

Minutes of the Oil and Gas Technical Advisory Board Meeting
Rachel Carson State Office Building
Harrisburg, PA
January 22, 2009
10:00 A.M.

A meeting of the Oil and Gas Technical Advisory Board (TAB) was held on January 22, 2009 in the 6th Floor Conference Room of the Rachel Carson State Office Building, Harrisburg. TAB members present were Chairman Robert Watson, Burt Waite, Gary Slagel and Art Yingling. Ron Gilius, Dave English, Joseph Umholtz, Eugene Pine, Carol Daniels, Craig Lobins, Scott Perry, Dan Lapato, Dana Aunkst, Patricia McSparran, Joel Sipe and Susan Weaver attended from DEP. Also attending were Amy Randolph, Nathan Bennett and Ted Borawski (DCNR Forestry), Ed Troxel and Ron Cersutza (PSAB), Charity Fleenor (Penn Virginia Oil & Gas), Roger Varner (HRG. Inc.), Gretchen Yarnan (BL Companies), Chris Underwood (ERM) and Chris Lammando (WBCR).

The meeting was called to order by Chairman Watson at 9:00 a.m. and was followed by introductions. Items 4, 5, and 7 were the first items presented in the meeting due to guest speakers on those agenda items.

Agenda Item 4 – Water Withdrawals update - Susan Weaver, Environmental Program Manager, Bureau of Watershed Management

Susan Weaver presented an update on water withdrawals in regards to the Marcellus Addendum for Water Management Plan to manage fresh water withdrawals. In June of 2008 the Department of Environmental Protection adopted this addendum using the Susquehanna River Basin Committee (SRBC) Guidelines Policy. This policy informs the Watershed Management Staff as well as the SRBC staff on how much water can you take out of a stream while still protecting the flight habitat and existing designated uses of the stream. This policy is being used for the Ohio River Basin (OHB) and the Delaware River Basin (DRB) as well, although there is not a lot of activity in drilling and hydrofracing in the DRB as of yet.

That policy essentially has a couple of numbers that gets into stream statistics if you want to withdraw a very small amount of water out of a stream. This application is reviewed and barring any other items on that stream it is determined whether or not the application is approved. In general, a withdrawal less than 10% of Q7-10 (the annual minimum seven-day average stream flow occurring once every 10 years on average) is usually satisfactory for all year around use with no “pass by” condition.

If you request an amount greater than 10% Q7-10 (large quantity withdraw), it is evaluated under the policy. There is a “pass by” condition where there will be times of the year, usually in August, September and October when the streams get low, and at a certain point all withdraw stops. It does not mean that the contractors cannot have the stream water, however, under certain conditions which are subject to monitoring, when water flow starts getting low, you stop the withdrawal.

Gary Slagel asked if the approval for the withdraw amounts, assuming it is a larger amount, is based on historic data or must they monitor? The applicant must identify the point of withdraw in the stream and that the applicants make the determination of the Q7-10 at that point of withdraw. There are several different methodologies that Watershed Management uses and that the burden is put on a

professional engineer or a professional geologist to determine the Q7-10 at that time. There is a lot of information out there and there is no one answer. You need to evaluate the different methods and make a determination on what is most appropriate for that particular situation.

The Application Addendum is being revamped to add a category for abandoned mine drainage (AMD) water or water from a wastewater treatment facility.

Susan continued to inform the group that one of the provisions that SRBC added to their regulations was to allow the Executive Director and the Commission certain projects without the need for the Commissioners to meet. This is known as “approval by rule”. Previously anything needing approval had to wait for the Commissioners next meeting, which are held every three months.

Late last year the “approval by rule” was expanded to include sewage treatment plant discharges and AMD water. This will facilitate getting the water to the applicant faster and will alleviate waiting for the next Commission meeting date. New forms, which were approved last year, are available on the website.

For groundwater withdrawal in the Ohio River Basin, the department is still requiring the application addendum be completed whether they are asking for approval for service water or ground water. So if you are proposing a ground water well, the department needs to know in the application addendum if pumping that well will impact surface water or wetlands.

Agenda Item 5 – Reuse, Recycle and Disposal of Drilling Fracturing and Production Fluids (Dana Aunkst, Director, Bureau of Water Standards).

Dana Aunkst provided an update of the current wastewater disposal options and the Department’s strategy for the next two years. Some of the early data received is showing that not only are we going to be experiencing the need for treatment and disposal of the high volumes, but some of the data is showing a high concentration of certain pollutants that have become a major concern. Major pollutants are total dissolved solids (TDS) and chlorides.

In the past, pH adjusted would dropout metals, but now greater TDS/chlorides present new problems for protecting downstream water supplies. This presents the need to determine treatment and/or disposal options. There is the need for strategy for this high volume of wastewater. Study results concluded that there is not enough capacity of streams to handle the wastewater. There is a need to include technology to reduce the chlorides/TDS.

The current approach is to continue to develop water quality criteria by continuing to work with the Environmental Protection Agency (EPA), in addition to working with the state of West Virginia because they have a lot of the same situations on development of water quality criteria. That process is a regulatory process and will take a couple of years. Also mentioned was the need to develop a level playing field in terms of technology that would be required for treatment for these waste waters before they can be discharged to the surface waters.

In the works is a sub committee in what is being called the Marcellus Shale Committee. That sub-committee will be working with certain people here within the department. This group will be holding a series of meetings and will be talking about technologies that are out there to treat TDS.

Dana added that a two year goal is being looked at to eliminate discharges to the stream. Within the two years the department hopes to have stringent requirements in place and be in regulation. This plan looks to eliminate discharges to the stream by encouraging reuse of water, work with the EPA and the industry to develop deep well disposal sites for approval in Pennsylvania.

Gary Slagel asked about the DEP press release stating that the Monongahela River TDS levels have dropped. Three weeks of laboratory data on water samples from the river found TDS levels below the 500 parts per million criteria established by the DEP and the U.S. Environmental Protection Agency. The latest results from December 30 recorded levels ranging from 110 parts per million (ppm) to 196 ppm. Gary asked if this was a 45 to 47 year low flow. Dana was not sure about the low flow but he knew the numbers were at or just below the Q7-10.

In a response to Chairman Watson question regarding the new standards effecting municipalities, Dana responded that for the municipality themselves, in general the TDS concentration of treated sewage is between 500 to 1,000 mg/L depending on the hardness of the water. It should not really affect the sewage treatment plant and that is one of the things the department is very concerned about, and any standard set should consider that. Industry, on the other hand, generally has its own treatment technology based requirements, depending on the industry itself. So if there already is an Effluent Limitation Guideline (ELG) in place for that particular industry. Based on that information those guidelines will continue to be used to regulate the parameters that are regulated by that technology. Any new sources would come under this umbrella and would be subject to any requirements put in place for TDS removal.

Art Yingling asked what was the current volume treated? Based on discussion with regional staff, it is around 3 million gallons a day for all plants in Pennsylvania. The big problem with sewage treatment plants accepting high TDS waste water is that TDS can inhibit the biological treatment process. Chlorides seem to have a much more toxic affect on the microbes that are actually treating the sewage. If the amounts not needed get through in doses you controlled, you can kill your biological treatment process. The first bugs to go are the nitrogen reducing bacteria, so if you have an ammonia limit on your sewage treatment plant and you are not going to meet your ammonia limit before chlorides get higher than you expected, you are going to kill that bacteria. The department is trying to get people to understand this so they don't sign agreements to take large amounts of this type of waste water.

Chairman Watson asked if Dana had any statistics of the amount of water that is produced -to Marcellus Shale - after they have been online for a few months?

Gary Slagel mentioned that drilling will be at a much slower pace than first anticipated due to lower energy prices. He added that the gas has to get back up to \$10 - \$12 to see this kind of energy put back into Marcellus Shale.

Burt Waite said there is a Marcellus Shale committee working in conjunction with another group called the Appalachian Shale Water Management Conservation Committee. They are bringing a lot of data out of Texas from that shale development and trying to look at the treatment technologies they are using and see if they may be applicable to our situation. They performed a very detailed analysis of flowback water here in PA which was consistent with what Ron Gilius reported to the group.

Art Yingling questioned about a solution to waste water. Dana felt the ultimate solution is a combination of everything that was discussed - reuse of the water, concentration (concentrated into a smaller volume), and underground injection with that smaller volume.

Dana informed the attendees that some companies are telling the department that they can make road salt out of the by-products. Art Yingling asked about the by-products of some of these processes working assuming we are going to have a lot of wastes and the numbers are correct. Dana mentioned that if it was a good enough quality it could be used as road salt and Penn Dot buys 460,000 tons of salt a year. Discussion ensued on this subject.

Ron Gilius told the committee that the Pennsylvania Oil and Gas Association (POGAM) sponsored a training program on deep injection disposal wells where 116 people registered for the program. Along with EPA, Deputy Secretary Cathy Meyers also attended to explain the Department view on use of deep well injection wells.

Agenda Item 6 – Approval of Centralized Storage Pits and Impoundments - Patricia McSparran, Director and Joel Sipe, Senior Civil Engineer, Bureau of Waterways Engineering

Both Patricia and Joel discussed the new “streamlined” process and construction standards for pits and impoundments. The following documents were handed out to the attendees for review:

- Design, Construction and Maintenance Standards for Pits and Dam Embankments Associated with Impoundments for Oil and Gas Wells
- Instructions for completing an Application for a Dam Permit for a Centralized Impoundments Dam at Marcellus Shale Sites
- Application for a Dam Permit for a Centralized Impoundment Dam at Marcellus Shale Sites
- Cultural Resource Notice
- Dam Permit for a Centralized Impoundment Dam at Marcellus Shale Sites

Ron Gilius stated that the new forms are scheduled to be posted by the end of January.

Agenda Item 2 – Approval of draft May 29, 2008 Minutes – Attachment A

Chairman Watson asked for a motion to approve the previous TAB meeting minutes. Burt Waite moved to approve the minutes, seconded by Gary Slagel. Minutes were approved.

Agenda Item 3 – Comments to Proposed Well Permit Application Fees and Projections for Marcellus Shale Wells - David English

David English presented an update of the proposed regulation for application fee increases. A copy of § 78.15, Application requirements, relating to permit application fee schedule was provided to the attendees. This schedule was for Vertical Wells, Non-Vertical Wells and Marcellus Shale Wells and the projections were done through year 2014 with the most critical projections being in years 2009, 2010, 2011 and 2012.

Ron Gilius told the committee that since the last (TAB) meeting, the two regulation packages (Executive Summary of the Marcellus Shale Well Permit Fees and the Oil and Gas Well Permit

Fees-proposed amendments to 25 Pa. Code Chapter 78) were presented to the Environmental Quality Board (EQB). The board accepted the Marcellus Shale fee increase as final rulemaking, however must now go to the Standing Committees and the Independent Regulation Review Commission (IRRC).

The proposed rulemaking package was accepted as proposed rulemaking and will go through a public comment period. From there it will go to a final rulemaking and then through the different legislative committees for approval.

Ron and David continued to inform the committee that the fee chart was generated back in July and August of 2008. It was based on what the department was hearing from the industry as well as what they were seeing with official well development. The projections were based on what the department expected with traditional oil and gas wells and Marcellus wells. Since then a lot of things have changed, in particular the economy, the price of natural gas and the level of activity anticipated.

Also handed out to the attendees was a copy of a map of PA showing the wells permitted from January to December 2008. The map was broken down by county and showed the total wells permitted as well as the Marcellus Shale wells permitted.

Art Yingling added that what he is hearing is that the programs are down due to energy prices and leasing issues. Craig Lobins informed the committee that the NWRO received 39 applications this year so far which exceeds more than the amount received this time last year.

The TAB members recommended that John Harper of the Geologic Survey be invited to the next meeting to discuss future Marcellus development and also shale formations. Some the ideas considered were shale wells that use more than 1,000,000 gallons for fracing, such as the Lower Huron, Gatesburg, Hamilton, Utica, and Antes. Should these be viewed in the same context as wells to the Marcellus?

Other Items of Discussion: Stray Gas Cases and Allowable Pressures at the Casing Seat

Craig Lobins briefed the TAB members on the current gas stray gas case in Susquehanna County. This case is still under investigation. Also, the over pressure problems associated with open hole completions was discussed. Further discussions of these subjects will follow at subsequent meeting.

Agenda Item 7 - Comments from the Public

Comments from the public were addressed during the discussion of the various agenda items

The next scheduled TAB meeting will be March 26, in the Rachel Carson State Office Building in Harrisburg. He also mentioned the tentative scheduled dates of May 28 and September 17 for the balance of TAB meetings for year 2009.

Gary Slagel motioned the meeting be adjourned. Burt Waite seconded that motion. The meeting adjourned at 12:50 PM.