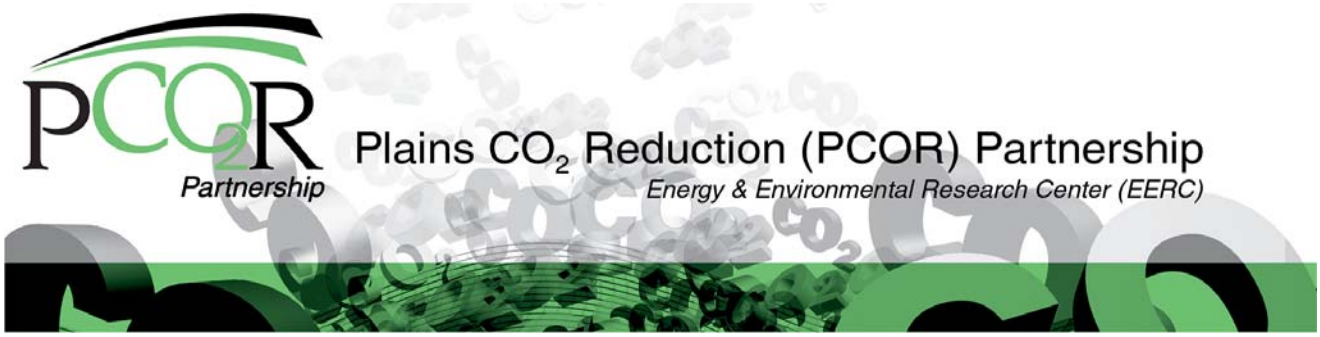

PLAINS CO_2 REDUCTION PARTNERSHIP PHASE III

Quarterly Technical Progress Report
Task 13 – Deliverable D58/D59

(for the period January 1 – March 31, 2015)

Prepared for:

Federal Information Tracking System (FITS)
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EXECUTIVE SUMMARY

The Plains CO_2 Reduction (PCOR) Partnership is one of seven Regional Carbon Sequestration Partnerships (RCSPs) competitively awarded by the U.S. Department of Energy National Energy Technology Laboratory in 2003 as part of a national plan to mitigate greenhouse gas emissions. The PCOR Partnership is led by the Energy & Environmental Research Center at the University of North Dakota and continues to include stakeholders from the public and private sector in Phase III. The PCOR Partnership region includes all or part of nine U.S. states and four Canadian provinces.

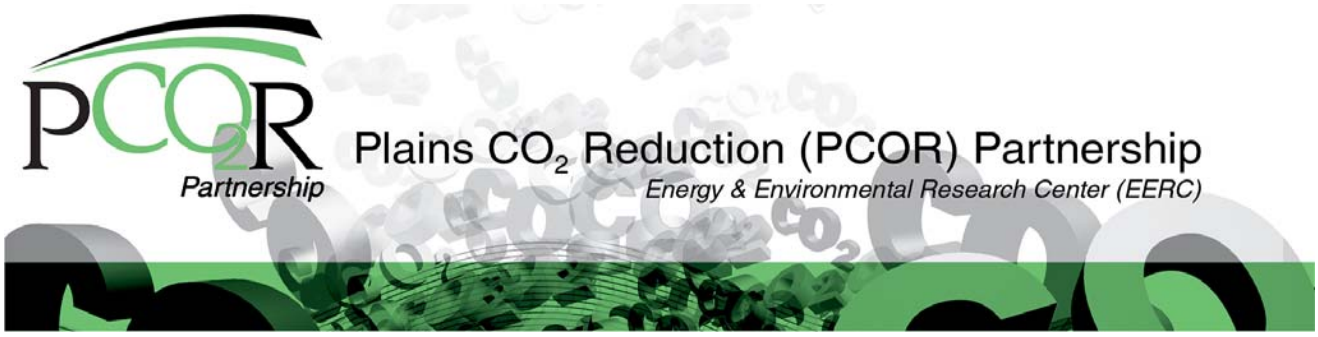
Phase III, the development phase, a 10-year effort (2007–2017), is an extension of the characterization (Phase I) and validation (Phase II) phases. The Phase III efforts of the PCOR Partnership include two large-volume demonstration tests—one in Canada and one in the United States—that focus on injecting carbon dioxide (CO_2) into deep geologic formations for CO_2 storage. Budget Period 4 (Years 3–8 of Phase III) began October 1, 2009.

This progress report presents an update of Phase III PCOR Partnership activities from January 1, 2015, through March 31, 2015.

Of significant importance, over 1.5 million metric tons of CO_2 has been stored at the Bell Creek test site! Denbury Resources Inc. (Denbury) has cumulatively injected (May 2013 – November 2014) over 1,660,570 metric tons of total gas (composition >95% CO_2). PCOR Partnership activities were focused on laboratory, modeling, and simulation activities. The analyses of the samples from the quarterly soil gas- and water-monitoring event, completed in December 2014 from field Phases 1 and 2, and laboratory core characterization activities were completed.

The PCOR Partnership annual membership meeting has been scheduled for September 15–17, 2015, in Chicago, Illinois. A project update meeting with Denbury is scheduled for April 13, 2015, in Plano, Texas.

Ten tasks continued. In addition to the foregoing, the draft Bell Creek Field test site – geomechanical modeling report was submitted; RCSP Water Working Group conference calls were held; the Bell Creek poster update was completed ahead of schedule; and three value-added products were submitted, with two approved this quarter.



PLAINS CO_2 REDUCTION PARTNERSHIP PHASE III
Quarterly Technical Progress Report
January 1 – March 31, 2015

INTRODUCTION

The Plains CO_2 Reduction (PCOR) Partnership is one of seven regional partnerships operating under the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) Regional Carbon Sequestration Partnerships (RCSP) Program. The PCOR Partnership is led by the Energy & Environmental Research Center (EERC) at the University of North Dakota (UND) in Grand Forks, North Dakota, and includes stakeholders from the public and private sectors. The membership, as of March 31, 2015, is listed in Table 1. The PCOR Partnership region includes all or part of nine states (Iowa, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wisconsin, and Wyoming) and four Canadian provinces (Alberta, British Columbia, Manitoba, and Saskatchewan).

The RCSP Program is part of NETL's Carbon Storage Program (Figure 1) and is a government–industry effort tasked with determining the most suitable technologies, regulations, and infrastructure needs for carbon capture and storage (CCS) on the North American continent.

The PCOR Partnership Program is being implemented in three phases:

- Phase I – Characterization Phase (2003–2005): characterized opportunities for carbon sequestration
- Phase II – Validation Phase (2005–2009): conducted small-scale field validation tests
- Phase III – Development Phase (2007–2017): involves large-volume carbon storage demonstration tests

Phase III is divided into three budget periods (BPs), running from October 1, 2007, to September 30, 2017:

- BP3: October 1, 2007 – September 30, 2009
- BP4: October 1, 2009 – September 30, 2015
- BP5: October 1, 2015 – September 30, 2017

BP1 and BP2 were effective in Phase II.

Table 1. PCOR Partnership Membership Phase III (October 1, 2007 – present, inclusive)

DOE NETL	Great River Energy	North Dakota Natural Resources Trust
UND EERC	Halliburton	North Dakota Petroleum Council
Abengoa Bioenergy New Technologies	Hess Corporation	North Dakota Pipeline Authority
Air Products and Chemicals, Inc.	Huntsman Corporation	Omaha Public Power District
Alberta Department of Energy	Husky Energy Inc.	Otter Tail Power Company
Alberta Department of Environment	Indian Land Tenure Foundation	Outsource Petrophysics, Inc.
Alberta Innovates – Technology Futures	Interstate Oil and Gas Compact Commission	Oxand Risk & Project Management Solutions
ALLETE	Iowa Department of Natural Resources	Peabody Energy
Ameren Corporation	Lignite Energy Council	Petroleum Technology Research Centre
American Coalition for Clean Coal Electricity	Manitoba Geological Survey	Petroleum Technology Transfer Council
American Lignite Energy	Marathon Oil Company	Pinnacle, a Halliburton Service
Apache Canada Ltd.	MBI Energy Services	Prairie Public Broadcasting
Aquistore	MEG Energy Corporation	Pratt & Whitney Rocketdyne, Inc.
Baker Hughes Incorporated	Melzer Consulting	Praxair, Inc.
Basin Electric Power Cooperative	Minnesota Power	Ramgen Power Systems, Inc.
BillyJack Consulting Inc.	Minnkota Power Cooperative, Inc.	RPS Energy Canada Ltd.
Biorecro AB	Missouri Department of Natural Resources	Saskatchewan Ministry of Industry and Resources
Blue Source, LLC	Missouri River Energy Services	SaskPower
BNI Coal, Ltd.	Montana–Dakota Utilities Co.	Schlumberger
British Columbia Ministry of Energy, Mines, and Petroleum Resources	Montana Department of Environmental Quality	Sejong University
British Columbia Oil and Gas Commission	National Commission on Energy Policy	Shell Canada Limited
C12 Energy, Inc.	Natural Resources Canada	Spectra Energy
Computer Modelling Group Ltd.	Nebraska Public Power District	Suncor Energy Inc.
Continental Resources, Inc.	North American Coal Corporation	TAQA North, Ltd.
Dakota Gasification Company	North Dakota Department of Commerce Division of Community Services	TGS Geological Products and Services
Denbury Onshore LLC	North Dakota Department of Health	University of Alberta
Eagle Operating, Inc.	North Dakota Geological Survey	University of Regina
Eastern Iowa Community College District	North Dakota Industrial Commission Department of Mineral Resources, Oil and Gas Division	WBI Energy, Inc.
Enbridge Inc.	North Dakota Industrial Commission Lignite Research, Development and Marketing Program	Weatherford Advanced Geotechnology
Encore Acquisition Company	North Dakota Industrial Commission Oil and Gas Research Council	Western Governors' Association
Energy Resources Conservation Board/ Alberta Geological Survey		Westmoreland Coal Company
Environment Canada		Wisconsin Department of Agriculture, Trade and Consumer Protection
Excelsior Energy Inc.		Wyoming Office of State Lands and Investments
Great Northern Project Development, LP		Xcel Energy

The overall mission of the Phase III program is to 1) gather characterization data to verify the ability of the target formations to store carbon dioxide (CO_2), 2) facilitate the development of the infrastructure required to transport CO_2 from sources to the injection sites, 3) facilitate sensible development of the rapidly evolving North American regulatory and permitting framework, 4) develop opportunities for PCOR Partnership partners to capture and store CO_2, 5) facilitate establishment of a technical framework by which carbon credits can be monetized for CO_2 stored in geologic formations, 6) continue collaboration with other RCSPs, and 7) provide outreach and education for CO_2 capture and storage stakeholders and the general public.

In Phase III, the PCOR Partnership is building on the information generated in its characterization (Phase I) and validation (Phase II) phases. The PCOR Partnership plans to fully utilize the infrastructure of its region to maximize CO_2 injection volumes. A programmatic

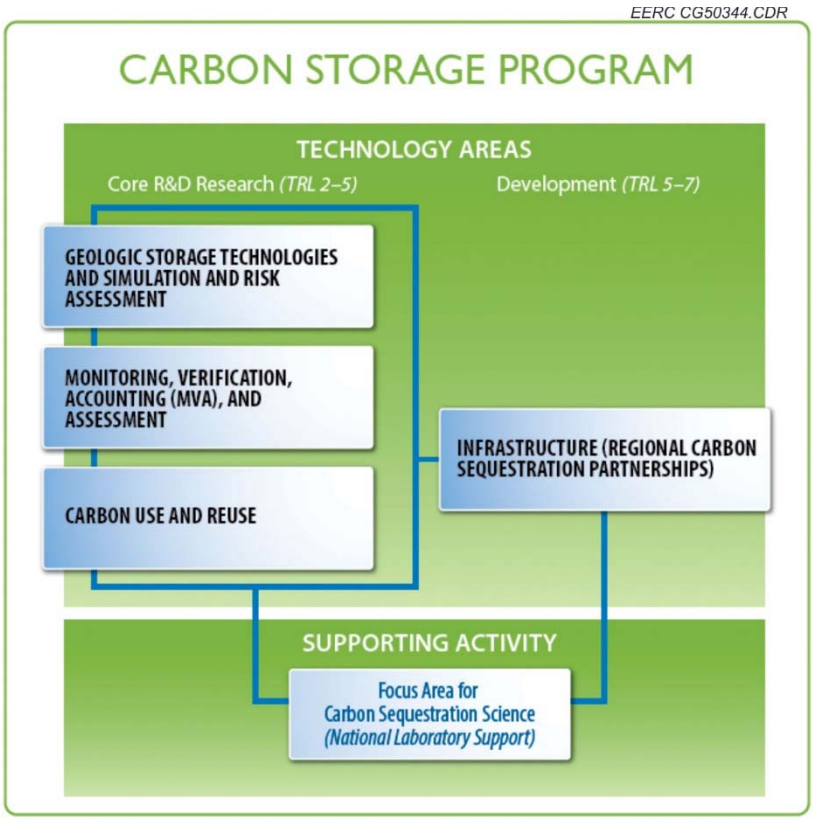


Figure 1. DOE Carbon Storage Program technology areas featuring regional partnerships (courtesy of Andrea Dunn, DOE NETL; "TRL" stands for technology readiness level).

development phase (Phase III) goal is implementation of large-scale field testing involving at least 1 million metric tons of CO_2 a project. Each of the RCSP large-volume injection tests is designed to demonstrate that the CO_2 storage sites have the potential to store regional CO_2 emissions safely, permanently, and economically for hundreds of years.

The PCOR Partnership is working with Denbury Resources Inc. (Denbury)-operated Bell Creek oil field in Powder River County in southeastern Montana. We have also conducted a feasibility study for Spectra Energy Transmission's (Spectra's) Fort Nelson gas-processing facility, situated near Fort Nelson, British Columbia, Canada. In addition, the PCOR Partnership is collaborating with the Petroleum Technology Research Centre (PTRC) on site characterization, risk assessment, and monitoring, verification, and accounting (MVA) activities associated with the Aquistore Project near Estevan, Saskatchewan, Canada. The PCOR Partnership's work has concluded with Apache Canada Ltd. to further characterize the Zama Acid Gas Enhanced Oil Recovery (EOR), CO_2 Storage, and Monitoring Project in Alberta, Canada, as well as its work on a multiyear, binational characterization effort of the basal Cambrian system (Figure 2).

Figure 2. Location of large-scale sites in PCOR Partnership Phase III.

The PCOR Partnership's objectives are as follows: 1) investigate the efficacy of various MVA strategies as a means of developing a CO_2 storage project in conjunction with a commercial EOR operation in order to verify that the region's large number of oil fields have the potential to store significant quantities of CO_2 in a safe, economical, and environmentally responsible manner and 2) verify the economic feasibility of using the region's carbonate saline formations for safe, long-term CO_2 storage. During Phase III, the PCOR Partnership will continue to refine storage resource estimates and evaluate other factors relevant to regional storage goals.

The PCOR Partnership plans to achieve its Phase III mission through a series of 16 tasks: 1) Regional Characterization; 2) Public Outreach and Education; 3) Permitting and National Environmental Policy Act (NEPA) Compliance; 4) Site Characterization and Modeling; 5) Well Drilling and Completion (completed); 6) Infrastructure Development; 7) CO_2 Procurement (completed); 8) Transportation and Injection Operations; 9) Operational Monitoring and Modeling; 10) Site Closure; 11) Postinjection Monitoring and Modeling; 12) Project Assessment; 13) Project Management; 14) RCSP Water Working Group (WWG) Coordination; 15) Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project (completed); and 16) Characterization of the Basal Cambrian System (completed). Table 2 lists the responsibility matrix for these 16 tasks.

It should be noted that Tasks 10 and 11 will not be initiated until BP5.

Table 2. Phase III Responsibility Matrix

Phase III Task Description	Task Leader
Task 1 – Regional Characterization	Wesley D. Peck
Task 2 – Public Outreach and Education	Daniel J. Daly
Task 3 – Permitting and NEPA Compliance	Charles D. Gorecki
Task 4 – Site Characterization and Modeling	James A. Sorensen
Task 5 – Well Drilling and Completion (completed)	John A. Hamling
Task 6 – Infrastructure Development	Melanie D. Jensen
Task 7 – CO_2 Procurement (completed)	John A. Harju
Task 8 – Transportation and Injection Operations	Melanie D. Jensen
Task 9 – Operational Monitoring and Modeling	Charles D. Gorecki
Task 10 – Site Closure	TBA*
Task 11 – Postinjection Monitoring and Modeling	TBA
Task 12 – Project Assessment	Loreal V. Heebink
Task 13 – Project Management	Charles D. Gorecki
Task 14 – RCSP WWG Coordination	Ryan J. Klapperich
Task 15 – Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project (completed)	Charles D. Gorecki
Task 16 – Characterization of the Basal Cambrian System (completed)	Wesley D. Peck

* To be announced.

PROGRESS OF WORK

Task 1 – Regional Characterization

Significant accomplishments for Task 1 for the reporting period included the following:

- Continued compiling information for the PCOR Partnership Atlas (5th edition) due August 2015, including updating the oilfield and source information, calculating new saline storage numbers divided by state/province, and researching current carbon market information.
- With regard to the upcoming DOE NETL Atlas V:
  - Reviewed and prepared comments on the draft Bell Creek-related pages for the DOE Atlas (comments sent January 12).
  - Reviewed the second draft, made comments, and suggested changes to the excerpt provided.
  - Made additional modifications.
- Continued activities to update the content and function of the partners-only **Decision Support System (DSS)**, including the following:
  - Continued working with EERC programming personnel to improve the online GIS (geographic information system) map.
  - Collected images from the last version of the PCOR Partnership Atlas to put in the image gallery on the DSS Web site.

  - Continued to assemble a presentation on the DSS online mapping services to showcase the capabilities for viewing results in a comprehensive and interactive framework outside of a report.
  - Continued working with programming to improve the online GIS map.
  - Worked on reformatting the Bell Creek-related information.
  - Worked on maintenance issues.
  - Updated North Dakota and Montana Petra projects with the latest general well information from each state's online resource, as follows: added 436 new North Dakota wells and 11 new Montana wells.
  - Updated the Saskatchewan, Manitoba, and South Dakota data.
- Created a new geodatabase to use for Bell Creek sampling locations.
- Continued work on several additional **value-added reports**, including the following:
  - Submitted the draft value-added regional characterization report to DOE on January 9, 2015.
  - Worked on the Inyan Kara Formation report:
    - Gathered references.
    - Requested geologic modeling data.
    - Located the saltwater disposal well injection data for the Dakota aquifer.
    - Began writing text.
  - Continued work on the report summarizing methods of original oil in place and CO_2 storage calculations.
  - Continued efforts on the Cedar Creek Anticline (CCA) report:
    - Worked on sections on EOR, geologic history, wellbore integrity, and cement tops.
- With regard to the **Aquistore** Project static modeling and dynamic predictive simulations effort:
  - Submitted and received notification of acceptance of an abstract to the 14th Annual Carbon Capture, Utilization, and Storage Conference (CCUS-14) (April 28 – May 1, 2015) entitled "Geologic Modeling and Simulation at the Aquistore Site: A Guide to MVA Deployment." Began work on the presentation.
  - Uploaded the remaining pressure and saturation data from the EERC's simulation results to a file transfer protocol site for the PTRC Science and Engineering Research Committee (SERC) to run seismic simulations for the Aquistore project.
  - Continued working with PTRC SERC regarding the Aquistore simulation model.
  - Received request for additional data generated by the simulations from a SERC member. Exported simulation data for Cases 2 and 3.
  - PTRC is working to improve injectivity of the injection well (they initially had lower than expected/needed injection rates). We have offered our services.
  - Injection is expected to begin next quarter.
- With regard to the **Aquistore** Project core work (12 samples), submitted the value-added lab report to DOE on January 30, 2015.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 2 – Public Outreach and Education

Significant accomplishments for Task 2 for the reporting period included the following:

- On February 5, 2015, submitted the update to the Bell Creek project poster (Deliverable D25, due March 31, 2015).
- During this reporting period, the PCOR Partnership outreach activities included two oral presentations. The following quantities of PCOR Partnership outreach materials were distributed:
  - PCOR Partnership documentary entitled "Nature in the Balance: CO_2 Sequestration" – 1
  - PCOR Partnership documentary entitled "Reducing Our Carbon Footprint: The Role of Carbon Markets" – 2
  - PCOR Partnership documentary entitled "Out of the Air – Into the Soil" – 1
  - PCOR Partnership documentary entitled "Managing Carbon Dioxide: The Geologic Solution" – 47
  - PCOR Partnership documentary entitled "Global Energy and Carbon: Tracking Our Footprint" – 2
  - "Plains CO_2 Reduction Partnership Atlas, 4th Edition, Revised" – 47
- Attended the 2015 National Energy Education Summit (www.ncseonline.org/2015-national-energy-education-summit) and the Energy and Climate Change 15th National Conference and Global Forum on Science, Policy, and the Environment (www.energyandclimatechange.org/) in Washington, D.C.
- Upon request, provided a copy of the 2010 outreach action plan to the Enhanced Oil Recovery Institute.
- Continued efforts to expand the type and presentation of statistics for overall past outreach activities and for planning.
- Continued to revise three draft Phase II project fact sheets, including holding meetings with project personnel to discuss content, with a focus on the terrestrial and Zama projects as well as addressing comments from senior management regarding Northwest McGregor.
- Continued to gather information on audience feedback systems for use with public presentations and focus groups.
- Attended the 10th Annual Southeast Regional Carbon Sequestration Partnership (SECARB) Stakeholders' Meeting March 11–12, 2015, in Atlanta, Georgia.
- Provided an outline of a talk entitled "Energy and Quality of Life – Drilling Down" to be given April 17, 2015, for the University of North Dakota Harold Hamm School of Geology and Geological Engineering Annual Spring Banquet (50 expected in attendance).
- Completed a review of the 4th edition Atlas (revised) and provided written comments to the Atlas team as a first step in contributing to the preparation of the 5th edition Atlas due in August 2015.

- Continued activities associated with **education and teacher education** seminars, including the following:
  - Accepted an invitation to present at the Lignite Energy Council's teacher seminar on July 16, 2015.
- Participated in a number of **conference calls** this quarter, including the following:
  - With regard to the Aquistore Outreach and Advisory Working Group monthly conference call:
    - In lieu of a January call, PTRC provided an e-mail summarizing planned activities for the next quarter for the Aquistore project, which was reviewed.
    - The February 23, 2015, call was canceled, but a summary of upcoming activities was provided.
  - With regard to the monthly RCSP Outreach Working Group (OWG) conference calls:
    - On January 22, 2015, topics discussed included the revision of the NETL Outreach Best Practices Manual (BPM) and content/schedule of upcoming calls.
    - On February 19, 2015, topics discussed included the comments on the NETL Outreach BPM and path forward. Accepted an assignment of preparing a draft table of projects and related outreach activities for the BPM. Subsequently prepared and submitted draft tables to the OWG that characterized the Phase II and III field activities, the settings and management structures of the projects, and the types of outreach undertaken for each of the projects.
    - On March 26, 2015, took part in the discussion regarding metrics and the draft table and received the assignment to review and provide comments on the major sections in the BPM document.
- Continued efforts to update the **public Web site** (www.undeerc.org/pcor), including the following:
  - Continued ongoing identification and repair of broken links.
  - On January 22, 2015, held an in-house meeting to discuss content in the regulatory and permitting section of the public Web site.
  - Worked on draft text to update the basal Cambrian system project section.
  - Reviewed and updated candidate pages for Web updates based on discussions with EERC programmers.
  - Reviewed and updated the standard operating procedure developed in July of 2014 for Web page tracking using Google Analytics.
  - Discussed scope and budget estimates for the public Web site with the EERC Web programmers.
- Continued collaborative efforts with **Prairie Public Broadcasting (PPB)**, including the following:
  - Continued to review historical sources for the coal documentary, including *Energy and the English Industrial Revolution* by E.A. Wrigley, *Power to the People* by Kandar and others, and *Getting the Coal Out* by Diana Tittle.
  - Received initial summary of site views for the video clips housed on the PPB Learning Media Web site (July–December 2014).
  - Completed transcription of filmed interviews and description of field footage associated with the Aquistore project upon request for footage by PTRC.

  - Held discussions with PPB staff who attended the North Dakota Science Teachers Association Spring Meeting held March 20–21, 2015, in Bismarck (resulted in requests for PCOR Partnership outreach materials though PPB).
  - Continued editing Parts 3 and 4 of the four-part education video, and sent action items to PPB.
  - With regard to D22, the energy from coal 60-minute documentary (due January 2016):
    - Traveled to Houston, then Plano, Texas, January 11–12, 2015, for filming at Rice University and then North American Coal Corporation's headquarters, respectively, and to attend other side meetings.
    - Continued efforts to schedule Dr. Friedmann for an interview.
    - Sent interview invitations, and updated the travel schedule.
    - Prepared a response to China University of Mining and Technology to request help with interviews and filming locations.
    - Initiated efforts to obtain site footage of the Kemper County facility.
- During this reporting period, information regarding the **site sessions/visits** to the PCOR Partnership public Web site included the following:
  - There were 6339 sessions/visits to the public Web site (www.undeerc.org/pcor). Traffic increased 15% over last quarter (5510 sessions/visits). Over 28% of these visits were initiated from a mobile device or tablet.
  - There were 5559 unique visitors to the public Web site, representing a 19% increase from last quarter (4680 visitors). In particular, 87% of these visitors (5528 visitors) were new to the Web site (visitors whose visit was marked as a first-time visit in this quarter).
  - Of the 6339 sessions/visits, 52% of the Web traffic was domestic and 48% was international. Table 3 lists the top ten countries for visits to the PCOR Partnership Web site. These included the United States, India, United Kingdom, Canada, Australia, Philippines, Germany, Malaysia, Pakistan and Kenya. There was traffic from 127 countries overall (Figure 3).
  - There were 336 sessions/visits originating from within the PCOR Partnership region (Figure 4). Approximately 68% of the regional visits originated from the United States, and 32% came from Canada. Visits from within the PCOR Partnership region comprised 5% of the overall traffic to the public Web site (it should be noted that the totals are exaggerated to some degree because the visit location data were aggregated at the state and province levels, even though the PCOR Partnership region formally includes only portions of British Columbia, Montana, and Wyoming).
- During this reporting period, a breakdown of how visitors came to the PCOR Partnership Web site, also referred to as **traffic sources** (Figure 5), was determined and is provided below:

Table 3. Sessions/Visit Activity from the Top Ten Countries and the PCOR Partnership Region

	Country	Sessions/ Visits*	PCOR Partnership State/Province	Visits*
1.	United States	3296		
			Minnesota	53
			Missouri	43
			Wisconsin	41
			North Dakota	21
			Montana	19
			Iowa	16
			Nebraska	16
			Wyoming	10
			South Dakota	8
2.	India	767		
3.	United Kingdom	417		
4.	Canada	243		
			Alberta	56
			British Columbia	31
			Saskatchewan	17
			Manitoba	5
5.	Australia	194		
6.	Philippines	84		
7.	Germany	68		
8.	Malaysia	67		
9.	Pakistan	67		
10.	Kenya	66		
	Other 117 countries	1070		
	Total Sessions/Visits	**6339**	**Total PCOR Partnership Visits**	**336**

*Arranged by the number of visits to the site.

- Direct traffic consists of those visitors who bookmark or type in the URL (www.undeerc.org/pcor). It is likely that most of the direct traffic (10%) is from persons familiar with the PCOR Partnership.
- Referral site traffic (3%) corresponds to the traffic directed to the PCOR Partnership Web page from other sites via links. The top three referring Web sites were energy.gov, sequestration.mit.edu, and natcarbviewer.com.
- Less than 1% of site traffic resulted from teacher campaigns and social interactions, such as e-mail or social media sources (e.g., Facebook and YouTube).

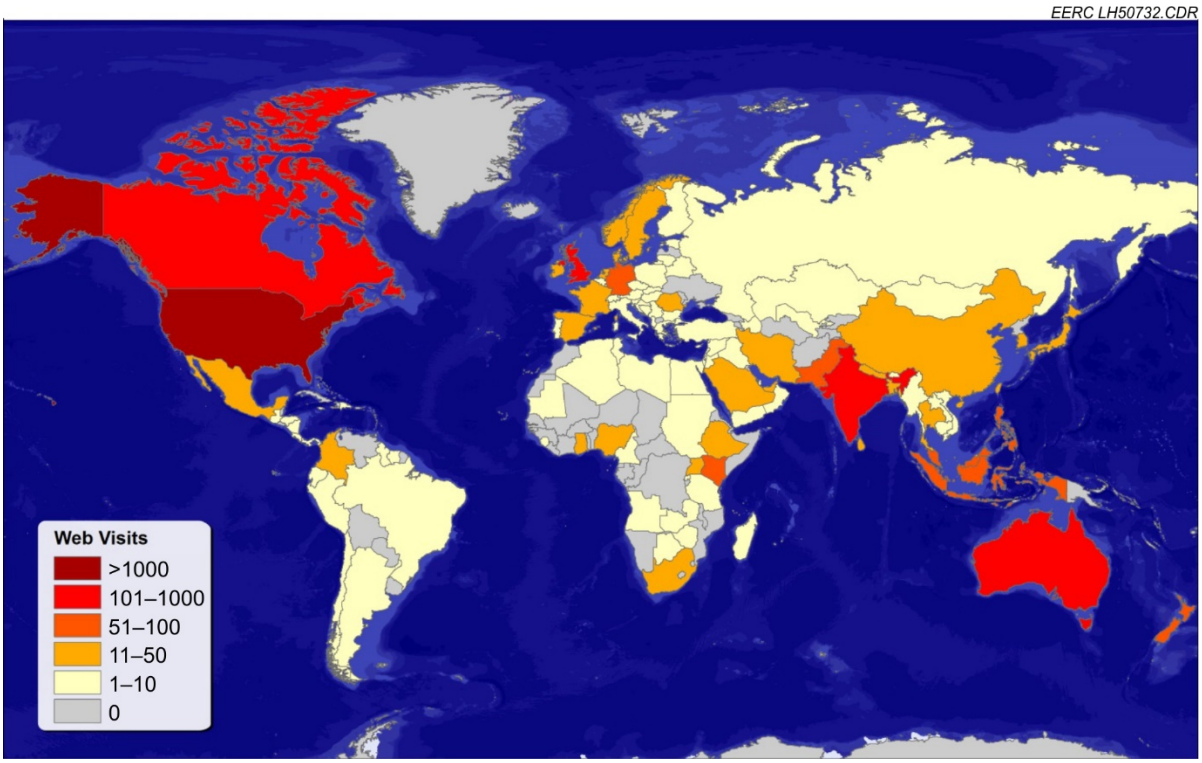


Figure 3. Map of PCOR Partnership Web site global traffic for this reporting period.

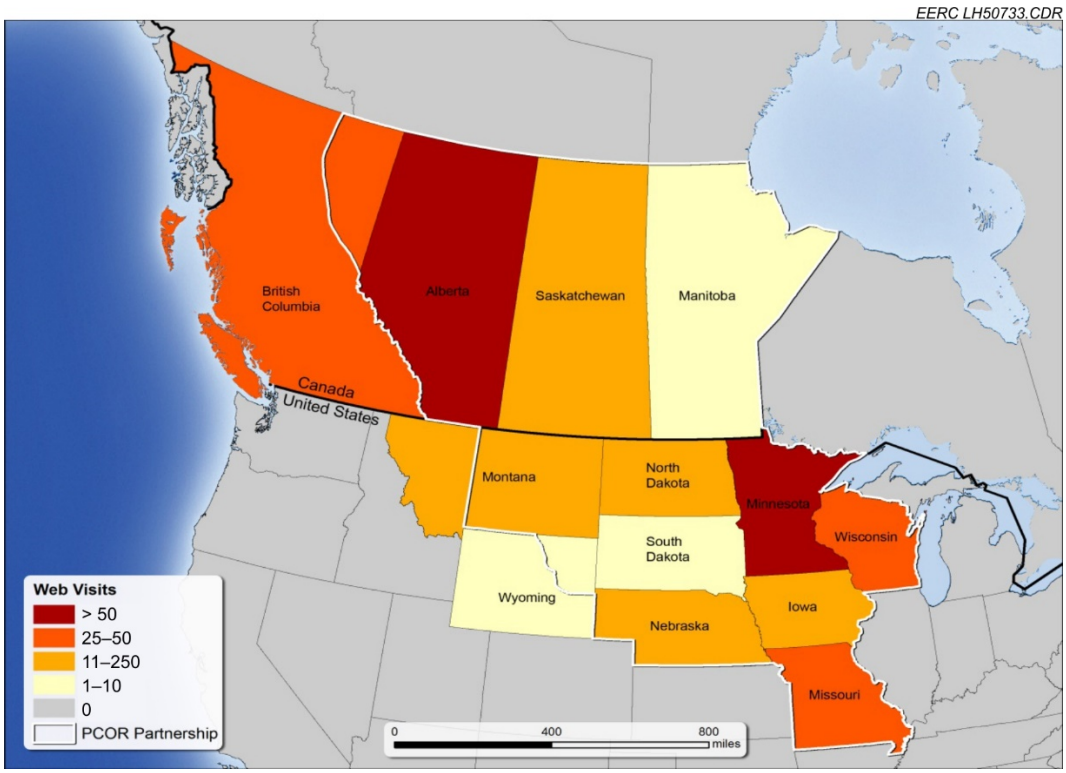


Figure 4. Map of PCOR Partnership Web site regional visits for this reporting period.

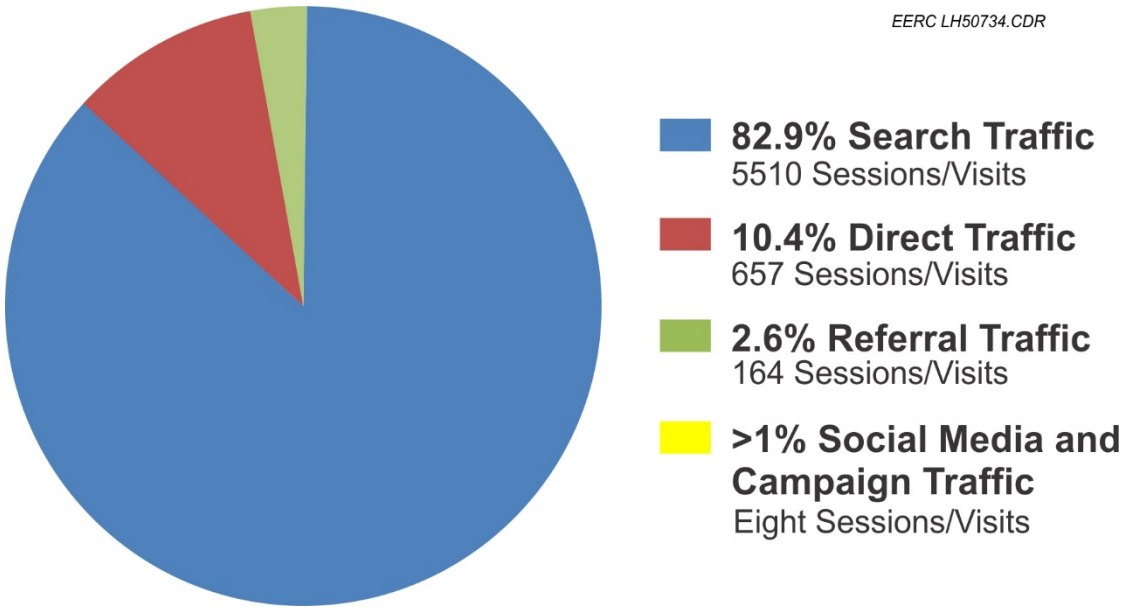


Figure 5. PCOR Partnership public Web site traffic sources for this reporting period.

- During this reporting period, the **nature of the sessions** to the PCOR Partnership public Web site included 9197 page views (a 9% increase from last quarter); the top five pages viewed are listed in Table 4. These five pages comprise 56% of total page views.
- All five documentaries and 50 video clips taken from the documentaries have been uploaded to the EERC's YouTube channel. The top five accessed YouTube videos are listed in Table 5. Because of the volume of material, the videos were organized into seven playlists. Each video description includes one or more links to the PCOR Partnership public Web site. Two PCOR Partnership full-length documentaries are also on the PPB YouTube Channel. These are listed in Table 6. These videos can also be streamed on the PCOR Partnership public Web site.

Table 4. Top "Page Views" on the PCOR Partnership Public Web Site

Page Title	Page Views	% Page Views	Page
What Is CO_2 Sequestration?	3334	36.3	www.undeerc.org/pcor/sequestration/whatissequestration.aspx
What Is CO_2?	2342	25.5	www.undeerc.org/pcor/sequestration/whatisco2.aspx
Home Page	386	4.2	www.undeerc.org/pcor/
CO_2 Sequestration Projects	247	2.7	www.undeerc.org/pcor/co2sequestrationprojects/default.aspx
Carbon Sequestration, Climate Change and CO_2	218	2.4	www.undeerc.org/pcor/sequestration/default.aspx

Table 5. Top EERC PCOR Partnership-Related YouTube Channel Videos Accessed

Video	Views	Est. Minutes Watched	Avg. View Duration
Reducing Our Carbon Footprint Documentary	766	5841	7:47
Reforestation in Brazil	257	633	2:26
The Phases of Oil Recovery – So Far	168	329	1:57
Household Energy Around the World	93	298	3:11
Household Energy and Carbon Footprint	64	141	2:12

Table 6. PCOR Partnership Documentaries on PPB YouTube Channel Accessed

Video	Views	Est. Minutes Watched	Avg. View Duration
Global Energy and Carbon: Tracking Our Footprint	3063	24,788	8:09
Managing Carbon Dioxide: The Geologic Solution	224	1946	8:69

- During this reporting period, the PCOR Partnership received **public television exposure** from documentaries broadcast in North Dakota, northwestern Minnesota, and Manitoba. A total of 21 broadcasts aired. The number of telecasts by documentary are as follows: "Out of the Air Into the Soil: Land Practices That Reduce Atmospheric Carbon" (6), "Managing Carbon Dioxide: The Geologic Solution" (9), and "Global Energy and Carbon: Tracking our Footprint" (6).
- During this reporting period, there was one instance of **media content** published regarding the PCOR Partnership. This is listed in Table 7.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 3 – Permitting and NEPA Compliance

Significant accomplishments for Task 3 for the reporting period included the following:

- With regard to the 2015 Regulatory Roundup meeting:
  - On January 30, 2015, sent an e-mail to selected regional regulators soliciting input on scheduling.

Table 7. PCOR Partnership Media Coverage

Date	Headline	Media Organization/ Publication	City	Journalist, Author, or Source	Type
2/12/2015	PCOR: The Partnership to Reduce Carbon Dioxide	Beulah Beacon	Beulah	Chris Erickson	Print Newspaper Article

  - Scheduled for July 22–23, 2015, in Deadwood, South Dakota.
  - Continued planning for the meeting:
    - Prepared a draft agenda.
    - Discussed potential speakers.
    - Discussed with Interstate Oil and Gas Compact Commission (IOGCC) representatives the regulatory topics for the 2015 PCOR Partnership regulatory meeting, including several IOGCC products.
- Reviewed past NEPA questionnaires.
- Continued review of the U.S. Environmental Protection Agency (EPA)-proposed rule for carbon emissions from existing stationary sources.
- Attended the 2015 Underground Injection Control Conference held in Austin, Texas, February 9–11, 2015.
- Held a conference call with the IOGCC, and discussed potential topics for briefing paper(s) to be submitted for inclusion at the May annual meeting in Salt Lake City.
- Participated in a conference call on March 26, 2015, with the IOGCC regarding the transition of Class II wells to Class VI. This topic will be discussed at the committee meeting (May 19, 2015) held in conjunction with the IOGCC Annual Meeting in Salt Lake City. Provided documentation on this issue and an agenda for the committee meeting, to include suggested industry and regulatory speakers and discussion topics with the committee.
- Began working on a PowerPoint related to Class II well to Class VI transition to be presented at an International Energy Agency meeting in Paris, France, in late April.
- Reviewed the U.S. EPA and other Web sites regarding permits and changes to the Class VI regulations.
- Worked on updating regulatory pages for the PCOR Partnership Atlas.
- Discussed updates to the regulatory section of the public Web site.
- Continued planning for D8, Permitting Review – Update 2, due September 30, 2015, including checking the status of the North Dakota primacy application and changes to Canadian and U.S. EPA regulations.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 4 – Site Characterization and Modeling

Significant accomplishments for Task 4 for the reporting period included the following:

- Continued preparing the PCOR Partnership site characterization BPM, due August 31, 2015.
  - Discussed the suggestions made by the Technical Advisory Board (TAB) group.
- Scheduled and prepared for a project update meeting with Denbury on April 13, 2015, in Plano, Texas. Topic areas include updates regarding Bell Creek geologic

interpretation, seismic, near-surface monitoring, and pressure and temperature monitoring.

- **Bell Creek** test site activities included the following:
  - With regard to **geomechanical** efforts, the following activities occurred:
    - Submitted D32, Geomechanical Report Update on January 30, 2015.
    - Continued geomechanical characterization of the Bell Creek Field.
    - Worked on updating the rock mechanical properties of the 3-D mechanical earth model (e.g., Young's modulus, Poisson's Ratio) and reservoir stresses using synthetic well logs (e.g., sonic logs).
    - Continued investigating options regarding microseismic data-processing services and 3-D vertical seismic profiling (VSP) data processing.
    - Continued preparing for the geomechanical simulations, including:
      - Conducted literature review related to the use of CMG (Computer Modelling Group) and other software packages for designing a geomechanical simulation process.
      - Worked on preparing data and the overall simulation workflow such as the model reservoir properties and rock mechanical properties.
      - Set up practice simulations in CMG to check the efficiency of the software for the simulation of CO_2 plume development during and after injection.
  - Continued work on Bell Creek **characterization**, including the following:
    - Continued developing ideas for a Bell Creek journal article related to facies modeling to be prepared in collaboration with Denbury.
    - Developed a workflow for reprocessing the sigma pulsed-neutron logs (PNLs). The results will be compared to the Version 2 geologic model's reservoir properties and will serve as a way to quality-control the model. Additionally, the saturations from the baseline PNLs will be compared to the history-matched simulation results to help validate the results.
    - Worked on developing well sections and cross sections (from the model and characterization data) for the laboratory to help facilitate the core work.
    - Worked on incorporating lab-generated data into Techlog for use in the upcoming petrophysical modeling.
    - Compiled lab data and well logs for 05-06 OW, 33-14R, and 56-14R wells.
    - Worked on incorporating production data from the field into the Petra database.
    - Created a subset of the fieldwide static geologic model (Version 2) that contains Phases 1 and 2; this model is being set up with parameters (e.g., rock compressibility) to prepare for predictive simulation and history matching.
    - Held weekly modeling/simulation meetings to discuss PNL processing. The PNL workflow regarding a new calculation for lithology, effective porosity, and fluid saturations within the Muddy Formation was presented in March. This workflow was built and processed within Schlumberger's Techlog software.
    - Reviewed the current Techlog project to verify its contents and create a plan for future petrophysical modeling.
    - Requested and received from Schlumberger effective porosity logs from the PNL work in a different format that is more conducive to integration with simulation results.

- Used the 3-D model, updated facies interpretation, injection/production, and seismic data to examine wells in Phase 1 for their utility related to a potential tracer study that may be conducted in the field.
- Began investigating statistical methods for analyzing variability within PNL results.
- Worked on developing a workflow for evaluating rock mineral volumes and effective porosity above the reservoir zone using PNLs. The effective porosity values from PNL data will be compared to effective porosity properties in the simulation model in order to identify areas of the simulation model with results that diverge from field observations.
- Continued working on Version 3 of the geologic model:
  - Efforts have been made to gain a better understanding of the transition between the Skull Creek and Muddy Formations. Activities included literature review of both formations in the Bell Creek Field and greater Powder River Basin and basic petrophysical analysis including facies correlation and comparison to previous interpretations. This work has implications in our understanding of the Muddy depositional model.
  - Held an in-house review of the updated facies interpretation of the Bell Creek Field, which incorporates both electrolog, seismic, and core data. Progress on this interpretation will be presented to Denbury at a WebEx April 6, 2015, and in person April 13, 2015, in Plano, Texas.
  - Constructed facies logs for each of the wells that have core and lab data. This work is indicating that a revised facies interpretation may be needed to accurately understand the geology of the Bell Creek Field. Considering a trip to view core to gather additional evidence for the revised facies interpretation.
  - Received one PowerLog license. This software will be used for petrophysical analyses. A PowerLog training session will be led by PCOR Partnership partner Eric Pasternack of Outsource Petrophysics, Inc., at the EERC in the near future.
  - Worked on integration of a 3-D seismic amplitude map, logs, and core to develop detailed geobody, depositional environment, and facies interpretations.
  - Several PowerPoint slides were developed and presented to the project team during the weekly Bell Creek modeling and simulation meetings.
- Performed experiments to determine the effect of 2 mol% methane in CO_2 on Bell Creek crude oil. There was no measurable effect of the added methane on MMP (minimum miscibility pressure) compared to MMP values determined earlier in March 2015 using pure CO_2.
- Performed CO_2 upper-phase sampling with CO_2 at 2300 psi (42°C) with Bell Creek crude and another one with 20 mol% methane in CO_2. Collected oil hydrocarbons are being analyzed.
- Sorted available special core analysis (SCAL) reports from Core Lab for the Bell Creek 0506-OW well. Will work with Core Lab to receive the remaining files.

– **Applied Geology Laboratory** activities included the following:
- Worked on obtaining pore-size and grain-size distributions for Bell Creek U.S. Geological Survey (USGS) wells.

- ♦ Lab and modeling personnel worked together on facies interpretations for the USGS cored wells.
- ♦ With regard to the 60 feet of full-diameter 33-14R core (collected April 2013):
  - o Continued fine-tuning the thin-section descriptions and x-ray diffraction data.
  - o Lab analyses are complete. The results are being incorporated into an interpretation provided to modeling personnel.
  - o Continued work on the permeability-to-air report.
- ♦ With regard to the 56-14R full-core plugs (collected March 2013):
  - o Permeability-to-water analysis continued. Following permeability-to-water analysis, samples were dried and retested for porosity and permeability-to-air to determine if significant changes had occurred, which was not observed.
  - o Updated size and shape analysis data.
  - o Lab analyses are complete.
  - o Held a lab meeting to discuss evaluations to investigate correlations to lithofacies in regard to Klinkenberg correction factors, grain size, porosity, permeability, and mineralogy with modeling personnel.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 5 – Well Drilling and Completion

This task ended in Quarter 3 – BP4, Year 7 (June 2014).

Task 6 – Infrastructure Development

Significant accomplishments for Task 6 for the reporting period included the following:

- A value-added report entitled "Assessing Temporary Storage Options to Manage Variable-Rate CO_2 Emissions for Use During Enhanced Oil Recovery" continued undergoing internal PCOR Partnership management review. Following DOE review, the authors plan to submit the manuscript for possible publication in *Energy & Environmental Science* (www.rsc.org/publishing/journals/ee/about.asp).
- Continued to search for and update technologies for the CO_2 capture technologies update overview.
- Continued preparation of the update to the "Opportunities and Challenges Associated with CO_2 Compression and Transport During CCS Activities" report (D85, due May 2015). The document focuses on the methods used to prepare CO_2 for pipeline transport—compression and liquefaction—discussing the basis for each method as well as any new approaches and the situations in which one approach might be preferred over another. To the extent possible, the energy requirements and economics of each approach will be included.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 7 – CO_2 Procurement

This task ended Quarter 4, BP4, Year 6 (September 2013).

Task 8 – Transportation and Injection Operations

Significant accomplishments for Task 8 for the reporting period included the following:

- Compiled and summarized information about the capture method and CO_2 stream composition for the Lost Cabin gas-processing plant, the Great Plains Synfuels Plant, and Boundary Dam for the PCOR Partnership team leader, who requested the information while at an international conference.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 9 – Operational Monitoring and Modeling

Significant accomplishments for Task 9 for the reporting period included the following:

- Worked on renewing software licenses with CMG.
- Began and continued to work on the MVA BPM, and held an in-house brainstorming meeting to discuss.
- Shared lessons learned from PNL work with PTRC.
- Provided Denbury a near-surface monitoring presentation that we presented at the Carbon Management Technology Conference on October 21–23, 2013, based on a request.
- Continued **Bell Creek** site activities, including the following:
  - Based on the most recent publicly available data, cumulative total gas injection (composition >95% CO_2) is 1,660,570 metric tons through November 30, 2014 (Table 8).
  - Held a meeting to discuss modeling, simulation, and historical well data collection activities relevant to the MVA program.
  - Presented at a workshop entitled “Research Issues in Gas Migration along Wellbores” in Calgary, Alberta, March 12, 2015.

Table 8. Bell Creek CO_2 Injection Totals for November 2014 (cumulative totals May 2013 to November 2014)

	November 2014 Injection
Total, Mscf	3,046,040
Total, U.S. tons*	174,229
Total, metric tons*	158,211
Cumulative Total, Mscf [+]	31,970,963
Cumulative Total, U.S. tons*[+]	1,828,689
Cumulative Total, metric tons*[+]	1,660,570

Source: Montana Board of Oil and Gas [MBOG] database.

* There is an approximately 2–3-month lag in posting of injection/production volumes to the MBOG database. This was calculated utilizing a conversion of 17.483 Mscf/U.S. ton and 19.253 Mscf/metric ton.

[+] Cumulative totals are for the period from May 2013 to the month listed.

- Began to develop alternate strategies for reduced monitoring, moving toward a commercially viable MVA strategy, specifically regarding frequency and focusing on key indicator analytes.
- Began planning and preparing for the update meeting with Denbury, April 13, 2015, in Plano, Texas, including compiling comprehensive update binders for the project team.
- With regard to **modeling and simulation** activities:
  - Received updated guidance from Denbury regarding field operations, proceeding with running additional simulation scenarios to investigate injection performance.
  - Continued literature review for CO_2 EOR simulation strategies.
  - Worked on building a single-well model with refined grids to better capture the near-wellbore phenomena during simulation.
  - Worked on structural modeling of the top of the Fox Hills–Hell Creek aquifer.
  - Gathered historical injection and production data to prepare for simulations.
  - Reviewed distribution of active wells across the Bell Creek Field for use in simulations.
  - Researched depositional environments for object modeling input into the near-surface model.
  - Worked on history-matching the new updated model. The overall production and injection profile in the Phase 1 area has been matched, including various parameters, e.g., primary and secondary oil, water and gas production, and water injection.
  - Worked on history-matching in Phase 2 section, including examining the geologic structure, permeability, water saturation and relative permeability distributions in the combined region, and identifying ways to improve matching performance.
  - Set up a combined simulation model for Phases 1 and 2 which includes all production and injection wells in the region. Determined parameters and constraints (e.g., perforation intervals, barrier locations, etc.) that will be used in the simulations, and worked on checking the preliminary simulation results. Updated the model with reservoir properties.
- With regard to **injection-phase seismic** efforts:

- ♦ Data processing is almost complete for the recently completed 3-D surface seismic survey at Bell Creek (Global Geophysical is doing the processing) and will be sent to the EERC when it is finished.
- ♦ Received 3-D VSP monitor survey data and comprehensive backup material from processing, and provided a breakdown of the shotpoints survey and shotpoints acquired.
- ♦ Continued work processing and differencing the 3-D VSP monitoring survey for 04-03 OW.
- ♦ Finished processing the recently completed 3-D surface seismic survey at Bell Creek (Global Geophysical is doing the processing). Received preliminary results from Denbury.
- ♦ Conducted a literature review for induced seismicity related to CO_2 injection.

– Continued analysis of **pressure gauge response** from the 05-06 OW well, including the following:
  - ♦ Continued review and analysis of processed permanent downhole monitoring data.
  - ♦ Continued database entry for tracking data drives for the borehole array and recording system.
  - ♦ Spoke with Trevor MacDougal of Qorex regarding a distributed temperature sensing (DTS) data anomaly which occurred between April 4 and May 21, 2014. The analysis determined that the system is performing within the system accuracy specification of ±2°C and that temperature offset is particularly sensitive to the temperature change of the surface cable near the freezing point of 0°C.

– With regard to **injection-phase PNL** activities:
  - ♦ Held an internal meeting to discuss and formalize plans related to Bell Creek PNL interpretation, analysis, and integration activities over the next 5 months.
  - ♦ Began checking results of the most recently collected PNLs as part of the quality assurance/quality control (QA/QC) process, and updated the templates for examining the reservoir and well profiles in Petrel.
  - ♦ Worked on investigating PNL statistics and a near-surface model. After successfully reprocessing the PNLs inside the Muddy Formation, the workflow was adapted to reprocess the PNL data for the overlying formations. New lithology, effective porosity, and fluid saturations will be computed to provide petrophysical data needed to populate the near-surface model. Additionally, PNL statistical analysis was evaluated to determine the best way of reducing model uncertainty and to remove error from the model outputs. This will help clean up the interpreted logs and remove artifacts of model error.
  - ♦ Held a WebEx with Schlumberger March 24, 2015, and discussed pulsed-neutron interpretations for the most recent fieldwork, including the monitor passes for four wells. Schlumberger participants included Bob Butch, Lee Swagger, Wayne Rowe, and Gabriel Velasquez.

– With regard to **injection-phase sampling** activities:
  - ♦ Continued to work with Denbury personnel to collect periodic oil and gas samples from select wells in the Phase 1 area. Although no oil and gas samples were collected during March 2015, a plan is being devised to collect one gas and one oil sample from each of the three production wells (32-02, 56-14, and 05-06) on

an estimated quarterly basis. The next round of samples is planned to be collected during the semiannual Bell Creek surface and near-surface sampling event.

- ♦ Traveled to Bell Creek January 14–16, 2015, to download data from the Qorex and MORE Vision systems, swap hard disk drives on the GeoPro system, and continue reservoir surveillance and analysis of continuous permanent downhole monitoring data in the 05-06 OW well.
- ♦ Continued working with the December 2014 quarterly soil gas and water data sets as follows:
  - o Completed data collection, analysis, and processing on over 210 soil gas samples from Phases 1 and 2.
    - ▪ Laboratory gas chromatography (GC) confirmation analyses were also completed for the 12 selected soil gas samples as part of the QA/QC procedure.
  - o Completed analysis and processing for water parameters from a select group of nine wells in and around the injection area.
  - o Updated the near-surface monitoring project database and interactive map product with the most recent December 2014 data results.
- ♦ Continued development of the Bell Creek water sampling and analysis prioritization protocol document.
- ♦ Completed the field (Micro Quad) and laboratory GC produced gas analyses for three production wells:
  - o 32-02 (sampled in November 2014)
  - o 56-14 and 05-06 (sampled in December 2014)
- ♦ Began planning and preparation for the upcoming semiannual Bell Creek surface and near-surface sampling event (tentatively scheduled for the last week in April or the first week in May).
  - o Began contacting landowners.
  - o Compiled Bell Creek Field site safety and operations manual, Denbury training course materials, training certificates for all field operators, and summary of HSE (Health and Safety Executive) requirements for an in-house safety meeting.
  - o Began Bell Creek Field sampling personnel training.

- With regard to the **Fort Nelson** project:
  - – Spectra Energy has currently suspended activities on the Fort Nelson CCS Feasibility Project pending the development of an economically viable business model for implementation. EERC staff met with David Moffatt and Mark Jenkins of Spectra Energy on March 12, 2015, in Calgary, Alberta, Canada. Mr. Moffatt and Mr. Jenkins provided a summary update of the status of the Fort Nelson project.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- Canceled planned travel (bad weather) to Bell Creek (February 9–14, 2015) to collect samples and distribute landowner water-sampling packages. A staff member was tentatively scheduled to travel March 16 for this. Sample equipment has been prepared for this event.

- Work on generating two value-add reports pertaining to 1) the Bell Creek baseline near surface monitoring results and 2) a laboratory study of CO_2–rock–groundwater interactions were reported in PCOR Partnership program updates between the months of February 2013 and May 2014. While the results of these activities are actively being used by the Bell Creek project team to develop and guide monitoring efforts, improve cost-effective monitoring strategies, and interpret operational monitoring data, it was determined that, because of their speculative nature without the context of operational monitoring data, their value is limited outside of the project team. Therefore, a decision was made to redesignate these reports as internal project documents considering their limited stand-alone value. It is anticipated that the key findings and results of these activities in context with the operational monitoring program will be reported in a future BPM. A technical paper or journal article focused on the implementation and results of a near-surface monitoring program is also being considered.

Task 10 – Site Closure

This task is anticipated to be initiated in Quarter 1, BP5, Year 9 (October 2015).

Task 11 – Postinjection Monitoring and Modeling

This task is anticipated to be initiated in Quarter 1, BP5, Year 9 (October 2015).

Task 12 – Project Assessment

Significant accomplishments for Task 12 for the reporting period included the following:

- Effective March 18, 2015, Loreal Heebink was named the new task leader.

Task 13 – Project Management

Significant accomplishments for Task 13 for the reporting period included the following:

- Continued planning for the 2015 annual meeting to be held in Chicago, Illinois, in September, including:
  - On February 12, 2015, sent out an e-mail soliciting partner input on speaker topics as well as a potential associated workshop for the upcoming annual meeting.
  - Event staff traveled to Chicago, Illinois, February 12–14, 2015, for a site inspection and contract negotiations for the upcoming PCOR Partnership Annual Membership Meeting.
  - On March 24, 2015, sent out an e-mail with save-the-date information for the September 15–17, 2015, meeting.
- Participated in a WebEx with the other partnerships and DOE regarding the upcoming DOE BPMs. There will be five BPMs, and they will be due in March and May 2016. DOE is forming teams with a member from each partnership for each BPM, with face-to-face kickoff meetings to be held for each team (likely in Pittsburgh). EERC staff were assigned for each BPM.

- Submitted an abstract to CCUS-14 (April 28 – May 1, 2015) entitled "Implementing Carbon Capture and Storage: An Overview of the Plains CO_2 Reduction Partnership." Received notification of acceptance of the abstract and began preparing the presentation.
- Held task leader meetings January 6, February 18, and March 17, 2015. Topics discussed included updates on Bell Creek and Aquistore, upcoming deliverables/milestones and travel, focused discussion on the next edition of the PCOR Partnership regional atlas, as well as updates from task leaders present.
- Continued planning for the winter TAB meeting, including an agenda and finalizing the presentation and meeting organization. TAB members were contacted with meeting information. The meeting was held in Phoenix, Arizona, March 3–5, 2015.
- Met with The CETER Group at the EERC to discuss future PCOR Partnership reports/ products.
- An abstract submitted to the International Forum on Recent Developments of CCS Implementation (http://co2quest.eu/ccsforum15.htm) in Athens, Greece, was accepted for oral presentation. Requested and received foreign travel approval to present at the forum scheduled for March 26–27, 2015. Prepared the oral presentation. Attended and presented.
- Planned for a visit from DOE NETL personnel on April 8–9, 2015, including preparing a draft agenda and PCOR Partnership update.
- Upon request, held a conference call on February 27, 2015, with Southwest Partnership about technical advisory boards.
- Spoke with Jim Rawson about Bell Creek geology and Trevor Richards regarding potential involvement with additional seismic activities at Bell Creek.
- Began planning travel and preparing a presentation for the workshop on CCS–EOR Utilization and Storage hosted by the Global Carbon Capture and Storage Institute in Beijing, China, April 16, 2015.
- Requested and received an extension to May 31, 2015, for D85 (Task 6), originally due March 31, 2015.
- Deliverables and milestones completed in January:
  - December monthly update
  - Task 9: D32 – Bell Creek Test Site – Geomechanical Report (Update 1)
  - Task 12: D58/D59 – Quarterly Progress Report
  - Task 14: M23 – Monthly WWG call held
- Deliverables and milestones completed in February:
  - January monthly update
  - Task 2: D25 – Bell Creek Test Site Poster (Update) (due March 31, 2015)
  - Task 14: M23 – Monthly WWG call held
- Deliverables and milestones completed in March:
  - February monthly update
  - Task 13: M36 – TAB meeting scheduled
  - Task 14: M23 – Monthly WWG call held

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 14 – RCSP WWG Coordination

Significant accomplishments for Task 14 for the reporting period included the following:

- DOE NETL officially released the WWG Web site (www.netl.doe.gov/research/coal/carbon-storage/wwg).
- With regard to monthly conference calls (M23):
  - Held a monthly conference call on January 27, 2015. Hosted a WebEx from DOE's Crosscutting Group, where its various program initiatives were discussed, which include proposed funding for new treatment methodologies for CCS extracted brine and for a national water atlas. The outline for the BPM was also discussed, and several comments were made related to structure and content and options for the upcoming annual meeting.
  - On February 26, 2015, monthly conference call discussions included development of the WWG BPM and ideas and timing of the annual meeting. It appears that holding the meeting during DOE's partnership review meeting in August is preferred.
  - On March 25, 2015, monthly conference call topics included development of the current WWG BPM, pursuit of writing a special journal edition of the International Journal of Greenhouse Gas Control (IJGGC) on the "Nexus of CCS and Water," and plans to host the annual WWG meeting during DOE's annual partnership review meeting in August.
- Received notice of the Groundwater Protection Council's annual underground injection control conference to be held in mid-February in Austin, Texas; attendance is under consideration.
- Continued the redesign of the water–CCS nexus graphic for both the WWG Web site and future fact sheet revisions.
- Continued working with the consultant on the BPM (D80, due November 30, 2016):
  - Continued work on the outline, including creation of an "expanded outline," which includes draft text of the various sections and potential references. The outline was provided to the WWG for this month's call.
  - Made additional revisions.
  - Finalized changes to the draft annotated outline and distributed to the WWG.
- Attended and presented at a DOE-sponsored workshop held at Lawrence Livermore National Library on March 16, 2015. The focus of the workshop was extracted-water projects associated with CCS.
- Distributed a WebEx presentation (and a related funding opportunity announcement) presented by DOE's Crosscutting Group to the members of the WWG.
- Continued collaborative efforts with The CETER Group, Inc., including the following:
  - Discussed monthly WWG conference calls.
  - Reviewed revisions for the BPM, and discussed suggestions for the annual meeting.
  - Discussed development of a solicitation for the special edition of IJGCC.

Actual or anticipated problems, delays, or changes during the reporting period included the following:

- All activities are on schedule, and there were no problems or delays during the reporting period.

Task 15 – Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project

This task ended Quarter 2, BP4, Year 7 (February 2014).

Task 16 – Characterization of the Basal Cambrian System

This task ended Quarter 2, BP4, Year 7 (March 2014).

PHASE III COST STATUS

The approved BP4 (Modification No. 32) budget along with actual costs incurred and in-kind cost share reported is shown in Table 9. A spending plan for BP4 and actual incurred cost by quarter of cash funds for BP4 are provided in Figure 6 and Table 10.

Table 9. Phase III Budget – BP4

Organization	Approved Budget,* $	Actual Costs Incurred, $
DOE Share – Cash	60,623,437	51,448,455
Nonfederal Share – Cash	2,411,971	2,915,689
Nonfederal Share – In-Kind	33,783,776	33,832,235
Total	96,819,184	88,196,379

*As of Modification No. 32.

PHASE III SCHEDULE STATUS

Table 11 lists all deliverables and milestones by quarter, with completion dates, through the end of the reporting period (see Table 12 for the Gantt chart for BP4, Years 7 and 8).

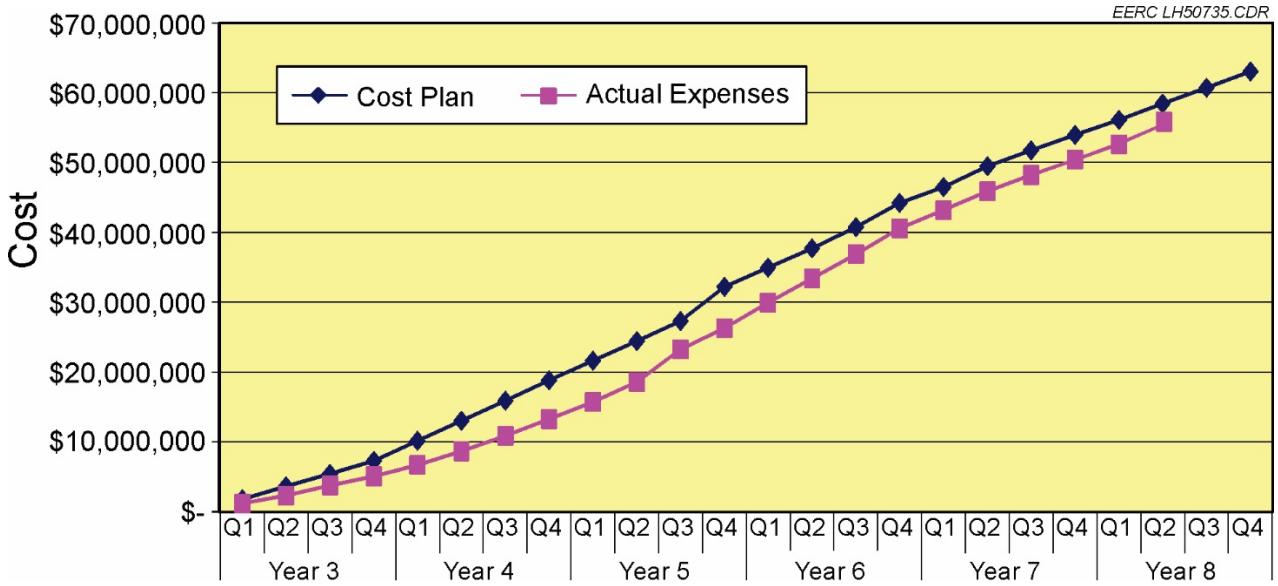


Figure 6. PCOR Partnership Phase III, BP4, Years 3–8 funding (cash only).

Table 10. Phase III, BP4, Years 3–8 Spending Plan

Baseline Reporting Quarter	Year 3								Year 4							
	Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4	
	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total
Baseline Cost Plan																
Federal Share	$1,692,969	$ 1,692,969	$ 1,692,969	$ 3,385,938	$ 1,692,969	$ 5,078,906	$1,692,969	$ 6,771,875	$2,707,624	$ 9,479,499	$ 2,707,624	$12,187,123	$2,707,624	$14,894,747	$2,707,624	$17,602,371
Nonfederal Share	$ 127,735	$ 127,735	$ 127,735	$ 255,470	$ 127,735	$ 383,204	$ 127,735	$ 510,939	$ 177,644	$ 688,583	$ 177,644	$ 866,227	$ 177,644	$ 1,043,871	$ 177,644	$ 1,221,515
Total Planned	$1,820,704	$ 1,820,704	$ 1,820,704	$ 3,641,407	$ 1,820,704	$ 5,462,111	$1,820,704	$ 7,282,814	$2,885,268	$10,168,082	$ 2,885,268	$13,053,350	$2,885,268	$15,938,618	$2,885,268	$18,823,886
Actual Incurred Cost																
Federal Share	$1,025,953	$ 1,025,953	$ 983,104	$ 2,009,057	$ 1,352,281	$ 3,361,338	$1,347,660	$ 4,708,998	$1,531,401	$ 6,240,399	$ 1,864,304	$ 8,104,703	$1,982,465	$10,087,168	$2,163,678	$12,250,846
Nonfederal Share	$ 171,873	$ 171,873	$ 164,935	$ 336,808	$ 74,929	$ 411,737	$ 4,563	$ 416,300	$ 80,246	$ 496,546	$ 56,614	$ 553,160	$ 257,142	$ 810,302	$ 251,531	$ 1,061,833
Total Incurred Cost	$1,197,826	$ 1,197,826	$ 1,148,039	$ 2,345,865	$ 1,427,210	$ 3,773,075	$1,352,223	$ 5,125,298	$1,611,647	$ 6,736,945	$ 1,920,918	$ 8,657,863	$2,239,607	$10,897,470	$2,415,209	$13,312,679
Variance																
Federal Share	$ 667,016	$ 667,016	$ 709,865	$ 1,376,881	$ 340,688	$ 1,717,568	$ 345,309	$ 2,062,877	$1,176,223	$ 3,239,100	$ 843,320	$ 4,082,420	$ 725,159	$ 4,807,579	$ 543,946	$ 5,351,525
Nonfederal Share	$ (44,138)	$ (44,138)	$ (37,200)	$ (81,339)	$ 52,806	$ (28,533)	$ 123,172	$ 94,639	$ 97,398	$ 192,037	$ 121,030	$ 313,067	$ (79,498)	$ 233,569	$ (73,887)	$ 159,682
Total Variance	$ 622,878	$ 622,878	$ 672,665	$ 1,295,542	$ 393,494	$ 1,689,036	$ 468,481	$ 2,157,516	$1,273,621	$ 3,431,137	$ 964,350	$ 4,395,487	$ 645,661	$ 5,041,148	$ 470,059	$ 5,511,207

Baseline Reporting Quarter	Year 5								Year 6							
	Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4	
	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total
Baseline Cost Plan																
Federal Share	$2,671,493	$20,273,864	$ 2,671,493	$22,945,356	$ 2,671,493	$25,616,849	$4,771,676	$30,388,524	$2,612,701	$33,001,225	$ 2,612,701	$35,613,925	$2,862,592	$38,476,517	$3,362,375	$41,838,891
Nonfederal Share	$ 152,429	$ 1,373,944	$ 152,429	$ 1,526,373	$ 152,429	$ 1,678,802	$ 152,429	$ 1,831,231	$ 145,185	$ 1,976,416	$ 145,185	$ 2,121,601	$ 145,185	$ 2,266,786	$ 145,185	$ 2,411,971
Total Planned	$2,823,922	$21,647,808	$ 2,823,922	$24,471,729	$ 2,823,922	$27,295,651	$4,924,105	$32,219,755	$2,757,886	$34,977,641	$ 2,757,886	$37,735,526	$3,007,777	$40,743,303	$3,507,560	$44,250,862
Actual Incurred Cost																
Federal Share	$2,255,269	$14,506,115	$ 2,762,335	$17,268,450	$ 4,349,081	$21,617,531	$2,768,852	$24,386,383	$3,463,510	$27,849,893	$ 3,244,138	$31,094,031	$3,271,990	$34,366,021	$3,542,974	$37,908,995
Nonfederal Share	$ 160,751	$ 1,222,584	$ 134,138	$ 1,356,722	$ 264,409	$ 1,621,131	$ 296,942	$ 1,918,073	$ 156,655	$ 2,074,728	$ 244,345	$ 2,319,073	$ 209,528	$ 2,528,601	$ 156,775	$ 2,685,376
Total Incurred Cost	$2,416,020	$15,728,699	$ 2,896,473	$18,625,172	$ 4,613,490	$23,238,662	$3,065,794	$26,304,456	$3,620,165	$29,924,621	$ 3,488,483	$33,413,104	$3,481,518	$36,894,622	$3,699,749	$40,594,371
Variance																
Federal Share	$ 416,224	$ 5,767,749	$ (90,843)	$ 5,676,906	$(1,677,589)	$ 3,999,318	$2,002,824	$ 6,002,141	$ (850,810)	$ 5,151,332	$ (631,438)	$ 4,519,894	$ (409,399)	$ 4,110,496	$ (180,600)	$ 3,929,896
Nonfederal Share	$ (8,322)	$ 151,360	$ 18,291	$ 169,651	$ (111,980)	$ 57,671	$ (144,513)	$ (86,842)	$ (11,470)	$ (98,312)	$ (99,160)	$ (197,472)	$ (64,343)	$ (261,815)	$ (11,590)	$ (273,405)
Total Variance	$ 407,902	$ 5,919,109	$ (72,552)	$ 5,846,557	$(1,789,569)	$ 4,056,989	$1,858,311	$ 5,915,299	$ (862,280)	$ 5,053,020	$ (730,598)	$ 4,322,422	$ (473,742)	$ 3,848,681	$ (192,190)	$ 3,656,491

Baseline Reporting Quarter	Year 7								Year 8							
	Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4	
	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total	Q1	Cum. BP Total	Q2	Cum. BP Total	Q3	Cum. BP Total	Q4	Cum. BP Total
Baseline Cost Plan																
Federal Share	$2,253,496	$44,092,387	$ 2,977,355	$47,069,742	$ 2,253,496	$49,323,237	$2,253,496	$51,576,733	$2,136,847	$53,713,580	$ 2,303,285	$56,016,865	$2,303,286	$58,320,151	$2,303,286	$60,623,437
NonFederal Share	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ 2,411,971	$ -	$ 2,411,971
Total Planned	$2,253,496	$46,504,358	$ 2,977,355	$49,481,713	$ 2,253,496	$51,735,208	$2,253,496	$53,988,704	$2,136,847	$56,125,551	$ 2,303,285	$58,428,836	$2,303,286	$60,732,122	$2,303,286	$63,035,408
Actual Incurred Cost																
Federal Share	$2,579,307	$40,488,302	$ 2,644,052	$43,132,354	$ 2,349,302	$45,481,656	$2,087,549	$47,569,205	$2,171,628	$49,740,833	$ 1,707,622	$51,448,455				
NonFederal Share	$ 62,881	$ 2,748,257	$ 14,980	$ 2,763,237	$ 15,096	$ 2,778,333	$ 90,494	$ 2,868,827	$ 2,587	$ 2,871,414	$ 1,337,720	$ 4,209,134				
Total Incurred Cost	$2,642,188	$43,236,559	$ 2,659,032	$45,895,591	$ 2,364,398	$48,259,989	$2,178,043	$50,438,032	$2,174,215	$52,612,247	$ 3,045,342	$55,657,589				
Variance																
Federal Share	$ (325,811)	$ 3,604,085	$ 333,303	$ 3,937,388	$ (95,806)	$ 3,841,581	$ 165,947	$ 4,007,528	$ (34,781)	$ 3,972,747	$ 595,663	$ 4,568,410				
NonFederal Share	$ (62,881)	$ (336,286)	$ (14,980)	$ (351,266)	$ (15,096)	$ (366,362)	$ (90,494)	$ (456,856)	$ (2,587)	$ (459,443)	$ (1,337,720)	$ (1,797,163)				
Total Variance	$ (388,692)	$ 3,267,799	$ 318,323	$ 3,586,122	$ (110,902)	$ 3,475,219	$ 75,453	$ 3,550,672	$ (37,368)	$ 3,513,304	$ (742,057)	$ 2,771,247				

Table 11. Phase III Milestones and Deliverables

Title/Description	Due Date	Actual Completion Date
Year 1 – Quarter 1 (October–December 2007)		
D37: Task 4 – Fort Nelson Test Site – Geological Characterization Experimental Design Package	12/31/07	12/28/07
D63: Task 13 – Project Management Plan	12/31/07	12/28/07
M17: Task 4 – Fort Nelson Test Site Selected	12/31/07	12/28/07
Year 1 – Quarter 2 (January–March 2008)		
D38: Task 4 – Fort Nelson Test Site – Geomechanical Experimental Design Package	1/31/08	1/31/08
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/08	1/31/08
D11: Task 2 – Outreach Plan	3/31/08	3/31/08
D27: Task 3 – Environmental Questionnaire – Fort Nelson Test Site	3/31/08	4/02/08
D30: Task 4 – Williston Basin Test Site – Geomechanical Experimental Design Package	3/31/08	3/31/08
M1: Task 1 – Three Target Areas Selected for Detailed Characterization	3/31/08	3/20/08
M18: Task 4 – Fort Nelson Test Site Geochemical Work Initiated	3/31/08	3/19/08
Year 1 – Quarter 3 (April–June 2008)		
D14: Task 2 – General Phase III Fact Sheet	4/30/08	4/30/08
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/08	4/30/08
D17: Task 2 – General Phase III Information PowerPoint Presentation	5/30/08	5/30/08
M3: Task 3 – Start Environmental Questionnaire for Williston Basin Test Site	6/30/08	6/27/08
M6: Task 4 – Williston Basin Test Site Geochemical Work Initiated	6/30/08	6/30/08
M7: Task 4 – Williston Basin Test Site Geological Characterization Data Collection Initiated	6/30/08	6/30/08
Year 1 – Quarter 4 (July–September 2008)		
D12: Task 2 – Demonstration Web Pages on the Public Site	7/31/08	7/31/08
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/08	7/31/08
D1: Task 1 – Review of Source Attributes	9/30/08	9/26/08
M2: Task 1 – Demonstration Project Reporting System (DPRS) Prototype Completed	9/30/08	9/26/08
Year 2 – Quarter 1 (October–December 2008)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/08	10/31/08
D20: Task 2 – Documentary Support to PowerPoint and Web Site	12/31/08	12/31/08
D57: Task 12 – Project Assessment Annual Report	12/31/08	12/31/08

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 2 – Quarter 2 (January–March 2009)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/09	1/30/09
M21: Task 14 – Outline of White Paper on Nexus of CO_2 CCS and Water, Part Subtask 14.2 – White Paper on Nexus of CCS and Water	2/28/09	2/27/09
D24: Task 2 – PCOR Partnership Region Sequestration General Poster	3/31/09	3/31/09
Year 2 – Quarter 3 (April–June 2009)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/09	4/30/09
M23: Task 14 – Monthly WWG Conference Call Held	4/30/09	4/15/09
D2: Task 1 – First Target Area Completed	5/29/09	5/29/09
M23: Task 14 – Monthly WWG Conference Call Held	5/29/09	5/29/09
D16: Task 2 – Fort Nelson Test Site Fact Sheet	5/29/09	5/29/09
M24: Task 14 – WWG Annual Meeting Held	5/31/09	5/07/09
M23: Task 14 – Monthly WWG Conference Call Held	6/30/09	6/25/09
Year 2 – Quarter 4 (July–September 2009)		
M23: Task 14 – Monthly WWG Conference Call Held	Not applicable	Not required
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation	7/31/09	7/31/09
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/09	7/31/09
M22: Task 14 – Draft White Paper – Nexus of CCS and Water Available for Comments	8/17/09	8/18/09 (DOE) 8/21/09 (WWG)
M23: Task 14 – Monthly WWG Conference Call Held	8/31/09	8/25/09
D1: Task 1 – Review of Source Attributes	9/30/09	9/25/09
D3: Task 1 – Permitting Review – One State and One Province	9/30/09	9/30/09
D9: Task 1 – Updated DSS	9/30/09	9/29/09
D47: Task 6 – Report on the Preliminary Design of Advanced Compression Technology	9/30/09	9/30/09
D77: Task 13 – Risk Management Plan Outline	9/30/09	9/18/09
M4: Task 4 – Bell Creek Test Site Selected	9/30/09	9/30/09
M5: Task 4 – Bell Creek Test Site – Data Collection Initiated	9/30/09	9/30/09
M23: Task 14 – Monthly WWG Conference Call Held	9/30/09	9/22/09

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 3 – Quarter 1 (October–December 2009)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/30/09	11/02/09
D78: Task 14 – Final White Paper on the Nexus of CCS and Water	10/30/09	10/28/09
M23: Task 14 – Monthly WWG Conference Call Held	10/31/09	10/26/09
M23: Task 14 – Monthly WWG Conference Call Held	11/30/09	11/16/09
D57: Task 12 – Project Assessment Annual Report	12/31/09	12/31/09
M23: Task 14 – Monthly WWG Conference Call Held	12/31/09	Waived by DOE
Year 3 – Quarter 2 (January–March 2010)		
D13: Task 2 – Public Site Updates	1/15/10	1/15/10
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/10	1/29/10
M23: Task 14 – Monthly WWG Conference Call Held	1/31/10	1/6/10
D79: Task 14 – Water Resource Estimation Methodology Document	2/28/10	Waived by DOE
M23: Task 14 – Monthly WWG Conference Call Held	2/28/10	2/25/10
D11: Task 2 – Outreach Plan	3/31/10	3/31/10
M23: Task 14 – Monthly WWG Conference Call Held	3/31/10	3/23/10
Year 3 – Quarter 3 (April–June 2010)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/10	4/30/10
M23: Task 14 – Monthly WWG Conference Call Held	4/30/10	4/28/10
M23: Task 14 – Monthly WWG Conference Call Held	5/31/10	5/13/10
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	6/30/10	6/30/10
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (update)	6/30/10	6/29/10
M23: Task 14 – Monthly WWG Conference Call Held	6/30/10	6/23/10
M24: Task 14 – WWG Annual Meeting Held	6/30/10	5/13/10
Year 3 – Quarter 4 (July–September 2010)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/10	7/29/10
M23: Task 14 – Monthly WWG Conference Call Held	7/31/10	7/28/10
M23: Task 14 – Monthly WWG Conference Call Held	8/31/10	8/31/10
D1: Task 1 – Review of Source Attributes	9/30/10	9/20/10
D52: Task 9 – Fort Nelson Test Site – Site Characterization, Modeling, and Monitoring Plan	9/30/10	9/30/10
M9: Task 4 – Bell Creek Test Site Geological Model Development Initiated	9/30/10	9/30/10
M23: Task 14 – Monthly WWG Conference Call Held	9/30/10	Waived by DOE

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 4 – Quarter 1 (October–December 2010)		
D87: Task 4 – Bell Creek Test Site – Geomechanical Experimental Design Package	10/30/10	10/29/10
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/10	10/29/10
M23: Task 14 – Monthly WWG Conference Call Held	10/31/10	10/26/10
M23: Task 14 – Monthly WWG Conference Call Held	11/30/10	Waived by DOE
D57: Task 12 – Project Assessment Annual Report	12/31/10	12/23/10
M23: Task 14 – Monthly WWG Conference Call Held	12/31/10	12/13/10
Year 4 – Quarter 2 (January–March 2011)		
M8: Task 4 – Bell Creek Test Site Wellbore Leakage Data Collection Initiated	1/15/11	1/14/11
D31: Task 4 – Bell Creek Test Site – Geological Characterization Experimental Design Package	1/31/11	1/27/11
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/11	1/31/11
M23: Task 14 – Monthly WWG Conference Call Held	1/31/11	1/19/11
M28: Task 4 – Bell Creek Geological Experimental Design Package Completed	1/31/11	1/27/11
D15: Task 2 – Bell Creek Test Site Fact Sheet	2/28/11	2/28/11
M23: Task 14 – Monthly WWG Conference Call Held	2/28/11	Waived by DOE
D10: Task 1 – Demonstration Project Reporting System Update	3/31/11	3/25/11
D18: Task 2 – Bell Creek Test Site PowerPoint Presentation (update)	3/31/11	3/31/11
D26: Task 2 – Fort Nelson Test Site Poster	3/31/11	3/31/11
D28: Task 3 – Environmental Questionnaire – Bell Creek Test Site	3/31/11	3/30/11
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCS Activities	3/31/11	3/31/11
M23: Task 14 – Monthly WWG Conference Call Held	3/31/11	3/22/11
Year 4 – Quarter 3 (April–June 2011)		
M30: Task 5 – Bell Creek Test Site Baseline MVA Initiated	4/01/11	3/24/11
M23: Task 14 – Monthly WWG Conference Call Held	4/30/11	4/21/11
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/11	4/29/11
D88: Task 13 – Programmatic Risk Management Plan	4/30/11	4/29/11
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/11	5/31/11
D34: Task 4 – Bell Creek Test Site – Baseline Hydrogeological Final Report	5/31/11	5/31/11

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 4 – Quarter 3 (April–June 2011) (continued)		
M23: Task 14 – Monthly WWG Conference Call Held	5/31/11	5/5/11
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (update)	6/30/11	6/30/11
M23: Task 14 – Monthly WWG Conference Call Held	6/30/11	6/23/11
M24: Task 14 – WWG Annual Meeting Held	6/30/11	5/5/11
Year 4 – Quarter 4 (July–September 2011)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/11	7/28/11
M23: Task 14 – Monthly WWG Conference Call Held	7/31/11	7/26/11
D29: Task 3 – Permitting Action Plan	8/31/11	8/31/11
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/11	8/31/11
D67: Task 9 – Fort Nelson Test Site – Simulation Report	7/31/11	8/31/11
M23: Task 14 – Monthly WWG Conference Call Held	8/31/11	8/24/11
D1: Task 1 – Review of Source Attributes	9/30/11	9/21/11
D4: Task 1 – Permitting Review – Basic EPA Requirements[+]	9/30/11	9/30/11
D9: Task 1 – Updated DSS	9/30/11	9/23/11
D25: Task 2 – Bell Creek Test Site Poster	9/30/11	9/30/11
D50: Task 9 – Bell Creek Test Site – Site Characterization, Modeling, and Monitoring Plan	9/30/11	9/30/11
M23: Task 14 – Monthly WWG Conference Call Held	9/30/11	Waived by DOE
M31: Task 9 – Bell Creek Test Site – Site Characterization, Modeling, and Monitoring Plan Completed	9/30/11	9/30/11
M33: Task 16 – Basal Cambrian Baseline Geological Characterization Completed	9/30/11	9/29/11
Year 5 – Quarter 1 (October–December 2011)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/11	10/31/11
M23: Task 14 – Monthly WWG Conference Call Held	10/31/11	10/26/11
M23: Task 14 – Monthly WWG Conference Call Held	11/30/11	11/30/11
D57: Task 12 – Project Assessment Annual Report	12/31/11	12/30/11
M23: Task 14 – Monthly WWG Conference Call Held	12/31/11	Waived by DOE
M34: Task 16 – Basal Cambrian Static Geological Model Completed	12/31/11	12/21/11

[+] Name change requested September 28, 2011, and approved October 3, 2011.

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 5 – Quarter 2 (January–March 2012)		
M16: Task 4 – Bell Creek Test Site – Initiation of Production and Injection Simulation	1/13/12	12/29/11
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/12	1/31/12
D65: Task 4 – Fort Nelson Test Site – Site Characterization Report	1/31/12	1/31/12
D81: Task 1 – Regional Carbon Sequestration Atlas (update)	1/31/12	1/31/12
M23: Task 14 – Monthly WWG Conference Call Held	1/31/12	1/19/12
M29: Task 4 – Fort Nelson Site Characterization Report Completed	1/31/12	1/31/12
D91: Task 16 – Report – Geological Characterization of the Basal Cambrian System in the Williston Basin	2/29/12	2/29/12
M23: Task 14 – Monthly WWG Conference Call Held	2/29/12	2/28/12
D5: Task 1 – Second Target Area Completed	3/31/12	3/30/12
D18: Task 2 – Bell Creek Test Site PowerPoint Presentation (update)	3/31/12	3/30/12
M10: Task 4 – Bell Creek Test Site Wellbore Leakage Data Collection Completed	3/31/12	3/12/12
M36: Task 13 – Annual Advisory Board Scheduled	3/31/12	3/28/12
M23: Task 14 – Monthly WWG Conference Call Held	3/31/12	3/27/12
Year 5 – Quarter 3 (April–June 2012)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/12	4/30/12
M23: Task 14 – Monthly WWG Conference Call Held	4/30/12	Waived by DOE
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/12	5/31/12
M23: Task 14 – Monthly WWG Conference Call Held	5/31/12	5/31/12
D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation (update)	6/30/12	6/29/12
D41: Task 4 – Fort Nelson Test Site – Geochemical Report	6/30/12	6/29/12
D84: Task 6 – Report – A Phased Approach to Building Pipeline Network for CO_2 Transportation During CCS	6/30/12	6/29/12
M23: Task 14 – Monthly WWG Conference Call Held	6/30/12	6/28/12
M24: Task 14 – WWG Annual Meeting Held	6/30/12	5/3/12
M32: Task 4 – Fort Nelson Geochemical Report Completed	6/30/12	6/29/12

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 5 – Quarter 4 (July–September 2012)		
D13: Task 2 – Public Site Updates	7/31/12	7/31/12
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/12	7/31/12
D67: Task 9 – Fort Nelson Test Site – Simulation Report	7/31/12	7/31/12
M23: Task 14 – Monthly WWG Conference Call Held	7/31/12	7/24/12
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/12	8/31/12
M23: Task 14 – Monthly WWG Conference Call Held	8/31/12	8/30/12
D1: Task 1 – Review of Source Attributes	9/30/12	9/28/12
D10: Task 1 – DPRS Update	9/30/12	9/28/12
M23: Task 14 – Monthly WWG Conference Call Held	9/30/12	9/27/12
Year 6 – Quarter 1 (October–December 2012)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/12	10/31/12
M23: Task 14 – Monthly WWG Conference Call Held	10/31/12	10/25/12
M23: Task 14 – Monthly WWG Conference Call Held	11/30/12	11/28/12
D57: Task 12 – Project Assessment Annual Report	12/31/12	12/28/12
M23: Task 14 – Monthly WWG Conference Call Held	12/31/12	Waived by DOE
M37: Task 3 – IOGCC Task Force Subgroup Meeting 1 Held	12/31/12	12/21/12
Year 6 – Quarter 2 (January–March 2013)		
D32: Task 4 – Bell Creek Test Site – Geomechanical Final Report	1/31/13	1/31/13
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/13	1/31/13
M23: Task 14 – Monthly WWG Conference Call Held	1/31/13	1/16/13
D14: Task 2 – General Phase III Fact Sheet (update)	2/28/13	2/28/13
M23: Task 14 – Monthly WWG Conference Call Held	2/28/13	2/28/13
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCS Activities	3/31/13	Waived by DOE (journal article)
D89: Task 16 – Report – Geochemical Evaluation of the Basal Cambrian System	3/31/13	3/28/13
D99: Task 14 – Water/CCS Nexus-Related Fact Sheet	3/31/13	3/22/13
M23: Task 14 – Monthly WWG Conference Call Held	3/31/13	3/28/13
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/13	3/27/13

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 6 – Quarter 3 (April–June 2013)		
D15: Task 2 – Bell Creek Test Site Fact Sheet (update)	4/15/13	3/25/13
D16: Task 2 – Fort Nelson Test Site Fact Sheet (update)	4/30/13	Waived by DOE
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/13	4/30/13
M14: Task 4 – Bell Creek Test Site Geological Characterization Data Collection Completed	4/30/13	4/30/13
M23: Task 14 – Monthly WWG Conference Call Held	4/30/13	4/25/13
M35: Task 16 – Basal Cambrian Dynamic Capacity Estimation Completed	4/30/13	4/30/13
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/13	5/31/13
D43: Task 5 – Bell Creek Test Site – Monitoring Experimental Design Package	5/31/13	5/31/13
M23: Task 14 – Monthly WWG Conference Call Held	5/31/13	5/30/13
M27: Task 5 – Bell Creek Test Site – MVA Equipment Installation and Baseline MVA Activities Completed	5/31/13	5/31/13
M23: Task 14 – Monthly WWG Conference Call Held	6/30/13	6/27/13
M26: Task 8 – Bell Creek Test Site – CO_2 Injection Initiated	6/30/13	May 2013 – sent 6/25/13
M37: Task 3 – IOGCC Task Force Subgroup Meeting 2 Held	5/9/13	5/29/13
M42: Task 3 – Findings and Recommendations of the Operational and Postoperational Subgroups Presented to the Carbon Geologic Storage (CGS) Task Force	6/30/13	6/20/13 – sent 6/28/13
Year 6 – Quarter 4 (July–September 2013)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/13	7/31/13
D33: Task 4 – Bell Creek Test Site – Geochemical Final Report	7/31/13	7/31/13
M12: Task 4 – Bell Creek Test Site Geochemical Work Completed	7/31/13	7/31/13
M23: Task 14 – Monthly WWG Conference Call Held	7/31/13	7/25/13
D64: Task 4 – Bell Creek Test Site – Site Characterization Report	8/31/13	8/29/13
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/13	8/30/13
D81: Task 1 – Regional Carbon Sequestration Atlas (update)	8/31/13	5/1/13
M23: Task 14 – Monthly WWG Conference Call Held	8/31/13	Waived by DOE

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 6 – Quarter 4 (July–September 2013) (continued)		
D1: Task 1 – Review of Source Attributes	9/30/13	9/5/13
D6: Task 3 – Permitting Review – Update 1	9/30/13	9/24/13
D48: Task 7 – Bell Creek Test Site – Procurement Plan and Agreement Report	9/30/13	9/24/13
D90: Task 16 – Report – Wellbore Evaluation of the Basal Cambrian System	9/30/13	9/5/13
D94:Task 2 – Aquistore Project Fact Sheet	9/30/13	9/30/13
D95: Task 2 – Aquistore Project Poster	9/30/13	9/30/13
D98: Task 3 – Report – Findings, Recommendations, and Guidance of CGS Task Force	9/30/13	8/30/13
M23: Task 14 – Monthly WWG Conference Call Held	9/30/13	9/30/13
M38: Task 3 – IOGCC Task Force Wrap-Up Meeting Held	9/30/13	8/16/13 – sent 9/5/13
M39: Task 3 – IOGCC Task Force Editing Subgroup Meeting Held	9/30/13	6/3/13 – sent 9/5/13
M40: Task 15 – Further Characterization of the Zama Acid Gas EOR, CO_2 Storage, and Monitoring Project Completed	9/30/13	9/24/13
Year 7 – Quarter 1 (October–December 2013)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/13	10/31/13
D42: Task 5 – Bell Creek Test Site – Injection Experimental Design Package	10/31/13	10/30/13
D99: Task 14 – Water/CCS Nexus-Related Fact Sheet	10/31/13	10/31/13
M23: Task 14 – Monthly WWG Conference Call Held	10/31/13	10/31/13
M23: Task 14 – Monthly WWG Conference Call Held	11/30/13	11/21/13
M23: Task 14 – Monthly WWG Conference Call Held	12/31/13	Waived by DOE
M24: Task 14 – WWG Annual Meeting Held	12/31/13	8/19/13
M43: Task 9 – Bell Creek Test Site – First Full-Repeat Sampling of the Groundwater- Soil Gas-Monitoring Program Completed	12/31/13	11/15/13 – sent 12/13/13
Year 7 – Quarter 2 (January–March 2014)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/14	1/31/14
D57: Task 12 – Project Assessment Annual Report	1/31/14	1/31/14
M23: Task 14 – Monthly WWG Conference Call Held	1/31/14	1/28/14
M41: Task 6 – Decision to Incorporate Ramgen Compression Technology into Bell Creek Project	1/31/14	1/29/14

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 7 – Quarter 2 (January–March 2014) (continued)		
D86: Task 15 – Updated Regional Implementation Plan for Zama	2/28/14	2/28/14
M23: Task 14 – Monthly WWG Conference Call Held	2/28/14	2/27/14
D24: Task 2 – PCOR Partnership Region Sequestration General Poster (update)	3/31/14	3/27/14
D36: Task 4 – Bell Creek Test Site – Wellbore Leakage Final Report	3/31/14	3/19/14
D92: Task 16 – Report – Storage Capacity and Regional Implications for Large-Scale Storage in the Basal Cambrian System	3/31/14	3/27/14
D93: Task 1 – Geological Modeling and Simulation Report for the Aquistore Project	3/31/14	3/25/14
D96: Task 4 – Bell Creek Test Site – 3-D Seismic and Characterization Report	3/31/14	3/27/14
M23: Task 14 – Monthly WWG Conference Call Held	3/31/14	3/25/14
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/14	3/4/14 – sent 3/25/14
M44: Task 9 – Bell Creek Test Site – First 3-D VSP Repeat Surveys Completed	3/31/14	3/1/14 – sent 3/25/14
Year 7 – Quarter 3 (April–June 2014)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/14	4/30/14
M23: Task 14 – Monthly WWG Conference Call Held	4/30/14	4/24/14
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/14	5/30/14
D101: Task14 – WWG Web Site Content Update	5/31/14	5/30/14
M23: Task 14 – Monthly WWG Conference Call Held	5/31/14	5/21/14
D44: Task 5 – Bell Creek Test Site – Drilling and Completion Activities Report	6/30/14	5/30/14
M23: Task 14 – Monthly WWG Conference Call Held	6/30/14	6/26/14
M45: Task 9 – Bell Creek Test Site – First Full-Repeat of Pulsed Neutron Logging Campaign Completed	6/30/14	6/9/14
M46: Task 9 – Bell Creek Test Site – 1 Year of Injection Completed	6/30/14	6/26/14

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Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 7 – Quarter 4 (July–September 2014)		
D13: Task 2 – Public Site Updates	7/31/14	7/29/14
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/14	7/31/14
M23: Task 14 – Monthly WWG Conference Call Held	7/31/14	7/17/14 WebEx
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/14	8/27/14 Exec. Sum.
M23: Task 14 – Monthly WWG Conference Call Held	8/31/14	Waived by DOE
D1: Task 1 – Review of Source Attributes	9/30/14	9/24/14
D7: Task 1 – Third Target Area Completed	9/30/14	9/26/14
D93: Task 1 – Geological Modeling and Simulation Report for the Aquistore Project	9/30/14	9/30/14
D100: Task 9 – Fort Nelson Test Site – Best Practices Manual – Feasibility Study	9/30/14	9/30/14
M23: Task 14 – Monthly WWG Conference Call Held	9/30/14	9/30/14
Year 8 – Quarter 1 (October–December 2014)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	10/31/14	10/31/14
D99: Task 14 – Water/CCS Nexus-Related Fact Sheet	10/31/14	10/31/14
M23: Task 14 – Monthly WWG Conference Call Held	10/31/14	10/28/14
M48: Task 9 – Bell Creek Test Site – 1 Million Metric Tons of CO_2 Injected	10/31/14	10/29/14
M23: Task 14 – Monthly WWG Conference Call Held	11/30/14	11/25/14
D57: Task 12 – Project Assessment Annual Report	12/31/14	12/30/14
M24: Task 14 – WWG Annual Meeting Held	12/31/14	8/11/14
Year 8 – Quarter 2 (January–March 2015)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/15	1/30/15
D32: Task 4 – Bell Creek Test Site – Geomechanical Report (Update 1)	1/31/15	1/28/15
M23: Task 14 – Monthly WWG Conference Call Held	1/31/15	1/27/15
M23: Task 14 – Monthly WWG Conference Call Held	2/28/15	2/26/15
D25: Task 2 – Bell Creek Test Site Poster (update)	3/31/15	2/5/15
M23: Task 14 – Monthly WWG Conference Call Held	3/31/15	3/25/15
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/15	3/31/15

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 8 – Quarter 3 (April–June 2015)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/15	
M23: Task 14 – Monthly WWG Conference Call Held	4/30/15	
D17: Task 2 – General Phase III Information PowerPoint Presentation (update)	5/31/15	
M23: Task 14 – Monthly WWG Conference Call Held	5/30/15	
D85: Task 6 – Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCUS Activities (update)	5/31/15	
D102: Task 13 – Best Practices Manual – Adaptive Management Approach	6/30/15	
M23: Task 14 – Monthly WWG Conference Call Held	6/30/15	
M49: Task 9 – Bell Creek Test Site – 1.5 Million Metric Tons of CO_2 Injected	6/30/15	
Year 8 – Quarter 4 (July–September 2015)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	7/31/15	
D49: Task 8 – Bell Creek Test Site – Transportation and Injection Operations Report	7/31/15	
M23: Task 14 – Monthly WWG Conference Call Held	7/31/15	
M50: Task 9 – Bell Creek Test Site – 2 Years of Near-Surface Assurance Monitoring Completed	7/31/15	
D35: Task 4 – Bell Creek Test Site – Best Practices Manual – Site Characterization	8/31/15	
D66: Task 9 – Bell Creek Test Site – Simulation Report	8/31/15	
D81: Task 1 – Regional Carbon Sequestration Atlas (update)	8/31/15	
M23: Task 14 – Monthly WWG Conference Call Held	8/31/15	
M51: Task 9 – Bell Creek Test Site – Initial Analysis for First Large-Scale Repeat Pulsed-Neutron Logging Campaign Post-Significant CO_2 Injection Completed	8/31/15	
D1: Task 1 – Review of Source Attributes (update)	9/30/15	
D8: Task 3 – Permitting Review – Update 2	9/30/15	
D45: Task 6 – Bell Creek Test Site – Infrastructure Development Report	9/30/15	
M23: Task 14 – Monthly WWG Conference Call Held	9/30/15	

Continued . . .

Table 11. Phase III Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 9 – Quarter 2 (January–March 2016)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	1/31/16	
D22: Task 2 – Energy from Coal 60-minute Documentary	1/31/16	
M23: Task 14 – Monthly WWG Conference Call Held	1/31/16	
D14: Task 2 – General Phase III Fact Sheet (Update)	2/29/16	
M23: Task 14 – Monthly WWG Conference Call Held	2/29/16	
D11: Task 2 – Outreach Plan (Update)	3/31/16	
D53: Task 9 – Fort Nelson Test Site – Monitoring for CO_2 Storage in a Brine Formation Best Practices Manual	3/31/16	
D55: Task 11 – Bell Creek Test Site – Cost-Effective Long-Term Monitoring Strategies Report	3/31/16	
D69: Task 9 – Bell Creek Test Site – Best Practices Manual – Simulation Report	3/31/16	
M23: Task 14 – Monthly WWG Conference Call Held	3/31/16	
M36: Task 13 – Annual Advisory Board Meeting Scheduled	3/31/16	
Year 9 – Quarter 3 (April–June 2016)		
D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report	4/30/16	
D15: Task 2 – Bell Creek Test Site Fact Sheet (Update)	4/16/16	
D16: Task 2 – Fort Nelson Test Site Fact Sheet (Update)	4/30/16	
D21: Task 2 – Bell Creek Test Site 30-minute Documentary	4/30/16	
D56: Task 11 – Report – Cost-Effective Long-Term Monitoring Strategies for the Fort Nelson Test Site	4/30/16	
M23: Task 14 – Monthly WWG Conference Call Held	4/30/16	
D17: Task 2 – General Phase III Information PowerPoint Presentation (Update)	5/31/16	
D101: Task 14 – WWG Web Site Content Update 1	5/31/16	
M23: Task 14 – Monthly WWG Conference Call Held	5/31/16	
M23: Task 14 – Monthly WWG Conference Call Held	6/30/16	

Table 12. Phase III, BP4, Years 7–8 Gantt Chart

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Table 12. Phase III, BP4, Years 7–8 Gantt Chart (continued)

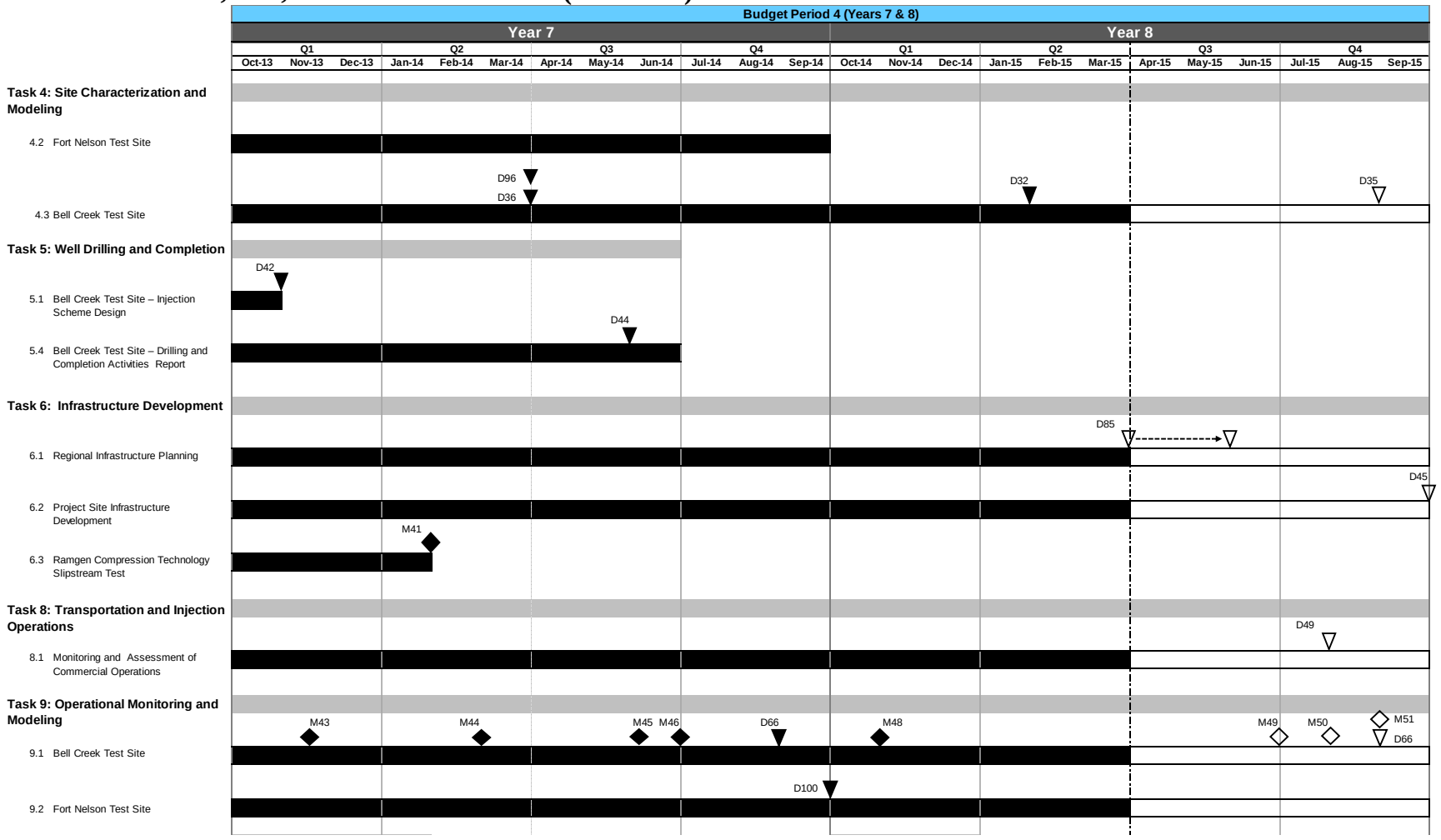

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Table 12. Phase III, BP4, Years 7–8 Gantt Chart (continued)

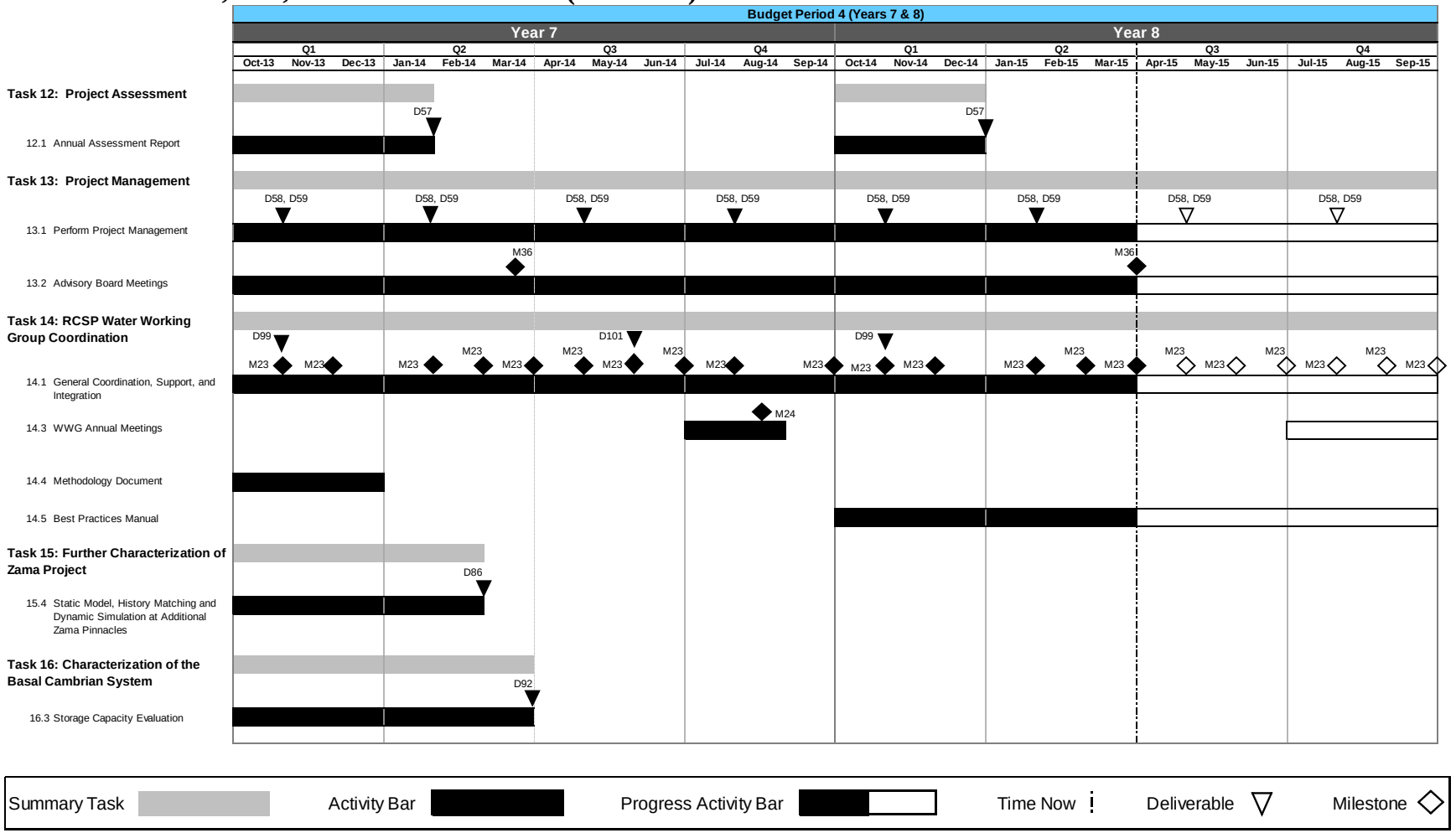

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Table 12. Phase III BP4, Years 7–8 Gantt Chart (continued)

Key for Deliverables ▼				Key for Milestones ◆	
D1	Review of Source Attributes	D58	Quarterly Progress Report	M23	Monthly WWG Conference Call Held
D7	Third Target Area Completed	D57	Project Assessment Annual Report	M24	WWG Annual Meeting Held
D8	Permitting Review – Update 2	D59	Milestone Quarterly Report	M36	Annual Advisory Board Meeting Scheduled
D13	Public Site Updates	D66	BC Test Site – Simulation Report	M41	Decision to Incorporate Ramgen Compression Technology into BC Project
D17	General Phase III Information PowerPoint Presentation	D81	Regional Carbon Sequestration Atlas	M43	BC Test Site – First Full-Repeat Sampling of the Groundwater- and Soil Gas- Monitoring Program Completed
D22	Energy from Coal 60-Minute Documentary	D85	Report – Opportunities and Challenges Associated with CO_2 Compression and Transportation During CCUS Activities	M44	BC Test Site – First 3-D VSP Repeat Surveys Completed
D24	PCOR Partnership Region CO_2 Storage General Poster	D86	Updated Regional Technology Implementation Plan for Zama	M45	BC Test Site – First Full-Repeat of Pulsed-Neutron Logging Campaign Completed
D25	BC Test Site Poster (Update)	D92	Report – Storage Capacity and Regional Implications for Large-Scale Storage in the Basal Cambrian System	M46	BC Test Site – 1 Year of Injection Completed
D32	BC Test Site – Geomechanical Report	D93	Report – Geological Modeling and Simulation for the Aquistore Project	M48	BC Test Site – 1 Million Metric Tons of CO_2 Injected
D35	BC Test Site – Best Practices Manual – Site Characterization	D96	BC Test Site – 3-D Seismic Acquisition and Characterization Report	M49	BC Test Site – 1.5 Million Metric Tons of CO_2 Injected
D36	BC Test Site – Wellbore Leakage Final Report	D99	Nexus of Water and CCS Fact Sheet	M50	BC Test Site – 2 Years of Near-Surface Assurance Monitoring Completed
D42	BC Test Site – Injection Experimental Design Package	D100	FN Test Site – Best Practices Manual– Feasibility Study	M51	Initial Analysis for First Large-Scale Repeat Pulsed-Neutron Logging Campaign Post-Significant CO_2 Injection Completed
D44	BC Test Site – Drilling and Completion Activities Report	D101	WWG Web Site Content Update		
D45	Report – Infrastructure Development				
D49	BC Test Site – Transportation and Injection Operations Report				

PHASE III PRODUCTS OR TECHNOLOGY TRANSFER ACTIVITIES

During the reporting period, three abstracts were submitted for presentation, four were accepted for presentation, and two presentations (oral) were given at seven different meetings/ conferences/workshops. In addition, a quarterly progress report, five deliverables (three draft, two approved), and five value-added products (three draft and two approved) were completed. In addition to the products cited below, staff also attended four project management site trips. For more detail see the Meetings/Travel section.

Abstracts

Submitted and Accepted for Presentation

Gorecki, C.D., Hamling, J.A., Sorensen, J.A., Peck, W.D., Daly, D.J., Jensen, M.D., Klapperich, R.J., Ayash, S.C., Anagnost, K.K., Steadman, E.N., and Harju, J.A., 2015, Implementing carbon capture and storage—an overview of the Plains CO_2 Reduction Partnership [abs.]: 14th Annual Carbon Capture, Utilization & Storage Conference, Pittsburgh, Pennsylvania, April 28 – May 1, 2015.

Peck, W.D., and Gorecki, C.D., 2015, Geologic modeling and simulation at the Aquistore site—a guide to MVA deployment [abs.]: 14th Annual Carbon Capture, Utilization & Storage Conference, Pittsburgh, Pennsylvania, April 28 – May 1, 2015.

Peck, W.D., Gorecki, C.D., Steadman, E.N., Doll, T.E., and Harju, J.A., 2015, Technical interpretation of the transition of CO_2 EOR to geologic storage [abs.]: 14th Annual Carbon Capture, Utilization & Storage Conference, Pittsburgh, Pennsylvania, April 28 – May 1, 2015.

Accepted for Presentation

Gorecki, C.D., Steadman, E.N., Harju, J.A., Hamling, J.A, Sorensen, J.A., Peck, W.D., Daly, D.J., Jensen, M.D., Klapperich, R.J., Ayash, S.C., and Anagnost, K.K., 2014, The Plains CO_2 Reduction Partnership—demonstrating carbon dioxide storage in the United States and Canada [abs.]: International Forum on Recent Developments of CCS Implementation, Athens, Greece, March 26–27, 2015.

Presentations

Gorecki, C.D., Ayash, S.C., Hamling, J.A., and Peck, W.D., 2015, PCOR Partnership Technical Advisory Board meeting: Presentation for the 2015 PCOR Partnership Technical Advisory Board Meeting, Phoenix, Arizona, March 2–3, 2015.

Gorecki, C.D., Hamling, J.A., Sorensen, J.A., Peck, W.D., Daly, D.J., Jensen, M.D., Klapperich, R.J., Ayash, S.C., Anagnost, K.K., Steadman, E.N., and Harju, J.A., 2015, The Plains CO_2 Reduction Partnership—demonstrating carbon dioxide storage in the United States and Canada: Presented at the International Forum on Recent Developments of CCS Implementation, Athens, Greece, March 26–27, 2015.

Deliverables/Milestones

Draft

Ayash, S.C., Gorecki, C.D., Steadman, E.N., and Harju, J.A., 2015, Technical Advisory Board meeting scheduled: Plains CO_2 Reduction (PCOR) Partnership Phase III draft Task 13 Milestone M36 for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Ge, J., Burnison, S.A., Bosshart, N.W., Dotzenrod, N.W., Liu, G., Braunberger, J.R., Ayash, S.C., Hamling, J.A., Sorensen, J.A., Gorecki, C.D., Steadman, E.N., and Harju, J.A., 2015, Bell Creek Field test site – geomechanical modeling report: Plains CO_2 Reduction (PCOR) Partnership Phase III draft Task 9 Deliverable D32 (update 1) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Approved

Gorecki, C.D., Harju, J.A., Steadman, E.N., Romuld, L., Hamling, J.A., Sorensen, J.A., Botnen, L.S., Daly, D.J., Jensen, M.D., Peck, W.D., Smith, S.A., Klapperich, R.J., Anagnost, K.K., and Votava, T.J., 2015, Annual assessment report: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 12 Deliverable D57 (October 1, 2013 – September 30, 2014) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2015-EERC-02-04, Grand Forks, North Dakota, Energy & Environmental Research Center, February.

Draft Submitted and Approved

Daly, D.J., Crocker, C.R., Hamling, J.A., Gorecki, C.D., Steadman, E.N., and Harju, J.A., 2015, CO_2 emissions go to work to produce more oil: Plains CO_2 Reduction (PCOR) Partnership Phase III Task 2 Deliverable D25 poster (update 1) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, February.

Progress Reports

Monthlies

Gorecki, C.D., Steadman, E.N., Peck, W.D., Daly, D.J., Sorensen, J.A., Hamling, J.A., Jensen, M.D., Harju, J.A., Anagnost, K.K., and Klapperich, R.J., 2015, Plains CO_2 Reduction (PCOR) Partnership: Phase III monthly report (December 1–31, 2014) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Gorecki, C.D., Steadman, E.N., Peck, W.D., Daly, D.J., Sorensen, J.A., Hamling, J.A., Jensen, M.D., Harju, J.A., Anagnost, K.K., and Klapperich, R.J., 2015, Plains CO_2 Reduction (PCOR)

Partnership: Phase III monthly report (January 1–31, 2015) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, February.

Gorecki, C.D., Steadman, E.N., Peck, W.D., Daly, D.J., Sorensen, J.A., Hamling, J.A., Jensen, M.D., Harju, J.A., Anagnost, K.K., and Klapperich, R.J., 2015, Plains CO_2 Reduction (PCOR) Partnership: Phase III monthly report (February 1–28, 2015) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Quarterlies

Gorecki, C.D., Harju, J.A., Steadman, E.N., Romuld, L., Sorensen, J.A., Botnen, L.S., Daly, D.J., Hamling, J.A., Jensen, M.D., Peck, W.D., Klapperich, R.J., Anagnost, K.K., and Votava, T.J., 2015, Plains CO_2 Reduction Partnership Phase III Task 13 Deliverable D58/59 quarterly technical progress report (October 1 – December 31, 2014) for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592 and North Dakota Industrial Commission Contract Nos. FY08-LX111-162 and G-015-030, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Value-Added Products

Draft Submitted

Smith, S.A., Heebink, L.V., Beddoe, C.J., Hurley, J.P., Eylands, K.E., Peck, W.D., Kurz, B.A., Gorecki, C.D., and Steadman, E.N., 2015, Petrophysical evaluation of Bakken Formation core from the Aquistore CO_2 injection site: Plains CO_2 Reduction (PCOR) Partnership Phase III draft Task 3 (update 1) value-added report for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Draft Submitted and Approved

Glazewski, K.A., Grove, M.M., Peck, W.D., Gorecki, C.D., Steadman, E.N., and Harju, J.A., 2015, Characterization of the PCOR Partnership region: Plains CO_2 Reduction (PCOR) Partnership value-added report for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2015-EERC-02-14, Grand Forks, North Dakota, Energy & Environmental Research Center, January.

Kalenze, N.S., Klapperich, R.J., Hamling, J.A., Gorecki, C.D., Steadman, E.N., Harju, J.A., and Azzolina, N.A., 2015, Data management policy and procedures developed for the PCOR Partnership's Bell Creek study: Plains CO_2 Reduction (PCOR) Partnership Phase III value-added report for U.S. Department of Energy National Energy Technology Laboratory Cooperative Agreement No. DE-FC26-05NT42592, EERC Publication 2015-EERC-03-15, Grand Forks, North Dakota, Energy & Environmental Research Center, March.

Meeting Minutes

Klapperich, R.J., 2015, Minutes—Regional Carbon Sequestration Partnership Water Working Group conference call: January 27, 2015.

Klapperich, R.J., 2015, Minutes—Regional Carbon Sequestration Partnership Water Working Group conference call: February 26, 2015.

MEETINGS/TRAVEL

Representatives from the PCOR Partnership incurred travel costs for their participation in the following five meetings/conferences, two workshops, and four project management site trips in this reporting period:

- January 11–14, 2015: traveled to Houston, Texas, to conduct interviews and film for the coal documentary.
- January 14–16, 2015: traveled to Miles City, Montana, for site work at the Bell Creek Station.
- January 23–28, 2015: traveled to Arlington, Virginia, to attend the National Energy Education Summit.
- February 8–12, 2015: traveled to Austin, Texas, to attend the 2015 Underground Injection Control Conference.
- February 9–14, 2015: traveled to Gillette, Wyoming, for site work at the Bell Creek oil fields.
- February 12–15, 2015: traveled to Chicago, Illinois, for a site inspection and contract negotiations for the 2015 PCOR Partnership Annual Membership Meeting.
- February 27 – March 5, 2015: traveled to Phoenix, Arizona, to attend the PCOR Partnership TAB meeting and other partner meetings.
- March 10–12, 2015: traveled to Atlanta, Georgia, to attend the SECARB annual meeting.
- March 11–13, 2015: traveled to Calgary, Alberta, Canada, to present at the Research Issues in Gas Migrating along Wellbores Workshop.
- March 14–16, 2015: traveled to Livermore, California, to present at the Enhanced Water Recovery Workshop hosted by DOE.
- March 24–29, 2015: traveled to Athens, Greece, to present at the International Forum on Recent Developments of Carbon Capture & Sequestration Implementation.

Materials presented at these meetings are available to partners on the PCOR Partnership DSS Web site (www2.undeerc.org/website/pcorp/).