The Ground Water Protection Council

2004 Annual UIC Conference

January 20-21, 2004

Sheraton Suites, Galleria, Houston, Texas

SUMMARY OF PROCEEDINGS

January 20, 2004

The entire first day constituted a General Session devoted to identifying concerns and outlining future discussion points on current national issues regarding Class I and II injection well regulations and policies. This session also dealt with other environmental regulations, proposals and ongoing Federal initiatives, which could potentially have an impact on the effectiveness of the Underground Injection Control (UIC) Class I and/or Class II programs as administered by the state or as followed by the regulated community in terms of compliance. Additionally, the purpose of the conference was, as has been in past years, to give the Class I and II regulated communities an opportunity to identify and discuss issues regarding injection as a waste management method. This conference is crucial to the Ground Water Protection Council (GWPC) because it is an important forum within GWPC's framework that allows industry full discussion of troublesome issues. Identification of these issues assists the GWPC staff and its Board of Directors to plan the Spring Washington D.C. Area Policy Meeting around important discussion points that require a greater audience of U.S. Environmental Protection Agency (EPA) officials and program managers to make progress toward resolution. The session, as always, focused on the challenges to improve public acceptance of deep well disposal as an effective and environmentally safe waste management practice. The session also provided an opportunity for updates on such non-UIC issues as, Storm Water Phase II regulations for oil and gas drilling sites proposed by EPA, the Toxic Release Inventory (TRI) and Spill Prevention Control and Countermeasures (SPCC), which EPA is currently proposing regulatory changes. One purpose of this session was to identify those Federal initiatives that are potential barriers to good environmental controls as practiced by the regulated community.

Opening Session ---9:00 A.M.- 9:30A.M.

Bill Bryson, Former GWPC President, current Senior Advisor for the Ground Water Protection Council and moderator for the two-day meeting session gave a brief introductory statement on the purpose of the conference and urged the attendees to make this a true forum to identify policy and technical issues. Individual action items identified by speakers and attendees will be noted in the proceedings of the meeting. Issues and concerns will be earmarked for discussion at the GWPC Annual Policy Meeting in

Washington D.C. or for the fall Technical meeting in Charleston, South Carolina. Bill then introduced Mike Paque, Executive Director of GWPC.

Michel Paque, Executive Director of the GWPC, as opening speaker, reviewed the purpose of the meeting and provided a historical recap of how and why this meeting became necessary. The original intent was to provide industry an opportunity to identify policy issues, which need to be forwarded to the Annual GWPC Annual Policy Meeting in Washington D.C. Paque stated that the discussion at this meeting allowed GWPC staff a great opportunity to collect information and hear points of view on troublesome regulatory issues and this input enhanced GWPC's ability to do long range planning. Discussions at this meeting are also important to identify regulatory technical issues for the GWPC staff to schedule for more in-depth discussion at the fall GWPC Technical Meeting. Paque stressed this point because this is the one meeting where industry, rather than GWPC member states set the agenda. He said the EPA –State relationship is not only mutually important but also affects activities of the regulated community. The relationships established among companies having issues on injection wells and other environmental regulatory issues are important to GWPC. Paque cited EPA's own statement on the value and safety of injection practices.

Tom Richmond, GWPC President (Director of the Montana Board of Oil and Gas Conservation), stressed that GWPC was a unique forum for the exchange of information and knowledge on technical issues and for identifying policy issues because it was the only organization with open communication between regulator and industry. He outlined the goals of GWPC, which are to increase participation in the organization, enhance member communication, strengthen relationships with environmental groups, increase industry involvement and increase funding for state programs.

Tom also mentioned other activities that the Ground Water Protection Council has been actively involved in during the past year. The Coal Bed Methane Hydraulic Fracturing issue remains a top priority and one that may still be on the Congressional table in 2004. He also mentioned conservation issues associated with the development of Coal Bed Methane (CBM) in several western states including those directed toward beneficial use of produced water. He also mentioned the Orphan Well Study, which GWPC is conducting this quarter of 2004 and progress on getting states to use the Risk Based Data Management System (RBDMS).

9:30 A.M. – 10:30 A.M.

"Regulatory Inconsistencies in UIC Program Implementation"

This segment of the program identified two cases within the administration of the UIC program where regulatory inconsistencies exist. The first part of this session centered on an issue in Alaska regarding the definitional interpretations among the terms "Class I wells, Class II wells and E&P Exempt waste" and provided viewpoints of the Alaska Oil and Gas Conservation Commission and BP Alaska. Unfortunately, EPA did not participate in the panel as originally intended to give the Federal perspective. In the

second Portion of the session participants discussed issues surrounding Class I Hazardous Waste Deep Well injection in Southeastern Michigan where an application for a Hazardous Waste Injection Disposal Restriction (HWDIR) exemption involved future wells that may prospectively penetrate the injection zone. This case centers on the Federal-State-and Local issues that serve as barriers to resolving the matter satisfactorily to all parties.

Class I, Class II, and E&P Exempted Waste Issues –North Slope-Alaska

Tom Maunder, Senior Petroleum Engineer, Alaska Oil and Gas Commission (AOGC) gave an overview of Alaskan production and injection activities. As of the end of 2002, Alaska had 1100 operable UIC wells of which 94% were EOR (Class II-R) and were converted producers. Production comes from the North Slope and Kenai Peninsula-Cook Inlet Areas. During 2002, injectors received 922 million barrels of water and 3cf of re-injected gas. There are 6 Class I injection wells, all on the North Slope, which are regulated under DI administration by EPA since the state of Alaska has primacy for only Class II. Of the 1.65 billion barrels of cumulative waste generated and disposed of, only 1% goes to Class I well. The annual MIT passage rate is 95% for both Part I and II. Mr. Maunder posed several questions regarding the North Slope UIC issues.

1) **What is a USDW and what happens when it does not exist or is exempt?**

There are no USDWs on the North Slope due to the permafrost development and Alaska has demonstrated that no aquifers exist in the North Slope area. There are surface water sources in the Alpine Field. At various times, both EPA sand AOGC have designated certain areas for Aquifer Exemption. **The terms "ground water, fresh water, USDW and aquifer define differently for EPA and the State of Alaska or at least, some elements have that potential for confused interpretation.**

2) **What fluids are eligible for Class II?**

EPA's position is eligible Class II fluids are those that have been down hole and are generated by contact with O&G production streams during removal of produced water or other contaminants. They are also wastes that are "directly associated", "intrinsically derived from" or "uniquely associated "with the down hole process. **EPA's interpretation is often contrary to logic because camp sanitary and other non-hazardous or exempt waste is classified as Class I rather than Class II. Cement rinsate and unused fluids are other examples. EPA's position is that the UIC rules do not provide for exceptions even thought the uniqueness of NS operations, the lack of USDWs and etc. indicate no environmental problems would occur of the sanitary wastewater, for example, would go to a Class II well.**

3) **What is the economic side of the discussion?**

At Alpine, the compliance costs (per barrel of fluid disposed) are Class I: $2.50 and for Class II: $1.50. The difference in cost is for MI demonstration and reporting Comparisons made by Tom included the Grind and Inject Facility, Class II (AOGC) and Oily Waste Disposal Wells, Class, (EPA). The Class I wells cost about $100,000 to

operate. Tom also compared construction programs for Class I versus Class II and concluded that the Class II well that follows Federal standards is built very much the same as a deep Class I well. **Class II wells are performance based.** The protection levels are the same. There is also a Class V overlay by EPA to account for unknown fluids in reserve pits. **According to Tom, UIC program was implemented to protect USDWs, not intended to manage fluids. In addition, the AOGCC mandates are more restrictive because only quality of water, not quality and deliverability determine a USDW.**

In summary, AOGCC and the industry both believe camp waste should go to Class II and the additional cost for the construction, maintenance and monitoring of Class I wells is both economically and environmentally unjustified. Geoffrey Kany of BP-Amoco mentioned that even if you take Class I well cuttings to as Class II facility you have to test the waste even if you drilled the well.

This whole discussion could be considered a series of issues where the current Federal UIC regulations and/or their implementation do not make sense in terms of either additional environmental protection or cost/benefit ratio. Although neither AOGCC nor the North Slope industry has had much luck negotiating change with EPA Region X, they had no recommendations for GWPC to pursue. GWPC should find out what, if any, course is amenable to AOGCC or the North Slope Operators to resolve the issues.

Issues of Conflicting UIC Permits

Bill Fulkerson, Legal Counsel, Warner, Norcross and Judd, LLP, Grand Rapids Michigan spoke on behalf of Environmental Disposal Systems, Inc. regarding a Deep Injection Well in Southeastern Michigan wherein the company had applied to Region V, EPA for an HWDIR exemption from the land disposal restrictions under 40 C.F.R. Part 148 of the UIC Regulations. The Michigan Department of Environmental Quality (DEQ) had issued a permit to another company to extract formation fluids, which could only occur if the company penetrated the HW disposal injection zone. **The basic question for discussion is whether a later activity can be permitted in an area where hazardous waste injection has occurred or is occurring or is permitted first and, if so does the regulatory agency for the HW Class I well have an obligation to impose additional conditions on the permittee to accommodate the proposed use by the later applicant?**

Mr. Fulkerson said there was a lot of opposition to the injection well and the NIMBY syndrome pervaded the community. The State DEQ and EPA had come to general agreement over a buffer zone to accommodate both activities, however, the State DEQ administration changed and a permit was issued to the latter party without special considerations and allowing incompatible use. The authorized HW injection well may never get drilled as a result. **The primary issue is if the water extraction company does**

encounter hazardous waste in the course of their development, is this vertical migration for which there is no exemption or is it man-made controlled migration? There is the potential of bringing up hazardous waste through subsequent drilling activity and some could interpret it a breach of the confining zone. Mr. Fulkerson said part of the problem is that Michigan DEQ does not have primacy for Class I primacy but issues permits in duplication to those issues by EPA. The final assessment is that neither the EPA nor the DEQ are comfortable dealing with both the public and regulatory aspects of the situation.

Mr. Fulkerson asked what could be done in situations such as this. He acknowledged that GWPC had written a letter (10-6-2003) to the Administrator of EPA Region V, which discussed the impacts of future drilling activity on the Class I UIC permit or HWDIR Exemption and the various regulatory interpretations on migration. There were no suggestions as to follow-up; however it has been mentioned as a topic worth further discussion but not additional rulemaking.

Recent Issues Update 11:00A.M. – 12:00P.M.

This segment of the program featured a panel discussion of **Michael Parker**, Environmental Advisor of ExxonMobil, **John Veil**, Water Policy Program Manager, Argonne National Laboratory, and **Scott Anderson**, Regulatory Consultant and former Executive Vice President of TIPRO (Texas Independent Producers and Royalty Association). The objective of this session was to provide updates and diverse viewpoints on:

1. SPCC Rule and Oil Pollution Act
2. Stormwater Regulatory Issues
3. Navigable Water Way Definition and Interpretation Issue

SPCC Rule and Oil Pollution Act **Mr. Parker** provided a short history of the current SPCC Final Rule, which was promulgated 7/17/02 and became effective 8/17/02. The effort took 10 years to complete and expanded the scope significantly from what applied previously. The shift from storage facilities to any facility using, storing, transporting or handling oil above the 1320-gallon threshold is significant. the terms “should” were changed to “shall” thereby decreasing any previous flexibility to zero. Additionally significant is that it took EPA over 100 pages of preamble to explain a ten-page rule. The concerns to industry are many including the expanded number of facilities covered and several procedural issues. Industry was more concerned about the preamble discussion rather than the actual text of the rule. At the urging of industry, EPA extended the deadline for 18 months. API, and other groups met with EPA, who was willing to discuss the issues, however, resulting response by EPA to address the concerns was both slow and unresponsive, according to Mr. Parker. As a result, API, IPAA, and Marathon filed suit and the Sierra Club and the State of New York joined the defendant (EPA). The API lawsuit challenges the: exclusion of costs in making a determination of impracticality for secondary containment, expansion of the rule without notice and comment for loading

racks and the Definition of Waters of the US and the exclusion of E&P wastewater treatment facilities from the exemption provided other industries. Settlement outcome is pending.

Scott Anderson said the independents and IPAA had the same issues as the majors plus several more. Secondary containment for flowlines is both impractical and a farming problem. In these regulations, economic practicality is important but discounted by EPA. The IPAA members are concerned that the plans required will hamper smaller operators and eventually cause closure for a lot of leases. **Who is liable if EPA regulations cause operators to abandon leases?**

Storm Water Regulatory Issues **Michael Parker** indicated the Final Construction General Permit issued 7/01/03 has a five year term, reduces applicability threshold from five acres to one and adds significant requirements for TMDLs, ESA, and HPA. In Mr. Parker's view, EPA eventually delayed applicability to E&P activities to March '05 because of the 30,000 sites per year they didn't realize would be affected. They are also reworking the economic impact analysis. **John Veil** discussed in more detail the coverage of the rule (runoff from construction sites, E&P facilities, and flowlines). He mentioned the Pollution Management Plan to be filed for construction under Phase II, including drilling sites affecting one acre or more. Many states in the Oil Patch of Texas, Oklahoma and New Mexico do not have primacy for NPDES, thus the Phase II storm water rules would fall to EPA to enforce. **Scott Anderson** said the independent oil and gas operators filed suit challenging the applicability of storm water requirements to E&P because the existing provisions of the Clean Water Act Section 402 (1) (2) which exempts the industry from the permit requirements. Scott said they have more issues with Phase II than the majors because companies do not have large environmental departments to handle the permits and etc. He believes the Phase II effort is "Wrong! Wrong! Wrong!" and threatens the industry. Anytime a company needs regulatory consultants to help unravel interpretation of the laws the costs go up. In Mr. Anderson's view, the part of the Pollution Management Plan that requires an operator to do Endangered Species surveys is an example of a lot of work and cost for little environmental benefit.

Navigable Waterway Definition: **Michael Parker** described the SWANCC decision, which challenged Federal jurisdiction over isolated waters/wetlands. The Court agreed with the plaintiffs that "Federal jurisdiction must be based on the presence of a 'significant nexus' (connection) between the subject waters and navigable streams. EPA/COE received 130,000 comments. API supports significant revision to the definition because the group believes that what EPA has tabbed as navigable water often is not. The Environmental Groups oppose any rollback of Federal authority and doubt states' willingness and abilities to pick up the balance. In December, 2003, EPA/COE announced they would not pursue changes in the definition. Parker expects legal challenges based on SWANCC to continue. **Scott Anderson** agrees with Parker but says the problems are more complicated for independents. There is no definition of Common Plan of Development in the regulations and without some idea of whether EPA is talking about contiguous lease situations or the operator's plan for the year to drill several wells at unconnected locations, the regulations may have a chilling effect on drilling.

Potential Action Items for GWPC or Industry: **Various industry groups, as mentioned above have brought suit against EPA and have taken issue with EPA's position and interpretation on the "petroleum production activities" exemption from construction runoff (storm water) requirements and also the definition of "Navigable Waters", particularly those intermittent drainages that only flow stones, not water. GWPC should continue to be a forum for those wishing to discuss the issue and, if asked, help facilitate positive dialogue between industry and EPA. Currently, EPA has developed some sensitivity to a few of the issues and has delayed deadlines to further study both technical and economic aspects.**

Environmental Information Issues - 1:30 P.M. - 3:15 P.M.

Bob Van Voorhees, Bryan, Cave and Associates: A Proposed Toxic Release Inventory (TRI) Reporting Revisions/Forms-

Bob gave a short briefing of the TRI's long and colorful history as it has affected the Class I reporting by EPA. Past summaries of this meeting provide much of the prior work by GWPC and the American Chemical Council (ACC) to bring EPA's TRI staff to recognize that Class I injection is not a "release" to the environment but a method of "contained disposal" through injection into deep subsurface saline formations. In July 2003, EPA published notices in the Federal Register that began the Information Collection Request (ICR) renewal process for the TRI Reporting Form R and the Form A Certification Statement. The comment period closed 9/2/03. The TRI program was seeking OMB approval in compliance with the Paperwork Reduction Act (PRA) for the above collection activities that were due to expire on October 31, 2003. In the proposed ICR revisions, EPA had taken a positive step forward by differentiating Class I injection as "contained disposal" from other activities reported as "releases to the environment". According the Bob, after making this "baby" positive step in the right direction, EPA, after receiving copious comments about various aspects of the proposed Form R changes, decided to take the amendments off the table because both industry and the public, and possibly EPA themselves appeared confused.

The Class I "contained disposal" reference was removed even though it was not one of the hotly contested revisions to Form R. The environmental groups were silent on the Class I issue. In November, GWPC sent a letter to the Administrator of the Office of Information and Regulatory Affairs for OMB requesting they deny the changes to Form R until the language regarding Class I (contained disposal) is restored and the amounts associated with contained disposal are not counted as released volumes. There is no indication that EPA has any intention at this time of including Class II oil and gas injection wells. **Van Voorhees recommended that GWPC keep the pressure on EPA to come out with acceptable changes. This may mean working with EPA on future Federal Advisory Committees for TRI Reporting or perhaps advising OMB. It is fairly apparent that EPA is reluctant to change anything until pressured.**

Mark Bohrer, UIC Director, North Dakota and Bruce Kobelski, UIC Team Leader, EPA; Cross-Media Electronic Reporting and Record Proposed Rule (CROMER-R-R) Mark **Bohrer** gave a update on this EPA initiative and indicated his comments were interpretive. He said EPA had held a workshop in December 2003 but no definite answers resulted from that discussion. The Recordkeeping part remains decoupled from the Reporting. Requirements are tiered dependent upon high or low risk. Examples of high risk would be Underground Storage Tanks (UST), Toxics and Hazardous Waste and certain activities under the Clean Air and Clean Water Acts. Low risk programs include those under SDWA. The Attorney General's opinion has been revamped. Program modifications will be necessary with approval authority at EPA Headquarters. Streamlined or multiple program revisions can be filed. This involves the AG's opinion, to which EPA has 180 days to respond. Formerly the AG had to certify a system was in compliance, now has determined that EPA has enforcement authority to prosecute. EPA must publish in the Federal register as a provision of application for program modification. Bohrer enumerated several system requirements including documentation of data generation timelines, validity and integrity of electronic signature and the document itself and an Electronic Signature Agreement (ESA). E-Authentication is a key provision and requirement of CROMERR as is ID proofing. Registration and wet ink electronic signature agreement is most commonly used by states. Existing systems have two years to comply. **The rule is to be sent to OMB by mid-February 2004 and when approved will be published for public comment. This will be the next opportunity for States and GWPC to comment. Funding will be an issue once the guidance is set because information from industry will become a burden to the receiving agencies.** Mark speculated on the future once guidance is published. There will probably by a Model AG Certification guidance package.

Bruce Kobelsi, EPA Headquarters said that although progress on CROMERRR had slowed in 2003, draft regulatory language was distributed at the January 2004 Workgroup meeting and indications are that at least the Reporting part will move in 2004. Within EPA, the Office of Environmental Information (OEI) is the lead for CROMMERRR. The Office of Enforcement and Compliance had raised enforcement related concerns, but concurred after OEI made satisfactory changes. The Environmental Council of States (ECOS) has been brought into the workgroup for state participation. OECA concerns related to wanting to be in the approval process for new signature technologies. And assuring that "Identity Proofing" is appropriately discussed in CROMERRR. The DA had provided OECA a "Priority Reports List" in July 2003 wherein reports would require identity proofing necessary for prosecution of EPA/DOJ cases. There were other items included on the list. UIC attention areas include the certification of closure report for Class I HW wells at CFR 146.71 and State/Tribal program modification to accept electronic reporting. Bruce said state input and consultation will be through ECOS and the UIC program has no direct input. **He believed CROMERRR will move to OMB by Mid-February 2004 and if approved within 60-90 days, OEI will be able to publish CROMERR in the Federal Register by Mid-September. State Guidance would be developed in the 2004-2005 winter/spring time frame.**

Bruce indicated OEI is the agency contact and GWPC should work through ECOS who will comment for states. GWPC can wait and see, however, the OMB approved draft will not be available for review at the March meeting in DC.

RBDMS/e-Commerce Solutions: Oil and Gas Electronic Permitting and Reporting

Paul Jehn, GWPC Technical Director, discussed one of the new RBDMS activities related to working to increase production of domestic oil and gas by increasing access to federal and state lands. This application is **California RBDMS.Net.** This system features on-line access to oil and gas injection data; electronic permitting and reporting, ability to download well information and creates a user-friendly interface with business. (Much of this discussion was included with the Panel Discussion on Access to Federal lands on 1/21/04). Electronic permitting and reporting decreases the time it takes to issue permits and also operator downtime.

Stan Belieu, Nebraska Oil and Gas Commission (NOGCC); discussed the concept of E-Business and defined it as the submission of routine monthly reports, on-line forms and logs. He described the XML Schema development including the use of the RBDMS Model, data sharing effort and interagency cooperation. Stan then outlined the NOGCC Report Module, which allows operators of all sizes to submit electronic reports via the Internet. The **Nebraska e-Commerce Solutions** has three tiers of reporting; eReport-Web forms, eReport remote and XML File. He went on the describe these in terms of Injection and Disposal well forms. Data validation checks are mandatory before storage in RBDMS file.

Alan Doniger, Director of Technology, POSC: discussed a ”Business Case for Collaborative Development of Shared Processes/Procedures for AU.S. Federal and State Well Permits and Activity Reports. This is a **BLM/MMS/ States/Industry e-commerce Coordination** effort. The project is targeted to BLM because Federal agencies realize operators need simplified filing to both states and BLM. and technical data related to filings needs to be shared and the actual data transfer must be simplified. BLM and MMS are currently developing new Internet procedures for operators in filing all activity reports. The same benefits described by Mr. Belieu apply here except that process must include all agencies dealing with oil and gas policy, regulation and facility and permitting. Doniger outlined proposed developments including the architecture necessary for industry input (Web Forms and Client Forms) and architecture for agency receipt (validation of data and integration. The whole process should improve the State-Federal relationships through the sharing of data and regulatory actions.

These reports were on work in progress related to getting state and federal agencies in e-commerce solutions and improving relationships while lessening some of the reporting and permitting burden on operators. One person

wanted to know whether there were any problems with the described systems and ongoing efforts by American Society of Testing and Materials (ASTM).

UIC ISSUES ROUNDTABLE DISCUSSION: The purpose of this section of the program was to provide updates on various study and regulatory initiatives for Class I and II UIC wells being carried out by States in cooperation with EPA or by EPA themselves through their own work groups.

NATIONAL UIC ISSUES: UIC Measures of Success Reporting with Bruce Kobelski, EPA Washington D.C.; Stan Belieu, NOGCC, and Ben Knape, UIC Team Leader, Texas Council on Environmental Quality.

Bruce Kobelsi, EPA Headquarters stated the UIC Measures of Success was an outgrowth of the National Source Water Contamination Strategy. He described how discussion papers focusing on elements for measuring program success evolved into the UIC Measures Guidance that was released for comment on 8/20/03. The current effort is to collect UIC Summary data for use in the National UIC Program Report. EPA wants the data for the measures either through the *Excel* spreadsheets or by completing the 7520 forms. After review and verification of data, EPA HQ will draft a pilot UIC Program Report and develop a workgroup to review it and get consensus. Bruce stated the 7520 summary reports turned in by the states range from very complete to "no information at all". He said EPA plans to develop a narrative depiction of progress (or lack of) in implementing the National UIC Program. EPA needs a "big picture" presentation for Congress and industry can "see" their successes or deficiencies and take appropriate action. **This way, EPA can monitor program effectiveness.**

Stan Belieu, Nebraska Oil and Gas Commission (NOGCC); described the FY 2003 reporting process for Class II and what was new, There are four features; an emphasis on public health, less paper, funding and changes in operating procedures. For the first time, Form 7520 UIC Measures will be using RBDMS. He described the report in its final form. The current effort is to match this form with the information to be required under CROMERR. How the integration will affect industry cannot be determined until the program is in place.

Ben Knape, UIC Team Leader, Texas Council on Environmental Quality stated that TCEQ was wary of any measures that would increase workload or that would confuse the public. He believes the UIC Success measures, if wrongly interpreted by EPA staff or other groups accessing the data, have the potential of creating an incorrect picture, both better and worse than reality. The current program success is "contamination prevention," not "accounting of violations" that some view as success because it can be measured. The terms "known release", "potential release" and "no release" are open to interpretation. TCEQ currently has a significant permit load and is in the process of integrating various UIC databases. **One of the attendee's queried as to whether anyone had**

thought about requiring Global Positioning System (GPS) readings on Class III well systems. Excursions related to Class III wells and former Class III wells now used for other purposes need to be tracked more accurately both as to activity and location.

Bruce Kobelsi, EPA Headquarters gave a brief rundown on issues under discussion by the EPA UIC TECHNICAL WORKGROUP and he provided information on other EPA activities of interest to the group. He first gave an overview of the work group history and past activities for newcomers. The Work Group is currently advising on Biosolid fracture slurry injection, reviewing Class V draft guidance documents and training materials, placing training materials on production and logging practices on the web for program/public access and developing additional UIC training materials in cooperation with the Drinking Water Academy.

Current issues under discussion are Standard Operating Procedures (SOP), definition of continuous cement in Class I HW wells, annular disposal of drilling and production waste and determination of AOR for potential corrective action. The current status of these is as follows:

Standard Operating Procedures (SOP) are to develop a series of consistent SOPs for used by EPA and other UIC programs by collecting data, information and documents and to make them available in document format. This is an ongoing task lead by Region V.

Review the practice of annular disposal in the U.S. and produce a thorough analysis of technical considerations. An initial survey for information gathering has been developed and will be distributed by GWPC Division II. This project is to be completed by January 2004 and is led by the State of Alaska and EPA Region VI. (Is this effort a duplication of the recent work completed by Argonne National Laboratory?)

Analysis of the AOR/Zone of Endangering Influence/ Corrective Action requirements of the UIC program with particular attention given to areas where the ZEI is greater than the ¼ fixed-radius AOR. The outcome may be a recommendation to EPA HQ to develop AOR technical guidance with completion in 2004 or 2005. The lead is Regions III, VI, and VIII and the states.

Carbon Sequestration: Bruce provided background on the Carbon Sequestration issue and the potential affects of CO2 on the environment and in global warming. The current methods are Terrestrial Sequestration, Oceanic Sequestration and Geologic Sequestration. The first two are not popular for a number of technical and practical reasons, which has allowed geologic sequestration as the emplacement vehicle of choice. The discussion is ongoing and Lawrence Berkeley Lab has been the lead advisor on geologic sequestration.

CBM Hydraulic Fracturing Bruce mentioned the Memorandum of Agreement between EPA and Halliburton, Schlumberger, and B.J. Services relating to the

elimination of diesel fuel in hydraulic fracturing fluids injected into USDWs during hydraulic fracturing of CBM wells This document is dated 12/12/03 and has a 30 notification of termination by either party.

Brandy Robbins, Marketing/Sales Manager, Texas World Operations (TWO) provided the 2003 Update on the Class I Injection Well Inventory. The purpose of this reports is to provide a snapshot of the health of the industry and to project current trends into the future. The last formal report was for the year 2000; however Texas World Operations has assumed the task of updating the inventory on an annual basis. The last EPA Class I inventory was conducted in 1995. There are currently 485 Class I wells at 279 facilities in 19 states as compared with 453 in the 2000 census. Since the last report there have been 45 permits issued for new wells, with 23 of these being municipal wells installations in Florida. The number of Class I wells in Wyoming has also increased during 2003. Region VI has the highest number of wells with 179. The number in Region IV still is growing and now totals at 155. The total contains 122 hazardous wells. The major growth in the use of wells continues to be among electrical companies and municipalities. The number of hazardous waste injection wells continues to remain steady. GWPC is working with TWO to develop a RBDMS analog file. Last year, Brandy stated that GWPC needs to continue to educate the public and the industry on the superior protection provided by properly completed Class I injection wells as opposed to other disposal and treatment options for liquid waste. **The GWPC Board of Directors and staff need to assess whether this education program is taking place to the degree it should and whether there is a way to measure effectiveness.**

Ken Davis, Principal Consultant, Subsurface Technology Inc. National Class III Well Inventory Effort: Mr. Davis stated the purpose of the inventory is to (1) Identify the variations in solution mining operations; (2) Assess the viability of the initial UIC measures for Class III wells; and (3) assess current management of Class III well information. Ken said that salt, potash, trona, uranium and copper are now extracted by solution mining and solution mined sulfur through the Frasch process is on the decline. The inventory was developed through contact with all 50 states. There are no Class III projects on Indian Lands or U.S. Territories, which EPA would regulate if they existed. There are currently at least 12,184 Class III wells in the United States, with 11216 being associated with uranium mining, 542 with halite (NaCl) and 426 for thenardite ($NaSO_4$). Texas has the most Class III wells with about 5,700 (5,216 are Uranium), Wyoming with 3000-4,000 (Uranium), 2,500 in Nebraska (Uranium) and 138 in Kansas (Halite). Class III wells are banned or prohibited in nine states and 25 states have no Class III wells but their development is no prohibited. Louisiana and New Mexico may have wells but did not respond to the survey. Ken indicated that due to the onslaught of regulations for storage in solution salt cavities, the Solution Mining Research Institute (SMRI) has received considerable new interest in joining their organization. **Mr. Davis and the SMRI are seeking guidance from the GWPC on how to best portray the statistics of Class III wells and how to develop a maximized report. GWPC Staff should follow up this recommendation with input from the Class III Division and the SMRI at their April meeting in Wichita.**

Scott Anderson, Regulatory Consultant, gave a review of a few of the issues confronting the Independent Oil and Gas Producers, which were not discussed in a previous part of the program. He thanked GWPC in its active role in the hydraulic fracturing issue and its attempt to get appropriate legislation passed. The current attitude of the environmental community is totally negative toward the industry and its takes an optimist to think the National Energy Bill is back on track. **He still believes that the hydraulic fracturing issue need a Congressional fix, a position concurred with by Tom Stewart, President of the liaison committee.** Scott mentioned some other things going on such as an EPA suit against a drilling company. He also believed that majors and independents are in agreement on more issues that they disagree. The difference is that independents do not have the depth of environmental, legal and government affairs experts on staff to continually participate in dialogue with EPA and others involved in the issues and have to depend upon more politically based approaches to impose their views.

Terry Twyman, Upstream Environmental Coordinator, American Petroleum Institute (API): "UIC and the Industry – The Future" Terry felt that a lot of regulations and interpretations were directed toward using good common sense and that API had no additional problems other than the ones already discussed in the previous sessions. She stressed that the E&P waste exemption was very important and should be defended and maintained. The larger companies were trying to deal with what seems to be an explosion of trucked illegal waste. API redrafted its Guidance for Commercial Facilities in 2001, which incorporates ways for companies to reduce risk and liabilities and comply with relevant regulations. This can be obtained from the Republic Website. UIC issues are included in the updated model designs of commercial facilities. The 2001 effort was primarily in response to an explosion at a commercial facility. **Terry had no specific issues to present to the seminar.**

Bob Van Voorhees, Bryan Cave and Associates gave a presentation entitled **"Mature Regulatory Program: Things Learned and Things to Improve".** Bob provided a laundry list of issues that "keep festering and don't do away". He indicated one of the characteristics of a mature regulatory program is that issues arise from a variety of sources: new technologies make current regulatory standards out-of-date and in need of revision to accommodate the new application. Years of experience under a set of regulations have proven some to be too restrictive in terms of cost/environmental benefit. Desires on the part of the regulatory authority to amend existing regulations to fit newly passed laws and new interpretations under existing laws, and suffer from inexperience on the part of regulatory personnel who weren't part of the history, original discussions and formation of the regulations. These issues do not go away because no one in the regulatory authority really wants to revisit old issues. Bob summed up a list of those issues, which are longstanding and aren't being addressed by EPA or, in some cases, by industry or GWPC. These are as follows:

1. **Toxic Release Inventory (TRI)**
2. **Consensus revision to Class I UIC regulations. The EPA regions should be involved as well as industry and GWPC.**

3. **Looking for ways to improve the existing UIC programs including cost/benefit analysis of some regulations (Class I is an example).**
4. **GWPC, state regulators and industry all have a role in helping EPA to arrive at true measures of success.**
5. **The Fluid Movement and Hydraulic Fracturing issues that are on the table thanks to the Legal Environmental Assistance Foundation (LEAF) are examples of how far something can go before reasonable approaches are acknowledged.**
6. **Even when changes are identified as being desirable, does one want to open up the UIC program to Federal rule making where the whole package is fair game.**
7. **We need to look into the Class I-Class II relationship for Alaska North Slope wastes, but should the discussion be limited to the North Slope given the same type of wastes?**
8. **The issue of whether certain injected wastes are excluded from surface and ground water interaction.**
9. **The Class I Hazardous Well Fall Off Testing Requirement: One of several “mail bag" items that have not been resolved.**

Bob indicated these and other issues relating to the UIC program and liquid waste management should be set on a schedule by industry and GWPC with the objective being resolution.

"Injection Well Case Study and Panel Discussion Session"

January 21, 2004

The sessions on the second day of the Conference included a series of case studies (experiences in the field or office) regarding Class I, II, III and V injection well innovative technology or practices and administrative streamlining procedures of interest presented by industry representatives and/ or consultants. In addition, two panels were included to expand discussion on such issues as barriers to access to Federal Lands and Frequency of Class I Hazardous Well Fall Off Testing Requirements. Some of these subjects covered were not strictly Class I and II related, however, they are emerging issues facing the industry and the Ground Water Protection Council.

1) **PANEL DISCUSSION: Issues That Preclude Access to Federal Lands: New Regulatory Barriers.** The purpose of this panel was to explore those activities that create barriers to efficient oil and gas production, use of injection wells and administration of regulations in states where both State and Federal Laws apply to leasing, operation and closure. Barriers can also be created at the expense of one regulatory level (state, e.g.) when the other regulatory level makes changes to their regulatory program. If there is a lack of funding to support modern communications technology, then it is possible for unintentional barriers to develop.

Tom Richmond, Director, Montana Board of Oil and Gas Conservation Mr. Richmond said that both the states and Feds impose barriers which adversely affect industry and very often an efficient regulatory process. Tom used the example of a barrier created by the Montana legislature wherein they changed the pre-notice requirements not only for new applications but also for amendments to existing facilities. This was to target CBM development. The split estate where the Federal Government (BLM) controls the mineral rights and there is private surface ownership also is often a barrier to development. The third example is lack of communication and inability to easily share databases among state and federal regulatory agencies. Tom described GWPC's Information Group Strategy, which called for development of a large state database (Next Generation Information System), Multi-agency Cooperation XML Schema Development/Adoption and Web-Site Enhancement. They desire to develop a large state system that will allow many users to access data simultaneously. He went on to explain the XML Schema and its incorporation with e-permitting activities. The key to success is cooperation.

Tom Maunder, Alaska Oil and Gas Conservation Commission gave a historical perspective of how minerals came to be reserved to the State. About 40 million acres were conveyed to the Native Villages with BLM administering. Even to date, the state has not completed land selections. There are active opposition groups to practically every oil related activity in Alaska whether it be the 1002 area of the Alaska National Wildlife Refuge, the development of the National Strategic Petroleum Reserve or the laying of pipeline and location of surface structures. Congress has also been a barrier to

development. None of the problems are related to technical issues or past environmental degradation.

Stan Belieu, Deputy Director, Nebraska Oil and Gas Commission. Stan said that GWPC and the Data Committee is now working to increase production of domestic oil and gas by increasing access to federal and state lands. This effort is operator driven. Examples are the California RBDMS.net, Nebraska Electronic Commerce, and the BLM/MMS/ Industry e-Commerce coordination. Funding for these comprehensive data management tools for regulators is a joint effort by DOE and the state oil and gas regulatory agencies. The system provides states with a large number of wells to take advantage of RBDMS, increased security, multi-user environment, and upgrading to .net technology. It also allows for complete review of the regulatory process. All these are designed to reduce barriers to Federal land access in addition to breaking down other barriers. The system features include on-line access to oil, gas and injection data, a user-friendly interface-business flow, electronic permitting and reporting and an ability to download well information. **The target for Phase I of the Electronic Permitting and Reporting is December 2004. There are no special issues other than Stan encourages commitment, funding, time and cooperation.**

Richard Watson, Geologist, BLM Washington Office: Mr. Watson presentation was "A Federal Lands Access Update." The BLM has been trying to lower barriers and improve administrative process. They have three major efforts: Conducting the Energy Policy and Conservation Act (EPCA) Inventory; and improving the Application for Permit to Drill (APD) process. The EPCA inventory examines five priority Rocky Mountain basins including the Powder River basin where Coal Bed Methane well drilling is now a hot topic. The effort will be used to update land use plans for the basins. There are ten Oil and Natural Gas Resource categories wherein each basin's acreage is sub-divided into leased or unleased, percent of Federal and Split Estate Lands and length of time limitations on drilling once a permit has been issued. EPCA Inventories Phases II, III, and IV will cover other basins within the U.S., including Alaska with completion of the project by the end of 2006. The EPCA requires BLM to set priorities for planning, leasing and permitting. Instructions were forwarded to BLM Field Offices in August 2003. The APD process improvement is guided by three policies. Policy#1 contains four strategy elements and recommendations including as Geographical Area Development Plan, Geographical Area NEPA (Field EA/EIS), Multiple APD Packages (Bundling) and Standard Operating Procedures (SOP). Policy#2- Cultural Resources allows for change to Block Surveys instead of Individual Surveys. Watson indicated that late surveys have been the major source of APD processing delays. Watson had some graphical presentations of BLM's progress on APD processing that also reflected an increase in their budget for FFY2003 with a smaller increase for FFY2004. These measures, when finally in precision will allow for BLM to ensure consistency across boundaries and a reasonably consistent development of BMPs as condition of approval.

Fernando Blackgoat, Upstream SHE Advisor, ExxonMobil Production Company presented the National Petroleum Council (NPC) Natural Gas Study entitled "Access/Environmental Issues". Most of his discussion was regarding Resource

Management Plans and Project Permitting decision trees. These include what the agency (BLM/state) does in developing Land Use Plans and EIS, which lead into allocation of land uses, Reasonably Foreseeable Development Scenarios (RFDS), Lease Stipulations and delineation of withheld acreage. The Study has also developed a decision tree for the Operator from the time he buys a lease through the time the project actually begins. The NPC Study outlined seven Access Challenges:

---- Statutory Restrictions, designated areas inaccessible by law.
---- Administrative Restrictions, areas inaccessible due to interpretations by administrative authorities.
----Threatened /Endangered Species, areas inaccessible due to extreme regulatory requirements, lack of clear habitat definition
----Sensitive Species, outcomes different in each state with a trend toward becoming more stringent.
----Archeological and Cultural Resource Requirements, causes delay because surface disturbances are subject to survey and stipulations are imposed on the basis of survey findings.
---- Environmental Assessments where all Federal decisions require environmental analysis and costs vary in accordance depending upon the situation and are usually basin specific.
---- Environmental Impact Statements are required for all significant developments and are expensive and time consuming.
---- Range of Outcomes when the above are combined into realistic scenarios, can project costs and delay repercussions.

Mr. Blackgoat mentioned that part of past delays were due to a loss of experienced Federal personnel within BLM. If Federal EIS/EAs are not coordinated with companion state requirements, reasonable progress gets delayed further. The bottom line purpose of the study was to recommend actions that could be taken to support environmentally sound resource development while focusing on streamlining processes, reducing time lags and avoiding unnecessary costs.

Neither the panelists nor the attendees had recommendation to make regarding the above-described issues. The role of GWPC and its RBDMS committee appears to be appropriately one of support for streamlining administrative process without sacrificing proper environmental controls.

2) **Bob Whiteside, Texas World Operations (TWO)** Bob Whiteside, President of TWO gave a presentation entitled “Practicing Safety While Working on Injection Wells”. Whiteside stated their company had had no accidents for 18 years. A contractor has to recognize that the commitment to following a company’s Health, Safety and Environmental (HS&E) Plan has maximum devotion at the CEO level, however, project managers who are under pressure to get a job completed within a certain time frame are willing to not follow the HS&E Plan to the letter and will often overlook less important requirements. This puts pressure on the consultant in terms of bidding for rig services and making purchasing decisions. The question if whether or not the contractor is responsible

if an accident occurs can occur particularly of the contractor has forsaken some of the requirements at the behest of lower management. Bob said the basic problem is that at the time of project inception, everyone from the CEO on down is on board, however, this enthusiasm wanes when events, including adherence to safety requirements, causes project delays.

Bob stated the best route for a contractor is to adhere to the safety requirements once he has determined to is responsible (company or contractor) if something goes wrong. Project managers and operators go by habit, not manual requirements. Companies often fall short on allowing employees to take the necessary four hours off to attend HAZWOPR training. This lack of expertise does not always make it easy for the contractor to work safely with company personnel. **Whiteside's presentation did not bring up any issues, which should be followed up on for future meetings or by the GWPC Research Foundation.**

3) **Markus Puder, Argonne National Laboratory** gave a presentation entitled "Tremors in the Cooperative Environmental Federalism Arena-What Happens When a State Wants to Return Program Primacy to the Federal Government?" Markus described the relationship between states and the EPA during the period when primacy for the UIC program was being sought by the state under the Safe Drinking Water Act and then the process EPA must go through if the state decides they no longer want to administer the program and desire to return it to EPA. This topic is particularly appropriate in light of the ever-increasing percentage of funding borne by the state in comparison to the Federal share of program support. EPA has had a longstanding policy that a state takes the entire UIC program or none of it. There have been exceptions made by EPA. California has primacy for Class V Geothermal and Class II but not for Classes I, III, and the rest of V. Several states have Class II primacy under SDWA Section 1425 but not for the other classes under Section 1422. Alaska has Class II primacy but not Class I. EPA must go through a hearing process if the state wants to voluntarily return the program. This voluntary return is codified. The EPA also has to go through a similar hearing process if it finds the state's program inadequate; however, this only occurs after the state has been sent a letter outlining deficiencies with a timeline for correcting them. The Alabama problem with the hydraulic fracturing issue is an example of the latter. A similar situation occurred in Illinois about fifteen years ago. **There are no current issues connected with this subject. Puder wanted to appraise industry of the process because the states are finding it extremely difficult to justify satisfying Federal requirements with a continued slide in Federal funding. He said the general belief is that industry wants the states to have primacy for the UIC program.**

4) **Bob Cox, Trican,** gave an update on Trican Polyethylene Liners. Mr. Cox stated that polyethylene liners had been used for over 20 years to line horizontal pipelines and has now been used on over 250 wells (4-1/2" and 5-1/2" applications. They are now evaluating installation effectiveness in 2-7/8 in. and 3-1/2 in. tubing lined "*in situ*" for Offshore Applications. He described the plastic properties of their material in comparison to steel for material yield strength and temperature. One of the materials, Rilsan, has

good chemical resistance to brine, crude oil, H2S and CO2 but not acid. The polybore depth limit for Rilsan is 6700'. He described the process for installing tubing into the well through the use of a Roller Reduction Unit (RRU). The RRU reduces liner OD by about 13% and weights maintain reduction with about 30% SMYS at shoe. The recovery of the liner is dependent upon weight (stress) and temperature. The higher the temperature, the faster the recovery. Cox said some of the Trican liners applications were to replace tubing/packer completions, reduce friction in Class II wells, and reduce wellhead injection pressure. The liners cause a tight fit in the hole. He provided some pressure data based on monitoring of pressures as injection occurred. Much of Trican's practical application with this material has been done in Alberta where the Province requires Cement Bond Logs, Casing Inspection and Temperature Logs. Wellhead pressures are limited to 90% of the fracture gradient and initially the casing must hold #1000 psi for 30 minutes to establish Mechanical Integrity. More recently the company has installed Trican's liners in Texas and has received approval in New Mexico. **Mr. Cox did not bring up any specific issues not did he indicate a resistance on the part of regulatory bodies to approve the plastic liners. <u>It might be of interest to GWPC to determine UIC primacy state levels of acceptance or reluctance to use this type of material in Class II wells.</u>**

<u>6)</u> 5) **<u>Robert Sullivan, Program Manager, Argonne National Laboratory</u>** gave a presentation entitled "<u>Using Handheld Devices and Wireless Technologies for Environmental Data Collection and Dissemination</u>". This paper was co-authored by Robert Johnson and David LePoire. The objective of this effort was to evaluate new hand held data collection and communication technology. The yearlong study entailed using various combinations of GPS/GIS-enabled PDAs/PCs in the field while also testing wireless LAN, cell modem and Bluetooth. The objective is to increase speed and efficiency of data collection, integrate GPS and GIS directly into data collection activities, maximize value of field visits by allowing staff to conduct preliminary QA/QC from the field, and use rapid dissemination of data to support real- time decision making. White Phosphorus Burn Pits at the Aberdeen Proving Grounds, Maryland were used as the study area. Mr. Sullivan described the various data XRF, GPS and GIS collection techniques used, the comparisons of equipment (PDA to PC) and the development of customized forms. He discussed the systems architecture (Device Network Setup); Procedures (data collection and communication) and the results. Query results were entered in ArcIMS. The study found the system was interactive and allowed Web-based query of GIS and database from remote locations, including the field in near real-time. It facilitated in-field QA/QC. All collection devices worked well; however, a ruggedized PDA was superior to a tablet PC for data collection. Cell modems worked well in both sending and viewing data. Mr. Sullivan's results were more detailed than summarized in this paragraph; however, the process appeared to work very well if one has techno geeks in the field. Preplanning is critical and the process may be impacted by the ability to see the data from the field. **This was basically a technical presentation and did not identify issues for future consideration. <u>This presentation may be of benefit if given to the Ground Water or Remediation Division Sessions in Charleston.</u>**

6) **PANEL DISCUSSION: Discussion Regarding Frequency of Class I Hazardous Well Fall Off Testing Requirements:** Whether or not the frequency of fall-off testing requirements is appropriate now that the Class I Hazardous Waste Injection Well Program has been established for over fifteen years and monitoring databases have been in use long enough to show performance trends that are to a great extent predictable is the issue for discussion. This issue has been in the Class I "mail bag" for several years and is usually a point of discussion by someone at the conference. The purpose of the panel was to set recommendations on how to pursue resolution or, at least. Get the issue past the annual discussion stage.

Bruce Kobelski, UIC Team Leader, EPA, Washington D.C. provided a historical perspective starting with the original FACA through the development of requirements for the "No-Migration" Petition. One of the questions that always face regulators is, "how long do we continue to model something when it basically says the same thing?" In this case, Section 1426 of SDWA has a stipulation for monitoring under Part 146, which indicates the pressure decay curve is the only valid test to fulfill annual monitoring requirement. Bruce could not recall how the annual frequency for the test evolved. In 1996, the CMA (now the American Chemical Council) lobbied hard to have the rules streamlined. One issue was whether or now casing inspection logs should be run less frequently. Bruce did state that when rules are opened up for discussion and amendment, bad things might happen.

Muhammadeli Abbaszadeh, Texas Council Environmental Quality (TCEQ) gave a brief presentation of how TCEQ administers the Class I primacy program for the pressure fall off test. He said they allow companies to do step-rate pressure fall off tests on one well of a group and then accept Bottom Hole Pressure (BHP) readings. There has been some buildup of pressure over the past fifteen years on some wells but no big anomalies.

James Clark, Principal Consultant for DuPont De Nemours said that the fall off test was one of the big insistences by the National Resource Defense Council (NRDC) back in 1990. In 1996, the Class I Division included it with three or four pages of issues, which they wished to have dialogue with EPA. Eight years later, the issue still exists and has not been resolved to the Class I Operators' satisfaction. He cited CFR 146.13 (d) Ambient Monitoring, which requires the well to be shut down and the subsequent conduct of a valid observation of Pressure Fall Off Curve (Annual Falloff Test). Other parts of the rule require measurement of the transmissibility and reservoir pressures, estimation of radial flow and boundaries and a proof of non-endangerment. It takes fifteen pages of guidance on how to analyze the test. Clark pointed out that some facilities have decades of data and that some reservoirs are consistent and well characterized and annual fall off tests are less critical. Clark made the following recommendations:

---- Revisit the Class I Guidelines with the proposal to allow a longer interval for pressure fall off testing at the discretion of the Director (TCEQ) on a case-by-case basis.

---- Revise EPA regulations to allow 2-3 year fall interval but maintain annual MIT, BHP measurement and ensure interval at least 50% open.

---- Take into account the significance of historical data of certain parameters such as high permeability, consistent transmissibility, and no identified boundary effects when determining if annual falloff tests are critical.

---- "Less critical would apply if reservoir history data exists and is consistent, high reservoir permeability exists, there are no AOR concerns, no boundaries. Other parameters can also be used.

Robin Fawcett, Solutia Inc. Restated some of the concerns expressed by James Clark, in particular, those having to do with unnecessary tests. He is against spending money on monitoring where the sole purpose appears to be allowing the accumulation of data for EPA to analyze but has little, if any, environmental benefit and, if the regulation were changed, would not sacrifice regulatory integrity. **Fawcett suggested some type of survey to GWPC members (Class I-HW Operators) asking how often their pressure fall off test results have fallen outside the parameters allowed by the no migration permit. They could also be asked about testing frequency.** He also wondered what the thoughts of the EPA UIC Technical Workgroup were.

Discussion and Identified Action Items. During the discussion, EPA Region VI (Susan Lopez) expressed concern over changing the frequency because EPA felt they learned something even though test results were often within the same range from year to year. Additionally, the just liked having a continuous record of data. **The group recommended that**

1) **GWPC's Class I Division develop a white paper which would articulate the pros and cons of changing the regulation to cover the amendments to 40CFR 146-13 (d) suggested by James Clark and Robin Fawcett. This would include a judgment of whether or not changing the regulation would "raise unnecessary flags".**

2) **The White Paper articulates alternate tests that could satisfy the intent of the monitoring requirements without necessitating a regulatory change.**

3) **Once the white paper is created, determine if there should be any technical backup material developed that could be done through the GWPC Research Foundation.**

4) **Bruce Kobelski recommended that if an effort of this sort is generated, then it should take into account some other states, which have non-hazardous Class I wells. Discussion possibly through a State/Federal Committee Forum.**

7) **Russell C. Fontaine and Jeff Anderson, Geomega:** Russell Fontaine gave a presentation entitled "Quantifying Injection Well Water Pathways and Volumes Across a

Geologic Fault under Conditions of Uncertainty". This is part of a series of papers presented by Geomega associated with a case study for evaluating the injection potential of a California oilfield using stochastic and well optimization modeling. The previous work established that an intervening fault was an asset wherein it separated a potential injection zone from the oil producing parts of the reservoir. The fault is a normal fault with no strike-slip component. This study set up a geologic model to identify the pathways available for injected water, to identify areas where pressure sinks existed and to see if the fault had any role in enhancing or detracting from the confidence of the system. A stochastic model was used to measure a fall in conductance and to measure pressure distribution across the fault. The model was able to establish that there was potential leakage of fluids across the fault, the range of leakage and to some extent, the quantity. The model is also able to identify barriers where leakage is minor or unlikely (by use of conductance information). **This presentation surfaced no policy issues, but presented an excellent model for use in determining the capability of Class II Injection well disposal zones.**

8) **Jeff Anderson and Russell Fontaine, Geomega.** Jeff Anderson, Principal Hydrogeologist for Geomega gave a presentation entitled "Evaluating the Technical Feasibility of a Class V Injection Well Field with Numerical Methods. This study was to evaluate aquifer storage and recharge (ASR) of alluvium using Class V injection wells and/or recharge ponds after oil field produced water has been treated in a reverse osmosis (RO) plant to meet State Drinking Water Standards. The potential volume of produced water is 60 million barrels per day. The goal is to identify technically feasible, cost effective water management alternative to disposal. Mr. Anderson presented the hydrogeologic and hydrologic setting for the area including the innate water quality of the aquifer. He described the test pilot project utilizing an aquifer recharge well and a pond. A model was developed and calibrated to compare the observed equipotentiometric surface and residual heads to those predicted by the model.

The model findings compared favorable to field-testing and was found to be a cost effective method to recharge the aquifer and manage effluent from the RO plant. In conclusion, Anderson stated: "This is a case where ChevronTexaco will provide a valuable resource to the State of California by providing drinking water and helping to minimize salt water intrusion. **Although this study was proposed as a Class V project, the fluids are derived from Class II oil field related facilities. The author proposed no regulatory issues; however, the activity does fall into that part of GWPC's area of interest on produced water reuse (not Coal Bed Methane).**

9) **Carl Brassow, President, Coastal Caverns, Inc.** gave a description of the design and operational history of a non-hazardous oil and gas waste disposal cavern in the Texas Gulf Coast which his company operates. They dispose of oilfield solid and gels into solution- mined salt caverns that were used to extract sulfur from 1970-83. The company received the Class II permit to operate an injection facility in 2000. They receive a lot of waste from offshore Texas and Louisiana. The cavern takes the wastes under 29" of gravity. The annulus next to the casing is open to the cavern. The weight of the waste is 12-14 pounds per gallon. The cavern is developed in the Moss Bluff Salt Dome and it has

an open interval of 400’ of salt. Natural gas is also stored in other caverns in this area. The capacity of this cavern is 6.2 million barrels.

Mr. Brassow indicated several favorable criteria of using salt caverns are that one knows where the waste is going. The process is relatively inexpensive in that disposal costs range from $5-$15 per barrel depending upon the usual costs such as transportation distance and mode of transportation. There is no grinding of materials at this site like the Alaska North Slope Grind and Inject operation. Mr. Brassow did not have any issues that require follow-up on the part of GWPC’s Class II Division; however, it is felt **GWPC should publicize this method of oilfield waste disposal as a viable method, particularly for wastes originating in offshore exploration locations. Work need to be done to determine the relative risk difference, if any, between domed salt and bedded salt.**