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Principal Author: Paul Jehn

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Recipient Name and Address: Ben Grunewald
Ground Water Protection Research Foundation
13308 North MacArthur Boulevard
Oklahoma City, OK 73142

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Abstract/Executive Summary

Under the Energy and Environment Initiative, the GWPC/GWPRF will expand the oil and gas electronic commerce initiatives used to enhance the Risk Based Data Management System (RBDMS) and the Cost Effective Regulatory Approach (CERA). The GWPC/GWPRF has identified the following priorities for work efforts during the time period that will act as the base from which selections for each work period will be proposed. Work tasks will be presented for each reporting period by the GWPC from areas selected from the general list of priorities.

Results and Discussion

Task 1: RBDMS Core Development:

RBDMS or an RBDMS utility is now installed in 20 states and one Indian Nation. Future developments for the RBDMS Core Program will concentrate on fixing identified bugs; offer required enhancements, and updating the RBDMS Core to be compatible with new developments in Microsoft Access, migration to Windows Yukon, .net technology, and SQL server. GWPC/GWPRF will also maintain an RBDMS web presence where states may engage in peer-to-peer networking. The RBDMS Core program will also be updated to be compatible with the electronic commerce initiative.

Accomplishments September 1 2004 – April 30 – 2005

The temporary web address for RBDMS is http://virtuales.com:81/RBDMS/default.aspx. This site hosts a discussion list, provides downloads and maintains the official versions of all RBDMS software.

Arkansas and Alabama are being updated to take advantage of new developments in RBDMS. A .net field inspection utility is being tested in Arkansas. A work plan has been developed to install RBDMS in Indiana.

A water quality database for energy activities is under development and will be tested in Ohio. This system will interact with RBDMS and will warehouse monitoring data received by the Ohio DNR.

Accomplishments May 1 – August 31, 2005

The Web address for all RBDMS projects is http://www.rbdmsonline.org:81/projects/rbdms/default.aspx. Work plans and project status reports are continually updated and are available on this site. The RBDMS Core program is being revised to take advantage of .net technology. Iteration 3 workplan is available to download at the web site. RBDMS representatives from New York, Ohio, Kentucky, Alabama, Arkansas, Indiana, Oklahoma, Nebraska, Texas, Utah, New Mexico, Colorado, North Dakota, Nevada and California met and tested new RBDMS modules and discussed methods for continued data sharing and compatibility. The RBDMS .net front end interface can be used in non-RBDMS states.

The University of Texas will be using RBDMS to manage over 10,000 oil, gas and injection wells in west Texas.

Accomplishments September 1, 2005 – February 28, 2006

RBDMS documentation and help manuals have been updated to include recent changes and to make them more user friendly. These are available for downloading and viewing:

The following desktop video files are in zip-to-exe archives that include the .avi (each about 5 minutes long) and video codec. The help files are in Windows .hlp format.

- Desktop video introduction to RBDMS: http://www.rbdmsonline.org/Downloads/EIMSrbdms01AVI_CP.exe
- User and admin help files for generic RBDMS, including well schematic utility and multilateral construction: http://www.rbdmsonline.org/Downloads/RBDMS_WSU_MLhelp020805.zip
- Basic Training Video 1: http://www.rbdmsonline.org/Downloads/Sort_FilterRBDMS01_CP.exe
- Basic Training Video 2: http://www.rbdmsonline.org/Downloads/IntroWellMaster01Avi_CP.exe
- Basic Training Video 3: http://www.rbdmsonline.org/Downloads/MITavi01_CP.exe

The generic Access front end included a menu pick that auto-generated a data dictionary. Many of the RBDMS state agency SQL Server installations were customized, so one data dictionary doesn't exist. However, from part of a recent analysis I did for a project, here is a data dictionary I ran for New York RBDMS: http://www.rbdmsonline.org/IN_DataMapRBDMS/NY_DD.htm and here is another I generated for Arkansas RBDMS: http://www.rbdmsonline.org/IN_DataMapRBDMS/AR_DD.htm.

Please see the video files. We are using these for training and demonstrations.

Accomplishments March 1, 2006 – August 31, 2006

Oklahoma: The Oklahoma Corporation Commission will be installing RBDMS in 2007. Work has begun on the development of the workplan. The attached draft workplan will be finalized by January 2006 with phase I being targeted for completion in June 2007. Oklahoma will build on the .net platform developed for California and Indiana.

Indiana: The Indiana RBDMS system incorporates .net technology and builds on the success of recent developments in California. Indiana RBDMS should be deployed in Sping 2007.

For complete descriptions and accomplishments of this task and of these projects please see the 2006 RBDMS Annual Report (attached) or download from:

http://www.gwpc.org/UIC/Data%20Management/uic_data_management_main.htm

Accomplishments September 1, 2006 – February 28 2007

Indiana RBDMS has been completed. The update table structure used in Indiana will be the basis for RBDMS.net. *The latest front end installer for Indiana RBDMS is available at http://RbdmsOnline.org/downloads/IN/RBDMSWinSetup.zip the latest database backup is available at http://RbdmsOnline.org/downloads/IN/INRBDMS_Bak.zip .*
The workplan for Oklahoma RBDMS.net has been finalized and work has been initiated on this project.

Task 2 Electronic Commerce:

The activities for task two focuses on reaching consensus among oil and gas states, industry, USDOE and BLM/MMS on a common approach to electronic commerce for oil and gas regulatory programs and continuing the development and implementation of electronic commerce based on these results and GWPRF's current work with XML schemas. Electronic commerce activities include:

1. On-line data access

GWPC/GWPRF has developed two pilot projects that allow industry to access state RBDMS data. These pilot projects use Java, Cold Fusion, and/or Crystal Reports to access data on-line. Under this task, GWPC/GWPRF will continue to develop, refine, and install the national on-line data access utility for RBDMS states. Possible solutions include a .net interactive GIS front end. This initiative will enable industry to reduce exploration and compliance costs and improve environmental performance by providing real-time on-line access to data. On-line data access allows dynamic data access via the Internet and can run as an application over a local or wide area network. The programs include data filtering, downloading, and advanced querying of the database. It will also provide a sound scientific basis for cost-effective, risk-based regulatory decisions and improve access to public lands and sensitive environments.

Accomplishments September 1 2004 – April 30 – 2005

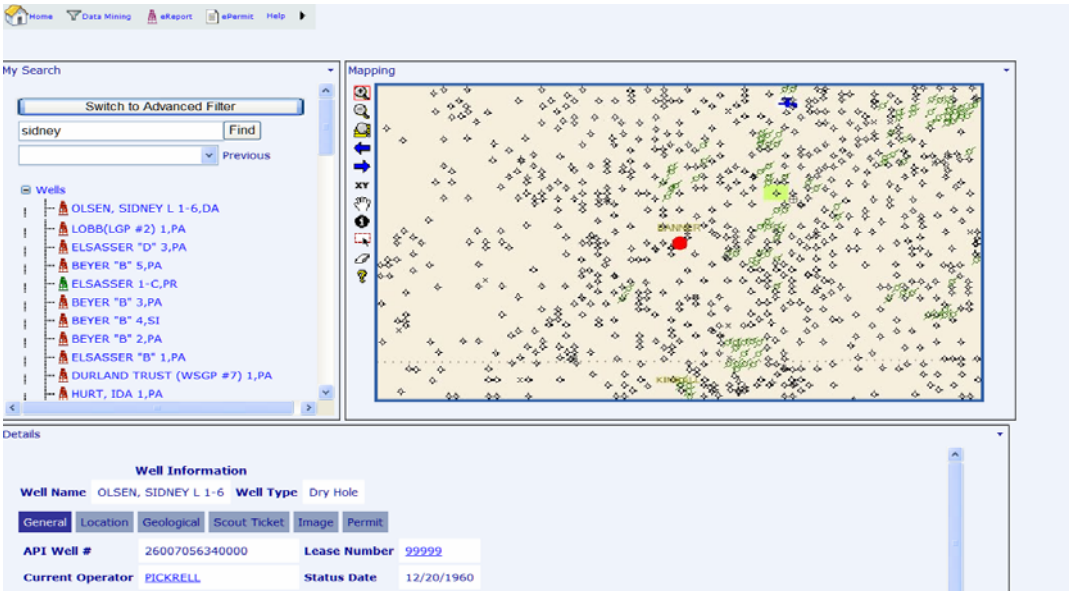
The Alaska Oil and Gas Commission data mining page http://www.state.ak.us/local/akpages/ADMIN/ogc/publicdb.htm provides on-line access to RBDMS. This will be used as the basis for future RBDMS data mining applications. This uses a .net/GIS interface and has gained acceptance by industry and regulators. A work plan is under development to install in Montana. The .net/GIS interface will be the basis for all future RBDMS projects.

Accomplishments September 1, 2005 – February 28, 2006

A new data mining interface is under development. A beta can be viewed and tested at http://rbdmsonline.org/rbdmsonlinedev

Accomplishments March 1, 2006 – August 31 2006

The new data mining interface is being update and customized for Nebraska. Full deployment is scheduled for late 2006. In this interface, the user will be able to view a GIS mode and easily click for more information. This same interface will also be deployed in Ohio, Osage Nation and Mississippi in early 2007.



Accomplishments September 1, 2006 – February 28 2007

The Nebraska data miner has been finalized and installed. This module will be the basis of the RBDMS training in May 2007.

The Alaska Oil and Gas Conservation Commission's data miner page has been updated using RBDMS technology (www.-aogcc-alaska.gov). This iste provides up-to-date information to the industry public and regulatory agencies. There is no cost to access Alaska's RBDMS system through this site. The new enhanments have made the site faster and easier to use.

The Montana data mining site has also been updated and offers Internet access to all scanned and generated Board orders in Adobe format.

In New York wseb traffic has increased from about 500 hits a day to over 3000 in the past 5 years. The New York DEC indicates that this is a direct result of RBDMS technology that makes data easy to obtain on the web.

2. Electronic permitting and reporting

RBDMS states have developed a prototype electronic reporting system that is being tested in Utah, Montana, and California. Under this task, GWPC/ GWPRF will

collaborate with the BLM, MMS, and industry to refine the electronic reporting module. GWPC/GWPRF and BLM have developed a business case which will guide the development and implementation of electronic permitting and reporting. GWPC will host an electronic commerce forum at the GWPC Annual Forum in September 2004. Participants include states (including states which do not use RBDMS), industry, BLM and MMS. A goal for this meeting will be standardizing XML schema development, which will serve as a platform for XML translator software using an N-tier data base model. This translator will facilitate the XML data exchange among multi-agencies using different data systems.

Accomplishments September 1 2004 – April 30 – 2005

Phase one of RBDMS on-line has been completed. This forms the administrative basis of electronic permitting and reporting. Documentation and work plans can be downloaded at http://www.state.ak.us/local/akpages/ADMIN/ogc/publicdb.htm.

The goals of RBDMS e-commerce are:

- ***Support state and industry data exchanges***
- ***Provide a phased implementation plan***
  - ***Production Reporting***
  - ***Permitting-Sundry Notice***
  - ***Full life cycle reporting***

Electronic reporting is now available in the following states:

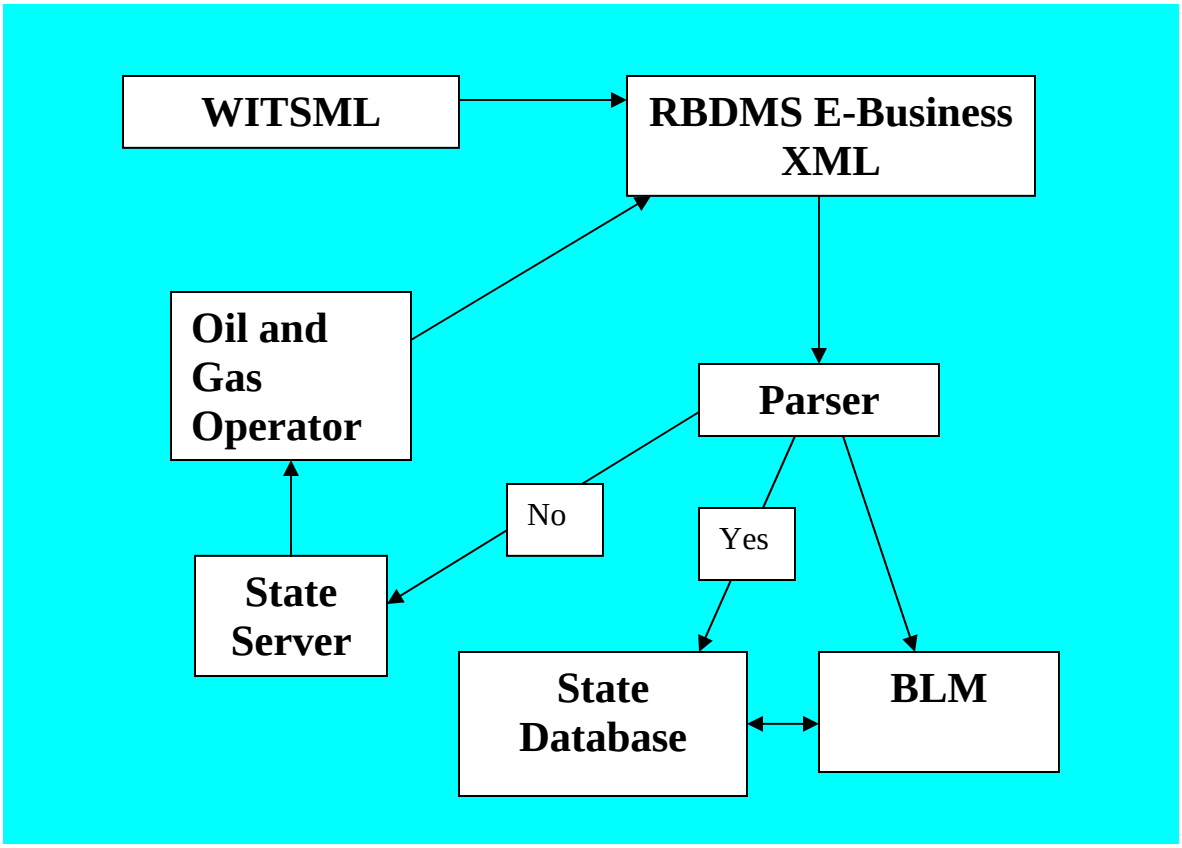
- ***Montana (monthly)***
  - ***Web based, xml submission and flat ascii***
- ***Utah (monthly)***
  - ***Full featured: web, .net, and xml submission***
- ***Pennsylvania (annual)***
  - ***Web entry, pre-populated mdb's supplied***
- ***New York (annual)***
  - ***.net, mdb's and xml submission***
- ***Nebraska (monthly)***
  - ***Full featured: web, .net, mdb's, and xml submission***

The attached power point file provides more detail on the implementation status of electronic reporting.

The XML schema for electronic permitting has been developed and is being reviewed by states and POSC. After this review, industry comments will be solicited.

Accomplishments May 1 – August 31, 2005

Industry is now testing the XML e-permitting schema in California. By soliciting feedback from industry, BLM and MMS, and states, the RBDMS user group has refined the e-permit data flow diagram.



As can be seen from the above diagram, WITSML is being used as the model standard. WITSML has been accepted by industry as the standard for XML activities. The RBDMS e-business XML is a subset of WITSML and is being modified to meet the business needs of all oil and gas producing states.

Accomplishments September 1, 2005 – February 28, 2006 Colorado, Alaska, Kentucky and Alabama are the pilot states for electronic permitting. Based on the work completed in California, GWPC has developed a functional design document which will guide the e-permit development. See appendix for the functional design document.

The California e-permit schema, which is based on WITSML, was reviewed against the requirements of the 4 pilot states. In additional industry was asked to review and comment on the proposed schema. The results of this evaluation are contained in: E-Commerce Project
Existing Schema Review and Industry Survey. ***The full text of the document is contained in the appendix.***

A model business process analysis is being conducted in Utah and will be used as a model for the pilot e-permit states. A complete workplan for the project is contained in the appendix.

Accomplishments March 1, 2006 – August 31, 2006

The Business analysis for Utah has been completed (see attachment D).

Accomplishments September 1, 2006 – February 28 2007

The e-permit schema has been reviewed by States, BLM, and MMS. An updated version is currently under review by industry. The latest schema, workplan and timeline for e-permitting can be downloaded here http://www.rbdmsonline.org:81/Projects/ePermit/default.aspx. Contact pauljehn@adelphia.net if you need a user id/password.

The E-commerce detaileds design document has been completed and approved by RBDMS states (see attachment E).

The Colorado Oil and Gas Conservation Commission will be testing electronic permitting for APDs in the summer of 2007.

For complete descriptions and accomplishments of this task and of these projects please see the 2006 RBDMS Annual Report (attached) or download from: http://www.gwpc.org/UIC/Data%20Management/uic_data_management_main.htm

Task 3 RBDMS/Electronic Commerce travel and training:

GWPC holds an annual training event where states receive training in the use of RBDMS and electronic commerce applications. This highly successful event is the primary technology transfer mechanism for this program. This training is conducted by states and specifically designed to meet RBDMS state needs. These training events are being held at, or near, one of the RBDMS state agency locations for an opportunity to further highlight the host agency's information management processes.

Under this task, state travel will also be supported to attend RBDMS/electronic commerce workshops. In these workshops the RBDMS Core and Technical committees develop program direction, review software applications, and work with industry and BLM/MMS on interagency solutions.

Accomplishments

Training events:

September 19 – 22, 2004, GWOC Annual Forum, Charleston, South Carolina. States in attendance: New York, Ohio, Indiana, Kentucky, Alabama, Arkansas, Nebraska, New Mexico, North Dakota, Utah, California. Topics include electronic permitting, electronic reporting, and XML schema development.

January 16 – 18, 2005, GWPC UIC Meeting New Orleans Louisiana. States in attendance: New York, Ohio, Indiana, Kentucky, Alabama, Arkansas, Nebraska, New Mexico, North Dakota, Utah, California and Louisiana. Topics include .net development and XML schema for permitting.

March 20 – 22, 2005. GWPC Policy Meeting. RBDMS Steering committee meeting.

April 17 – 20, 2005. Galveston, Texas. RBDMS Annual Training Event. States in attendance: New York, Ohio, Indiana, Kentucky, Alabama, Arkansas, Nebraska, New Mexico, North Dakota, Utah, California, Alaska, Missouri. See Attached agenda.

Technical transfer and outreach activities:

March 2005: Society of Petroleum Engineers Meeting. Presentation of paper "Increased Access to Federal Lands Through Data Sharing" (copy attached)

April 20, 2005. Houston, Texas. "GWPC E-projects" Presented to PIDX REGS E-Commerce Group and the POSC eRegulatory Special Interest Group (copy of power point presentation attached).

May 1, 2005: Galveston Texas. RBDMS Annual Training and Technical Transfer

May 15-17: Attended IOGCC meeting in Anchorage and presented RBDMS initiatives

May 2005: Presented CERA initiatives at the International CO2 Sequestration meeting in Washington D.C.

June 2005: California representatives met in Anchorage with the AOGCC to discuss tech transfer and electronic commerce issues common to large oil and gas producing states.

July 20 2005 : Presented RBDMS and CERA initiative to the NETL staff in the Tulsa Oklahoma office

August 1, 2005: RBDMS Steering Committee meeting held in conjunction with the annual GWPC Board retreat. Presentation made to the GWPC board of directors.

August 2005: Information regarding RBDMS was provided to the British Columbia Oil and Gas Board.

August 2005: The RBDMS Core module was given to the University of Texas. The University of Texas will be using RBDMS to manage over 10,000 production and

injection wells in west Texas. The University of Texas would like to use RBDMS as a means of communication with the Texas RRC.

Accomplishments September 1, 2005 – February 28, 2006

September 2005: GWPC Annual Forum, Portland, Oregon. RBDMS technical committee met to develop consensus and draft workplan for e-permitting.

January 2006: GWPC UIC Meeting: RBDMS Steering committee and technical committees met to draft e-permit workplan. The functional design document attached in the appendix is the result of the January meeting.

Accomplishments March 1, 2006 – August 31, 2006

GWPC conducts frequent WebEx meetings to provide technical transfer between states over the internet. Meetings this period include Ohio water quality module, data mining, electronic permitting and introduction to RBDMS.

RBDMS Annual Training: May 7 – 11, 2006 at the Alaska Oil and Gas Conservation Commission. This years training focused on electronic commerce and GIS applications. Id addition we held the RBDMS "101" session for states and personnel new to RBDMS

May, 2006: IOGCC meeting in Billings Montana. Made presentation on the new features of RBDMS to the oil and gas directors.

July 2006: Summer GWPC Board Meeting. Presented RBDMS accomplishments to the entire GWPC/GWPRF boards.

September 2006 Miami Florida: GWPC Annual Forum. Presentation of RBDMS/Water to state ground water and drinking water managers. Meeting of the RBDMS steering and technical committess for technical transfer.

October 2006: Presentations at the IPEC conference San Antonio Texas October
Source Water Protection and the Energy-Water Nexus

Scott Kell, Ohio Department of Natural Resources, Division of Mineral Resource Management
Stan Belieu, Nebraska Oil and Gas Conservation Commission
**Paul Jehn, Ground Water Protection Council (GWPC), Oklahoma City, OK*
Tom Gillespie, Virtual Engineering Solutions, Inc.
David Lowther, Coordinate Solutions, Inc.
See attached abstract in the appendix of this report

January 2007: San Antonio Texas. Meeting and technical of RBDMS steering and technical review committees. Presentation to GWPC Annual UIC meeting on electronic 7520 reporting capabilities of RBDMS.

February 2006: Finalized the training agenda for the May RBDMS training. The training will be held in Sarasota Florida beginning on April 21. The agenda can be viewed in the appendix of this report.

Task 4 Cost Effective Regulatory Approach:

The GWPC/GWPRF has spearheaded an effort to seek and foster the development of new approached that can benefit the petroleum industry as well as related government agencies. These efforts by the Foundation are commonly referred to as the "Cost Effective Regulatory Approach" or CERA projects. The GWPRF will continue the CERA program to increase environmental protection while streamlining the regulatory process. Under this task, states and the GWPRF will pursue projects that will promote the technical transfer of technologies that protect environmentally sensitive areas.

Activities under this task may include:

1: GWPC meetings: GWPC will typically hold five meetings annually which are partially or completely funded under this grant application. These annual meetings include:

- GWPC Annual Forum - September
- Emerging Issues Meeting (e.g., produced water, CO_2 sequestration…) – October
- Annual UIC Meeting – January
- Annual Policy Meeting, Washington D.C. – March
- Annual RBDMS/Electronic Commerce Training – May

2: Class II peer reviews: The GWPC State UIC Peer Review effort is an opportunity for states to share experiences with their peers who administer the same (or similar) regulatory programs. States who have gone through the process feel strongly about the benefits of the effort. States serving as reviewers as well as those reading the reports benefit from the knowledge of how other agencies are dealing with specific issues. However, the agency that gains the most from the process is the state being reviewed. The completed review document provides the state with a detailed report on the strengths and weaknesses of the agency which can be used to advance the program and enhance the protection of ground water.

3: Education and outreach; GWPC will continue public education and outreach programs to demonstrate the sound environmental practices of oil and gas production, coal bed methane, and UIC. Data from the states RBDMS systems will be used for verification. GWPC will also initiate an education program, which combines water quality and quantity data with the production and use of fossil energy.

4: Emerging issues (e.g., $C0_2$ geo-sequestration, and coal bed methane): GWPC will monitor emerging issues as related to our "energy and the environment" initiative and will make this identified issues a focus topic of our regularly scheduled meetings.

Accomplishments September 1 2006 – March 31 2007

- *GWPC facilitated the presentation of draft regulatory guidance related to the Pilot Projects for CO2 geosequestration, including the DOE Phase II projects, at its 2006 Annual Forum in Miami, Florida..*
- *In October, 2006 GWPC staff attended the 26th Annual Oil Shale Symposium held at the Colorado School of Mines. Subsequently, GWPC contracted with Argonne National Laboratory to develop a paper related to water impacts from oil shale development. A presentation on the final paper was made at the UIC Conference in January 2007.*
- *GWPC coordinated external comments and provided internal comments on the draft CO2 geosequestration guidance. The comments included responses from more than 20 individual state agencies and entities. The comments provided by and through GWPC resulted in substantial positive changes to the final guidance.*
- *At its UIC Conference in January, 2007 GWPC provided space and program development assistance for a full day CO2 geosequestration workshop that was attended by more than 125 people. The workshop was divided into morning and afternoon sessions. The morning session was developed by DOE/ NETL and the Regional Carbon Sequestration Partnerships and focused on the technical issues of geosequestration. The afternoon session was a facilitated discussion of remaining technical and regulatory issues and was developed by EPA.*
- *The final MIT study report entitled "Report of Survey on MIT Failures" was published in October, 2006. The report was also added to the GWPC website e-Library. Follow-up work on data management issues related to Class II UIC reporting is being conducted for use by GWPC in future National UIC Database discussions.*
- *A report entitled "Peer Review Kentucky Class II UIC Program" was published in September, 2006. Fifty copies of the report were delivered to the Kentucky Division of Oil and Gas Conservation for their use in attempting to acquire primacy for the Class II UIC Program from USEPA. An additional four hundred and fifty copies were printed and are being distributed at GWPC meeting and conferences and upon request. In addition, the report was posted to the GWPC website e-Library.*

Meetings held

1. *GWPC Annual Forum: September/ October- 2006, Miami, Florida*
2. *GWPC Annual UIC meeting: January 2007 - San Antonio, Texas*
3. *RBDMS Training:*
    a. *April, 2005 – Galveston, Texas*
    b. *Mary, 2006 - Anchorage, Alaska*

Follow-up information about the meeting (when available) can be accessed at www,gwpc.org

Education and outreach:

1. *New Mexico participated in a pilot program to extract the complete inspection history of Class II wells from RBDMS. The results were used as the basis for a paper on oil and gas regulatory compliance.*

Coupling Economic Benefits for the Energy Production Sector with Enhanced Ground Water Protection and Conservation

Energy and the Environment-Economic Benefits and Initiatives: Implementation of environmental regulation is a cost of doing business. In the energy sector such costs are directly related to the implementation methodologies associated with the regulations being applied by regulatory agencies. In the case of exploration and production of oil and gas, one of the most heavily regulated areas relates to the management of produced water. In this arena, implementation of the Underground Injection Control (UIC) Program by states and USEPA results in a cost to industry that can be lowered through the use of properly applied regulatory approaches. Additionally, produced water has beneficial uses when regulatory barriers are removed. This CERA initiative can also lead to lowered costs and increased production. GWPC proposes to review several specific areas of UIC program implementation and evaluate changes that will result in cost reductions for the oil and gas industry; while also enhancing the protection of ground water and the environment. The following is a list of the initiatives that will be undertaken by GWPC.

Cost Effective Regulatory Relief for Produced Water Management:
Step 1: GWPC plans to conduct an initial review of the Safe Drinking Water Act and Environmental Protection Agency policy related to state primacy of UIC programs. Step 2: GWPC will develop and evaluate a model Memorandum of Agreement (MOA) document related to primacy and develop a Class V UIC MOA for the State of Montana providing regulatory relief for greater flexibility for the state regulatory agency and improved environmental options for the management of produced water. Step 3: Upon the completion of steps 1 and 2, GWPC will conduct an evaluation of the primacy delegation and if feasible, develop an application for state primacy of a single class or subclass of UIC wells related to produced water. This effort is tentatively slated to be conducted for the State of Alaska.

Accomplishments September 1, 2005 – February 28, 2006

1: GWPC obtained an analysis of the SDWA; which found that there was no bar to the USEPA granting primacy over any combination of well types.

2: GWPC prepared a Memorandum of Agreement on behalf of the State of Montana requesting that EPA delegate a portion of the UIC program for Class V wells to the Montana Board of Oil and Gas Conservation and presented the MOA to EPA Region 8 officials on January 11, 2006.

3: GWPC received a response from EPA Region 8 on March 29, 2006 in which the Region stated it was not opposed to the concept of a partial delegation to Montana but did not see the current need for implementing an MOA due to a lack of pending applications.

Literature investigation of Oil Shale Development Effects on Ground Water
GWPC will commission Argonne National Laboratories to conduct a search of the literature relating to the usage and effects on water from oil shale development in anticipation of a more intensive effort to develop this resource.

Accomplishments September 1, 2005 – August 31, 2006

GWPC commissioned the study and provided ongoing direction to the study team to ensure the development of a comprehensive search of the literature related to oil shale development and its affects on ground water. A draft report was completed and reviewed and the final report is scheduled for release during the next quarter.

Drinking Water Desalination Concentrate Disposal:

GWPC will initiate a project to assess quality of the concentrate from a desalination pilot project. This effort will be done jointly by the Ground Water Protection Research Foundation (GWPRF), Texas A&M and Argonne National Laboratory and begin in the summer 2005. The project will develop data on the chemical constituents contained in brackish/saline water concentrate and compile the information into a database. This information can be used by regulatory agencies to determine the appropriate requirements for managing concentrate by underground injection, including Class II as one possibility. The project is intended to be flexible to accommodate new opportunities to collect and compile data from additional water sources.

Accomplishments September 1, 2005 – August 31, 2006

1: An update of the analytical data that had been completed through 2005 was presented at the 2006 GWPC Annual UIC Meeting. The Texas Commission on Environmental Quality has been working with other state agencies to streamline regulations for the permitting process for disposal in deep-underground injection wells of brine produced by desalination operations. Applicants for permits to dispose of brine from desalination in injection wells must meet the current requirements for disposing of hazardous waste in Class I injection wells, including brine from desalination if it is classified as a waste material from "either industrial or municipal facilities". Since injection wells have been used for disposal of salt water associated with oil and gas operations for almost a century, (as Class 2 wells), it is hoped that new cooperative efforts in desalination will allow deep injection wells into oil and gas fields for brine byproduct use in enhanced oil recovery operations. Recent private meetings between TCEQ and the TRC may have removed the roadblock.

2: Results of field analysis of oilfield brines from test sites that were collected and analyzed as part of a Texas A&M University study were presented to the GWPRF

UIC Program Awareness (MIT/ ZEI Studies):

The current reporting of mechanical integrity tests (MIT's) is confused by the fact that each state defines test failure in a different manner. Once a National UIC database is implemented, states may be reporting raw data rather than compiled data. This may result in improper utilization of the data due to the differences in state definitions of test failure. Additionally, the utilization of a Zone of Endangering Influence (ZEI) calculation in the Area of Review considerations for UIC wells proposed by the EPA National Technical Workgroup would result in additional costs to industry and states, and could lead to lower domestic oil and gas production. The GWPC will conduct studies to evaluate the need for a consistent definition of MIT failure among the states, and the need, feasibility and cost of implementing ZEI in reviews of UIC wells.

Accomplishments September 1, 2005 – August 31 , 2006

1. GWPC conducted a study to determine the nationwide consistency of the MIT inspections and

subsequent 7520 reports and information provided in the PART review. This report was finalized in September 2006.. The report shows the variability of MIT failure criteria and the concerns that states have in developing a national report based on these data.

2. The GWPRF reviewed the work product of the UIC National Technical Workgroup (NTW) related to Area of Review/ Zone of Endangering Influence (AOR/ZEI) and submitted a letter to EPA requesting an interpretation of the intent of the work groups statements regarding use of the ZEI calculation to determine whether or not further technical evaluation of the AOR/ ZEI issue under the CERA umbrella was warranted. We expect a response from the NTW to be made within the next quarter.

Data Application for Tracking Water Quality and other Environmental Effects of Mining Operations: The GWPC is developing a comprehensive source water quality data tracking application for agencies that oversee mining operations.

The RBDMS Mines data application extends the RBDMS™ family of software programs into source water quality protection and laboratory information management. The application will be used to manage surface water, ground water, and waste stream quality (e.g., oilfield brine, associated waste and acid mine drainage) data associated with mining operations to evaluate permit applications and application revisions. Ultimately, however, oil and gas and mine owners and their laboratory consultants will be able to refer to the database through a Web-enabled e-commerce interface to track compliance with water information reporting requirements. The application is being built with .NET and XML technologies and will offer the following operational benefits:

- Performance beyond mere compliance tracking

-Comprehensive source water quality data tracking with direct links to RBDMS oil and gas and MineInfo databases and two-way data exchange between agencies and laboratories

-A data structure proven in sophisticated laboratories to handle many diverse sampling and analysis techniques

-Simplified data entry and tracking through user-assigned groupings of samples and analyses

Accomplishments September 1, 2005 – February 28, 2006

A GIS interface is being added to this module. A current beta version can be viewed at http://rbdmsonline.org/gis/oh/gisconfig.aspx

Accomplishments March 1, 2006 – August 31, 2006

This project is near completion of Phase I and should be deployed in early 2007. Monitoring data from Ohio, USGS and EPA has been added to the application. The GIS layers also include locations of public water supply wells, coal mines, oil and gas productions wells, Class II injection wells, source water protection areas and other hydrologic features. This application allows regulators to view monitoring data from compliance reports, run statistical analysis and use a GIS format for watershed management. Monitoring data is electronically downloaded from the laboratory directly

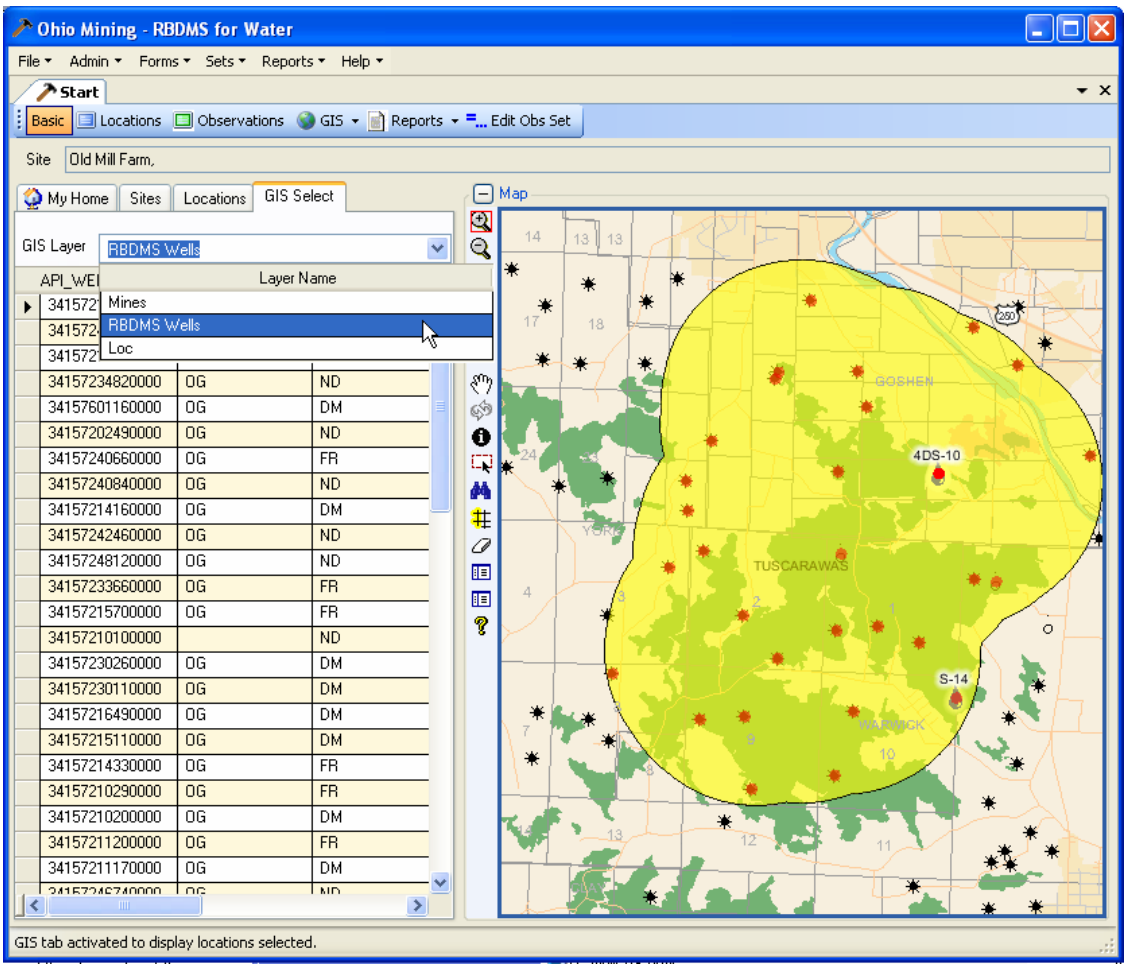
into RBD<S for Water. In Phase II, this application will be web enabled to allow for industry use.

Please call Paul Jehn (GWPC) at 208 892-1400 for an on-line demonstration of this system.

A video files describing this application can be downloaded from
http://www.rbdmsonline.org/OHMines/Video/RBDMSW_OHMinesavi.exe (47 MB)

For complete descriptions and accomplishments of this task and projects please see the 2006 RBDMS Annual Report (attached) or download from: http://www.gwpc.org/UIC/Data%20Management/uic_data_management_main.htm

Accomplishments September 1 2006 – February 28, 2007.
RBDMS/water has been completed for Ohio and will be installed in the Spring of 2007. The following diagram shows how this program can track water quality monitoring data and it relates to UIC wells and coal mines.



Task 5 Reporting:

GWPC/GWPRF will produce an annual report which details accomplishments with topical reports that discuss specific work areas as required.
Accomplishments September 1 2004 – April 30 – 2005

Accomplishments September 1, 2005 – February 28, 2006
The 2006 RBDMS is underdevelopment and will be published in May 2006

Accomplishments March 1- August 31 2006: *The RBMDS 2006 Annual Report can be downloaded from:*
http://www.gwpc.org/UIC/Data%20Management/uic_data_management_main.htm
and the RBDMS Annual report is attached

Experimental

This research project does not involve the use of experimental methodology.

Graphical Materials List(s)

None at this time

References*/Bibliography

RBDMS 2005 Annual Report

S.D. Belieu, SPE, Nebraska Oil and Gas Conservation Commission, P.J. Jehn, Ground Water Protection Council, M.F. Bohrer, North Dakota Industrial Commission Society of Petroleum Engineers March 2005: SPE Paper Number 94371, Increased Access to Federal Lands Through Data Sharing

S.D. Belieu, SPE, Nebraska Oil and Gas Conservation Commission, P.J. Jehn, Ground Water Protection Council: NOGCC's eReport Module. Presented at the IPEC meeting November 2005

Paul Jehn November 2006: State Electronic Commerce Initiatives: Presented at IPEC.

RBDMS 2006 Annual Report

Video file describing the RBDMS for Water system: available at
http://www.rbdmsonline.org/OHMines/Video/RBDMSW_OHMinesavi.exe (47 MB)

Source Water Protection and the Energy-Water Nexus

Scott Kell, Ohio Department of Natural Resources, Division of Mineral Resource Management
Stan Belieu, Nebraska Oil and Gas Conservation Commission
*Paul Jehn, Ground Water Protection Council (GWPC), Oklahoma City, OK

Tom Gillespie, Virtual Engineering Solutions, Inc.
David Lowther, Coordinate Solutions, Inc.

List of Acronyms and Abbreviations

API – American Petroleum Institute
GWPC- Ground Water Protection Council
GWPRF – Ground Water Protection Research Foundation
EIMS – Environmental Information Management Suite
RBDMS – Risk Based Data Management System
DOE – Department of Energy
EPA – Environmental Protection Agency
BLM – Bureau of Land Management
MMS – Minerals Management Service
XML – Extensible Markup Language
CERA – Cost Effective Regulatory Approach.
AOGCC – Alaska Oil and Gas Conservation Commission
UDOGM – Utah Department of Oil and Gas and Minerals
MBOGC – Montana Board of Oil and Gas Conservation
NOGCC – Nebraska Oil and Gas Conservation Commission
PPM – parts per million
POSC- Petrochemical open Software Corporation
E-commerce – electronic commerce
E-permit – electronic permit
E-report – electronic report
UIC – Underground Injection Control

Appendix

Accomplishments September 1, 2005 – February 28, 2006
Attached files and links to on-line files

The following desktop video files are in zip-to-exe archives that include the .avi (each about 5 minutes long) and video codec. The help files are in Windows .hlp format.

- Desktop video introduction to RBDMS:
  http://www.rbdmsonline.org/Downloads/EIMSrbdms01AVI_CP.exe

- User and admin help files for generic RBDMS, including well schematic utility and multilateral construction:
  http://www.rbdmsonline.org/Downloads/RBDMS_WSU_MLhelp020805.zip

- Basic Training Video 1:
  http://www.rbdmsonline.org/Downloads/Sort_FilterRBDMS01_CP.exe

- Basic Training Video 2:
  http://www.rbdmsonline.org/Downloads/IntroWellMaster01Avi_CP.exe

- Basic Training Video 3: http://www.rbdmsonline.org/Downloads/MITavi01_CP.exe

The generic Access front end included a menu pick that auto-generated a data dictionary. Many of the RBDMS state agency SQL Server installations were customized, so one data dictionary doesn't exist. However, from part of a recent analysis I did for a project, here is a data dictionary I ran for New York RBDMS: http://www.rbdmsonline.org/IN_DataMapRBDMS/NY_DD.htm and here is another I generated for Arkansas RBDMS: http://www.rbdmsonline.org/IN_DataMapRBDMS/AR_DD.htm.

Source Water Protection and the Energy-Water Nexus

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Developing the data analysis tools to monitor water quality and to assess available supplies has become critical to resource management and to maintaining levels required to sustain energy production levels. In response, the GWPC is expanding its Risk Based Data Management System (RBDMS) into source water quality protection, laboratory information management, produced water management, and water quantity assessment. RBDMS for Water tracks water and waste stream parameters and makes site-specific monitoring data available in a GIS format. This paper discusses how RBDMS for Water is being customized to fit the very different goals of two regulatory agencies.

In Ohio, RBDMS for Water will be used to manage surface and ground water and waste stream (oil field brine and acid mine drainage) quality data associated with mining operations oversight. Oil and gas and mine owners and their laboratory consultants will be able to refer to the database through the Web to track compliance with water information reporting requirements.

In Nebraska, the GIS component of RBDMS for Water is being used to combine coverages of wellhead protection areas with oil, gas, and UIC well locations from its oil and gas database. The resulting maps allow NOGCC to manage its field inspection activities to target wells located in high-risk, environmentally sensitive areas for quarterly inspections.

The GWPC successfully deployed earlier versions of RBDMS for Water to agencies overseeing source water protection programs in Oklahoma, Nevada, Nebraska, and Mississippi.

RBDMS Training Agenda

April 22-25, 2007

Sarasota, Florida

About the Format of Track 1 Sessions:
Because of the extent of the material that will be covered during the training exercises, the session leaders will conduct the segments as live demonstrations ("we tell" and then "we show") rather than use the full "we tell, we show, now you do it" cycle. For those of you who choose to "do" along on your workstation, the session leaders will not be able to stop and rescue those who lose the thread, because that jeopardizes the opportunity for everyone to see the whole process in the time allotted. Documentation of the processes demonstrated will be provided separately, and we believe that everyone will learn more if entire processes can be observed in a more or less smooth, continual flow.

If you really choose to "do along" and need help setting up your laptops, please contact Paul Jehn (pauljehn@adelphia.net) to schedule remote assistance (VPN or Terminal Services) no later than April 16. Full setup requirements are too extensive to expect that the consultants will have the time to build your laptop configuration (or to rectify underlying problems that prohibit normal installation of the training software) the day before the training. Since we also have found that using a virtual machine ("ghosting") is problematic for many attendees because of the hefty disk space requirements (10 GB), please make arrangements before you get on the plane either to consult your own in-house Information Services guru to make sure you have the minimum hardware and properly configured software or to coordinate such help through Paul. Also remember that you will be given a DVD with GWPC-developed software and instructions that you can take home after the training. You may find it more instructive to merely observe the sessions and to consult the "Cliff Notes" afterwards.

Hardware specifications to support SQL Server 2005 are here:

http://www.microsoft.com/sql/downloads/trial-system-requirements.mspx.

Configuring Your Workstation for the Development Environment:

1. Windows 2003 is preferred to Windows 2000 because it has better security and configurability, but either will work. Windows XP with SP 2 is also fine.
2. Internet Information Services version 5 or higher (version 6 is preferred).
3. SQL Server 2005 (Evaluation Edition for 180-day free trial version here: http://www.microsoft.com/sql/downloads/trial-software.mspx.)
4. Visual Studio 2005 (Professional Edition for 90-day DVD trial is here: https://www.tryvs2005.com/profile.aspx?
5. If you want both Visual Studio 2005 and SQL Server, you can get both applications at once by ordering the Visual Studio 2005 Team Suite 180-Day DVD Trial from https://www.tryvs2005.com/profile.aspx?.
6. Wireless or wired Internet capability (wireless preferred)
7. A Web browser (IE version 6.0+ is recommended.)
8. XML Spy 2007 Professional Edition is available as a free 30-day trial here: http://www.altova.com/download/xmlspy/xml_editor_professional.html. You can request a free 30-day evaluation key code from within the dialog box that will automatically open when you install and start the application(s). The trial key code will be emailed to you

within minutes.

SQL Server 2005 Service Packs:
If you already have a full SQL Server 2005 installation, please note that Service Pack 2 was released on March 6, 2007. It is available here: http://www.microsoft.com/downloads/details.aspx?familyid=d07219b2-1e23-49c8-8f0c-63fa18f26d3a&displaylang=en (SQLServer2005SP2-KB921896-x86-ENU.exe). Also, be sure to add the critical update to Service Pack 2 here: http://www.microsoft.com/downloads/details.aspx?familyid=E2C358A1-ECC4-4C49-8F65-DAA6B7800EEC&displaylang=en. You will have to re-start your computer after installation.

Additional Requirements for the Training Exercises:

1. .NET WinForm application installation that includes .COM link to Access RBDMS for GIS browser (link forthcoming)
2. A restored sample database (link forthcoming

Sunday April 22, 1:00 – 5:00 SQL Server Training (agenda under development) Tom Gillespie and Sen Wen will lead a discussion of -new features in SQL Server 2005 -the differences and suggested uses of the Express and Mobile versions. -XML and SQL server -SQL problem solving using your version of RBDMS and SQL If there is enough interest, the last two hours we will split into twp groups: advanced group and overview group	
Monday April 23, 8:30 – 5:00 Introductions: Paul Jehn, RBDMS Steering Committee Brief demonstration of the Nebraska data mining module DOE Budget and RBDMS Priorities: Mike Paque	
Track 1	Track 2
RBDMS.net upgrade: Introduction: Paul Jehn Steers RBDMS.net: ALL, VES, CS, iSingleton -Status of Indiana: what's new, what's old, new GUI, field inspection, relationship diagram, data dictionary, migration path from classic to RBDMS.net -Status of California: what's new, implementation timeline -RBDMS.net next steps: final decision on data structure, which reports to keep, how can Access/SQL reports be imported into RBDMS.net/SQL -Plan to move forward with Oklahoma and Mississippi	Basic RBDMS: Ben Stone **Attendees: Nancy Beeler**
E-permit project components: Thom Kerr, iSingleton, VES Tell and Show	**Darin West, David English, Nancy Beeler, Chris McKelvey, Mona**

1. Status of e-permit project and timeline for implementation 2. E-permit component project review 3. Web forms 4. Schema review 5. Data dictionary 6. e-permit and XML(Extensible Markup Language) Tools 6.1. XML Editing 6.2. XML File format 6.3. Parser 6.4. XSL 6.5. WSDL (Web Service Definition Language) 6.6. Soap (Simple Object Access Protocol) 7. What is an Xml Schema 7.1. Purpose of an XSD 7.2. Viewing an XSD 8. Sample XML File 8.1. Format 8.2. Data 8.3. Generate Sample 8.4. Validation – Parsing 8 e-permit phase II	**Nemecek**

Tuesday April 24		
Track 1	Track 2	
8:30 – 10:30 Configuring RBDMSWebGIS (D. Lowther) • Create map configuration file. o Mapserver (.map) o ArcIMS (.axl) • Create RBDMSWebGIS XML Config file. o Tools o TOC: Key mapping between RBDMSDataMining (or other RBDMS product) and RBDMSWebGIS o MapService 10:45-12:00 Configuring RBDMSDetachedGIS (D. Lowther) • DetachedGIS XML Config file o Relationship to map configuration file	Basic RBDMS: Ben Stone **Attendees: Nancy Beeler**	

o Download o Viewing 1:00–5:00 Configuring RBDMS.NET (T. Gillespie) • Integrate RBDMSWebGIS. • Integrate RBDMSDetachedGIS. • Create SQL Server Reports (.rdlc) with Visual Studio 2005 and add it to RbdmsWin.NET report tree. • Create grid style reports and add it to RbdmsWin.NET report tree. • Integrate RBDMS.NET with MS Access.		
Wednesday April 25		
Data Mining (continued)		
8:30–12:00 Configuring Nebraska RBDMSDataMining (D. Lowther and T. Gillespie) • Live demo of creating an installation using Arkansas as an example. Steps: o Build Wells shapefile from RBDMS. o Configure Full Text Search (FTS). o Configure Advanced Filter. o Configure Nodes.xml for population of tree from FTS and Advanced Filter. o Build Details XML files. ▪ Wells ▪ Company o Integrate RBDMSWebGIS.		