

**Department of Interior Bureau of Ocean Energy Management Study:**

***Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship, Topic 5: Sub-Seabed Geologic Carbon Dioxide Sequestration Best Management Practices***

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## **LONG-TERM GOALS**

The goal of this project is to compile and evaluate all pertinent information needed to generate a U.S. Best Management Practices (BMP) for sub-seabed geologic carbon dioxide (CO<sub>2</sub>) sequestration in order to support BOEM's regulatory framework for these types of projects.

## **OBJECTIVES**

There are both scientific and technological objectives needed for this multi-year effort. The primary scientific objective is to assess the suitability of geologic strata underlying the U.S. continental shelf, at depths of thousands of feet, for sequestration of CO<sub>2</sub>. The technological objectives are to identify (1) how current offshore oil and gas practices need to be adapted to, and (2) what new practices need to be developed to allow sub-seabed geologic sequestration of CO<sub>2</sub> to move forward in the U.S.

## **APPROACH AND WORK PLAN**

The approach of this study is to first compile and summarize existing knowledge, both within the U.S. and internationally, that is applicable to sub-seabed geologic sequestration of CO<sub>2</sub>. Following this, the team will identify and develop additional practices specific to the U.S. The work is currently divided into three tasks covering 11 subtopics. The three tasks are:

1. Task 1. Worldwide literature and data availability surveys
2. Task 2. Develop best management practices manual
3. Task 3. Analysis of data gaps and need for further work

The 11 subtopics are:

- Subtopic 1: site selection and characterization, including data collection, capacity assessment, and modeling requirements.
- Subtopic 2: risk analysis.
- Subtopic 3: project construction, operation, decommissioning.
- Subtopic 4: operational and environmental controls and monitoring, verification, and accounting.
- Subtopic 5: mitigation.
- Subtopic 6: inspection and auditing.
- Subtopic 7: reporting requirements.
- Subtopic 8: emergency response and contingency planning.
- Subtopic 9: site closure.
- Subtopic 10: post-operation monitoring and management.
- Subtopic 11: liability and bonding.

Key parties participating in this work are researchers at the Bureau of Economic Geology (BEG) and subcontractors from private industry, State government, and academia. The key individuals from BEG include the co-PI's, Rebecca Smyth and Timothy Meckel, Susan Hovorka, and Bob Hardage. The subcontractors are:

1. Det Norsk Veritas (DNV) USA Inc.
2. Mustang Engineering & JP Kenny (Mustang)
3. Texas General Land Office (GLO)
4. Dr. Richard McLaughlin, Harte Research Institute for Gulf of Mexico Studies at Texas A&M (HRI)
5. Dr. David Adelman, The University of Texas at Austin School of Law (UT Law)

Areas of expertise of individual parties are as follows:

- Subtopic 1: BEG
- Subtopic 2: BEG, DNV, and GLO
- Subtopic 3: BEG, GLO, HRI, and Mustang
- Subtopic 4: BEG, DNV, and GLO
- Subtopic 5: BEG and DNV
- Subtopic 6: BEG, DNV, and Mustang
- Subtopic 7: BEG and UT Law
- Subtopic 8: BEG, DNV, and GLO
- Subtopic 9: BEG, GLO, HRI, and UT Law
- Subtopic 10: BEG, GLO, HRI, and UT Law
- Subtopic 11: BEG, GLO, HRI, and UT Law

The work plan for fiscal year 2012 will be to coordinate efforts between BEG and the subcontractors for continued work on Task 1 and initiation of work on Task 2.

## **WORK COMPLETED**

In a paragraph, please describe the actual tasks completed or technical accomplishments. The work completed during fiscal year 2011 has been primarily administrative. It has taken much longer than anticipated to finalize agreements between BEG and the subcontractors. The final

subcontract was not signed until November 2011. It is anticipated that the entire group (BEG plus subcontractors) will meet to coordinate efforts, and refine definition of the subtopics in early February 2012. The technical work that was completed in FY 2011 includes construction of electronic reference databases, links to which have been forwarded to BOEM.

## **RESULTS**

Results during FY 2011 are primarily administrative with limited progress on technical tasks. Reasons for this include the difficulty associated with finalizing subcontracts between BEG and subcontractors. The last remaining subcontract was finalized in mid-November 2011, so technical work will move forward at a more rapid pace in 2012. Technical results to date are primarily compilation of reference documents. A summary of documents obtained by subtopic is as follows:

- Subtopic 1 – 110 documents
- Subtopic 2 – 85 documents
- Subtopic 3 – 50 documents
- Subtopic 4 – 80 documents
- Subtopic 5 – 7 documents
- Subtopic 6 – 9 documents
- Subtopic 7 – 8 documents
- Subtopic 8 – 5 documents
- Subtopic 9 – 9 documents
- Subtopic 10 – 2 documents
- Subtopic 11 – 49 documents

## **IMPACT AND APPLICATIONS**

Technical results to date are minimal and therefore are not anticipated to have impact on or application to National Security, Economic Development, Quality of Life, or Science Education and Communication

## **TRANSITIONS**

Technical results to date are minimal; therefore there are no transitions related to National Security, Economic Development, Quality of Life, or Science Education and Communication

## **RELATED PROJECTS**

Technical results to date are minimal; therefore there are no closely related national or international projects to date.

## **REFERENCES**

BEG has set up a web version of EndNotes reference databases for the project. These can be accessed via the following web address: <http://www.myendnoteweb.com>. The e-mail address to use for login is: [rebecca.smyth@beg.utexas.edu](mailto:rebecca.smyth@beg.utexas.edu). The password is: boemre\_1.