State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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# State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for January 27, 2009

**Board Members Present:** Chairman Arthur Becker, Anthony Tirro, Richard Dalton (morning only), Joseph Pepe, Sr., Fred Sickels, Karl Muessig (morning only), Carol Graff, Joe Yost, Gary Poppe

**Board Members Absent:** - none

**NJDEP Staff Present:** Steve Reya, Pat Bono, Michael Schumacher (afternoon only)

**Other State Personnel Present:** D.A.G. Helene Chudzik, Legal advisor to the Board (morning only)

**Member(s) of the Public:** Benjamin Primost, President, New Jersey Groundwater Association

1. **Call to Order** - The meeting was called to order by A. Becker at 9:35 am with a quorum present

2. **Review of Minutes from November 18, 2008 Meeting** - A motion to accept the minutes without changes was made by C. Graff, seconded by G. Poppe and unanimously approved.

3. **Review of Executive Session Minutes from November 18, 2008 Meeting** - A motion to accept the minutes without changes was made by G. Poppe, seconded by R. Dalton and unanimously approved.

4. **Formal motion to approve the exam scores from the December Pump Installer, Soil Borer, and Monitoring Well Driller Exams**- All of the scores for the December Pump Installer, Soil Borer, and Monitoring Well Driller Exams were previously certified by the Board via email, as the January Board meeting was held later in the month than usual. Exam score letters had already been sent to the applicants prior to the January meeting. Therefore, F. Sickels made a motion to formally approve the scores for all three exams. J. Yost seconded the motion, with all in favor.

5. **Individual requests for license reinstatement**- S.Reya explained how he had received a call from a New Jersey Licensed Journeyman Well Driller who had not renewed his license prior to December 31, which would have allowed him to pay the late fee and have his license reinstated. S. Reya stated that the individual had informed him that he planned to address the Board, as he felt that the 6-month grace period was unfair. S. Reya also said that he had informed the caller that the grace period was expressly stated in the regulations, therefore, he would have to pass the

Journeyman Well Driller Exam if he wished to possess the license. The caller had informed S. Reya that he planned to discuss the matter with the Board. As he did not attend the meeting, the Board proceeded without further discussion.

6. **Discussion of Study guide material for test applicants-** A. Becker discussed the fact that exam scores for all categories of well drillers and pump installers appeared to be lower than usual. At the November 2008 meeting, he proposed that both Board members and Bureau of Water Systems and Well Permitting (Bureau) staff prepare more helpful list of study guides that would point applicants towards the pertinent information they should be studying rather than referencing overwhelming quantities of material. S. Reya presented a revised study guide draft in which he had narrowed down the pertinent chapter's of Johnson's "Groundwater and Wells" and Site Remediation"s "Field Sampling Procedures Manual (2005)." A. Becker suggested that Board members review the draft prior to the next meeting and submit corrections and/or suggestions to S. Reya prior to the May meeting. R. Dalton noted that some of the ASTM specifications referenced in the study guides might contradict New Jersey's regulations. He also believed that while many of the specifications were consistent with the regulations, listing the ASTM material on the study guide may be redundant and confusing, as the applicable specifications are currently referenced in the regulations and/or Field Sampling Procedures Manual. Board members will contact S. Reya prior to the March meeting or bring revisions to the meeting in an attempt to have a final study guide complete before the June 9, 2009 exams.

7. **Discussion of DX Geothermal Well Systems -** P. Bono discussed the status of recent requests by several companies to have DX systems approved by the Bureau for installation in New Jersey. Both P. Bono and F. Sickels noted that the current regulations, N.J.AC. 7:9D, only allow for site specific deviation requests. Such deviations are necessary due to geologic conditions or physical limitations imposed by a particular drilling site. The technology involved in a DX system is entirely different from the closed loop geothermal wells that are currently approved in the regulations. H. Chudzik stated that approval of such systems would necessitate a rule change. She added that currently there isn't an available mechanism that would allow the Bureau to approve such systems. She also said that she did look into the possibility of other mechanisms such as pilot/experimental programs to allow for a limited number of systems to be permitted in order to evaluate them without setting a precedent that would open a floodgate of approvals for subsequent permit applications. However, she stressed that approval for long term use and/or for a large number of these systems to be installed would ultimately require a rule change. Several Board members noted that a pilot program would have to last over a decade to determine the integrity of copper in the New Jersey's groundwater, which would probably prove impractical. H Chudzik said that she had recently spoken with D.A.G. Jill Denyes, who had attended the previous Board meeting (November 18, 2008). The two had concluded that there is currently no mechanism that would allow the Bureau to approve such systems even if all of the technical issues were resolved. Presently, the well permitting regulations are not scheduled for rule revision until 2011. Outside parties may request the Department to amend their rules under the Administrative Procedures Act. However the burden of providing the technical data proving a need for a regulatory change would be on them.

F. Sickels stated that the Bureau did not have any immediate plans to revise the Rules due to staffing limitations. He also noted that the technical issues such as refrigerant, copper tubing, cathodic protection systems and the effect that low pH soils would have on such a system would have to be addressed before the Bureau would even be prepared to undertake revising the current rules. F. Sickels also stressed the fact that current permitting, well driller licensing and grouting requirements would not be on the table for discussion with regard to revising the rules. He also proposed sending letters to local inspectors notifying them of the fact that DX systems have never

been approved. H. Chudzik questioned whether the Board of Public Utilities had been approving and/or endorsing such illegal systems. A. Becker also questioned whether the Bureau could investigate systems that are believed to have been illegally installed within the state so they could also serve to yield data regarding the longevity of such systems.

A. Becker asked if the Bureau would be sending letters to "interested parties," many of whom had addressed the Board at their previous meeting, notifying them that such systems would not be approved at this time. F. Sickels stated that there is still a lack of information regarding the maintenance of the cathodic protection systems and how subsequent property owners would be kept aware of the upkeep requirements with systems that were installed by a previous owner. Additionally, excavation activities in the vicinity of these systems are a potential problem, as the systems would not be included in a One Call "markout." F. Sickels said that local administrative authorities would also have to be involved in reviewing the systems and noted that they also have staffing issues. The Bureau will send a letter to the "interested parties" stating that the systems cannot be approved under the current set of regulations and that the Bureau has not received enough data to warrant revising regulations at this time.

Mr. Benjamin Primost, President of the New Jersey Groundwater Association (NJGWA), asked whether the DEP was at the point where it was not yet agreed that DX technology is acceptable and secondly, if the rules would still have to be changed should the technology be deemed acceptable to the Department. F. Sickels and P. Bono stated that his assessment was essentially correct. F. Sickels also added that the Department had received quite a few letters from the industry cautioning the Department to proceed slowly when considering approving such systems, as well as cautioning relaxation of regulations at the expense of the state's groundwater. B. Primost stated that he also submitted a letter on behalf of the NJGWA that was similar to the other referenced letters. He added that he would be all for the technology, provided it is protective of the groundwater. He also expressed concern for installation in rock formations where contaminants could move through fractures to other wells. He also suggested that the Department consider the need to establish minimum setback distances for geothermal systems as they have for wells and septic systems.

F. Sickels said that reports of illegal installations of such systems concern him, however, obtaining accurate information on the location of the systems has been a problem. He again stressed the need to involve local administrative authorities in the process. B. Primost felt that such local involvement would be difficult, as there is currently no local approval process for such systems, as far as he was aware. F. Sickels suggested sending a letter to the NJ Department of Consumer Affairs (DCA) to inform construction code officials that DX geothermal systems had never been approved for installation within the state. The letter would also specify that permitting, licensing, construction and abandonment requirements for typical open or closed loop geothermal wells are regulated by the Bureau of Water Systems and Well Permitting. He hoped that awareness would lead to lack of approvals or even referrals of existing illegal systems. A. Becker requested that Board members also receive a copy of the letter via email.

A. Becker provided an update of a conversation he had with NJGWA's lobbyist, Paul Bent, on January 26, 2009. Mr. Bent had spoken with Senate Environmental Committee Staffer Kevin Duhon of the Senate Democratic Office earlier in the day. Mr. Duhon had apparently spoken with NJDEP Legislative liaison, Hohn Hazen. Mr. Hazen reportedly told Mr. Duhon that "the Department concerns on DX agree with (NJGWA's concerns). DEP is 'pushing back' on the DX system drilling and permit issues."

F. Sickels and R. Dalton discussed the requirements and/or recommendations of other states that have already addressed DX geothermal systems. A. Becker also added that he had attended several national conventions recently and had discussed the installation of DX systems with several drilling contractors and noted there appears to be some design and installation variability within the industry. J. Pepe noted that at the previous Board meeting, the "interested parties" repeatedly brought up the fact that requiring licensed individuals and that not having one entity in charge of the entire geothermal system would be cost prohibitive and would preclude property owners from installing such systems. The Board discussed how the Department could not consider the approval of the systems based on financial considerations.

8. **Licensing Topics -DEP changes to support for the Driller and Pump Installer licensing program (effective July 2009)-** F. Sickels informed the Board the NJDEP's Bureau of Exams and Licensing group is expected to stop the administrative support they provide to the Bureau of Water Systems and Well Permitting in the near future. F. Sickels explained that shifting priorities within the Department had led to a decision to allocate staff resources in that Bureau to other tasks. He said that a necessary measure would likely be to contract with a third party to administer and grade the exams. It would then be feasible to implement a continuing education program in the future by utilizing the services of the outside company. The Board discussed the ability to administer standardized tests, such as the ones given by the National Groundwater Association (NGWA). The fact that New Jersey has unique state regulations poses a problem with such a test. Board members discussed whether New Jersey could use the NGWA tests as the basis for driller and pump installer licensing, provided a section could be added to each test that would test the applicant for their knowledge of New Jersey regulations. F. Sickels said that the Bureau of Exams and Licensing could be dismantled prior to July, 1, 2009. J. Pepe explained how a third party handles the testing for his electrician's license. He said that the exam covers code questions in the first part and state-specific questions in the second part. P. Bono noted that she had spoken with the Florida Well Driller License representative who gave her information on Florida's program, which is currently administered by a third party and has apparently been successful.

   F. Sickels said that even if New Jersey ultimately decided to go the route of a third party test administrator, the department still needs to set up a Request For Proposal with selection criteria, hold a bid meeting and wait for bid submittals. He felt that by the time the vendor was selected and the program was up and running, it could be years down the road. Therefore, he was extremely concerned by the July 1 transition date. The Board then discussed NGWA's tests and whether they could be adapted for use in New Jersey.

   C. Graff explained that years ago, while working for the Department, she had looked into the tests and found that the exams were much easier than the ones used by New Jersey. She also felt that there was much to be gained in a New Jersey-specific section, rather than a broad exam that is identical from state to state. A. Becker brought up the fact that a third party would not be verifying the experience and qualifications of the applicant. He added that he believed that using a third party would greatly assist the Bureau and that it should be possible to have a state-specific regulatory section added to an existing exam, however, he was unaware of any state that currently handled their exams in that manner. R. Dalton also agreed that national guidelines are not NJDEP-specific and should not be the sole testing criteria.

   G. Poppe brought up enforcement of the current regulations. He expressed concerns that increasing the workload involved in the licensing program would lessen resources that could be utilized for enforcing the current regulations. G. Poppe stressed the fact that licensing requirements and construction regulations are useless without adequate enforcement.

A. Becker noted that a system that allows exam applicants to take the exam on the computer is easier, cheaper and more secure. J. Pepe further explained the electrician's license program, which is overseen by DCA. F. Sickels thought that if the company is already under contract with DCA, DEP might be able to use a similar contract or tie into theirs, as they are both state agencies. J. Pepe offered to forward a DCA contact so Bureau staff could look into the possibility. He added that their exams have a bank of exam questions, which are constantly rotated into the exams.

J. Yost provided information he had received from the International School of Well Drilling. He felt that the Bureau should look into the program for possible inclusion in a continuing education program in the future. F. Sickels said that any continuing education program would have to be a self-operating contract with little DEP oversight.

9. **Program Updates-** P. Bono updated the Board on the status of E-Permitting, which will hopefully be in operation sometime in March or April of this year. She explained how a problem with the online payment methods led to a delay instituting the program. She also said that the Bureau had not yet mailed out letters to drilling companies with delinquent well record submittals since the Bureau wanted to data manage all of the records currently "in house" to ensure that their database was accurate.

J. Yost brought up an issue about re-designating a well from "test" to "public supply." He questioned whether a driller/drilling company submitting a re-designation permit could be held responsible for construction violations of the original well if another firm drilled it. S. Reya explained that it would be the responsibility of the driller/drilling company that drilled the original well to construct the well in accordance with applicable regulations. Therefore, appropriate enforcement would be initiated with the original driller/company. He also added that a person/company re-designating a well could be responsible if they report false information on a re-designation permit to give the appearance that the well meets the required standards.
P. Bono discussed how E-permitting would deal with the lack of a property owner signature on permit applications. She said it would be imperative for drilling companies to have written contracts with the owner specifying the fact that the owner has given the authority to apply for necessary permits. Next she discussed plans to reduce the amount of staff resources that the Bureau currently uses performing well searches. She hopes well drillers, pump installers, environmental consultants and the general public will ultimately be able to perform some level of well search through the internet. Unfortunately, there are several security concerns such as releasing sensitive water supply data that must be worked out before the information is accessible through the internet.

10. **Discussion of DX Geothermal Well Systems (Correspondence) -**The Board discussed correspondence from the drilling community that had been submitted to the Board since the last meeting. Letters were received from the following:

- Benjamin Primost, President, NJGWA
- Gary Poppe, Vice President, Kaye Well Drilling, Inc.
- Gordon Craig, President, Geothermal Services
- Gary Brill, NJ Licensed Well Driller, Mill Pond Mechanical Sales
- Robert Seybold, President, HRS Drilling Co., Inc.
- Art Becker, Chairman, New Jersey Well Driller and Pump Installer Advisory Board

•Letter from Michelle Putnam, Director of NJDEP Water Supply element, in response to Art Becker's letter.

All of the letters urged the Department to proceed cautiously when considering approval of such technologies and not to relax the licensing and permitting requirements. A. Becker offered to write a response letter on the Board's behalf thanking the above individuals for their feedback.

11. **Discussion of DX Geothermal Well Systems (continued)** - Review and discussion of information submitted since November

F. Sickels referenced a December 12, 2008 email from Dr. Alan Stern, who is a toxicologist and Chief of the Risk Assessment Section of NJDEP's Division of Science, Research, and Technology. F. Sickels said that Dr. Stern essentially came to the conclusion that there is currently very little data available that speaks to ingestion of the proposed refrigerants. Dr. Stern also found that there are not enough chronic exposure studies available to determine if a release of the refrigerant in groundwater would have detrimental effects. The following is a paragraph from Dr. Stern's email with regard to the proposed refrigerants:

> All of these chemicals have boiling points considerably below ambient temperatures in New Jersey. They would, therefore, be expected to volatilize rapidly, and would not be expected to accumulate in the ground. However, each of these chemicals have a solubility in water in the tens to thousands of parts per million range:
>
> Thus, in a large in-ground release, it would be expected that groundwater immediately surrounding the release could become saturated and could, potentially present levels in the ppm (parts per million) range to local wells. Unlike slow leaks from underground storage containers a release of these refrigerants from an in-ground coil would occur over a very short period of time due to its gaseous nature and the fact that it is under pressure. Furthermore, these chemicals will, over time, tend to partition into air from the water. Therefore, it is less likely that drinking water exposure to contaminated groundwater from such a release would be chronic.

F. Sickels also discussed December 23 and December 29, 2008 emails he had received from Andrea Friedman, Office of Climate and Energy-NJDEP. Her email addressed the proposed refrigerants in the following manner:

> Steve Reya from your staff provided me with a list of refrigerants used in the direct exchange geothermal systems that have been proposed to NJDEP. According to Steve, the refrigerants are R-22 (Honeywell Genetron 22), R-407C (Honeywell Genetron 407C) and R-422B (Icor International NU22B).
>
> R407C and R422B are both greenhouse gases under the definition in the New Jersey Global Warming Response Act (GWRA), and are classified as highly warming gases in the Intergovernmental Panel on Climate Change Fourth Assessment Report. Highly warming gases, while released in much smaller quantities than CO2, have much higher global warming potentials than CO2, making control of these gases critical to any comprehensive climate control plan.

It also added that "According to Steve Anderson (Office of Climate and Energy), R-22 is an ozone depleting substance that is being phased out. It is not considered to be a greenhouse gas under the NJ Global Warming Response Act." Fred Sickels said that he believed the biggest risk

over the installation of such systems is the potential vertical conduits created when such systems are installed. He also didn't believe NJDEP should allow the use of R-22 if it is in the process of being phased out (under federal and international requirements, according to Steve Anderson).

A. Becker said that there is currently a regulation requiring HVAC contractors to extract refrigerant product when servicing a system that has leaked. He also believed that it would be possible to properly decommission the systems when they are no longer in service, despite the small diameter of the copper tubing. J. Yost expressed concern over the fact that the boreholes would be drilled on an angle. He stated that the likeliness of having voids in the grout column would be greatly increasing in an angled hole where the tubing is often resting on the borehole wall. G. Poppe agreed with his concern and added that the integrity of the borehole could be suspect when drilling angled boreholes. A. Tirro did not see a problem with the angle drilling, provided the property owners ensured that the entire borehole was confined to their horizontal property boundary equivalent below ground. He also said that he believed that if a borehole were drilled on an angle with mud, it would tend to be stable and stay open. If drilling in rock, however, he would case the portion of the hole that would extend through the overburden. F. Sickels added that some areas of the state might be more appropriate for the installation of the systems than others.

A. Becker and F. Sickels discussed the possibility of the Department sending letters to the DX contingency. F. Sickels stated that he would wait to hear back from D.A.G. Helene Chudzik regarding legal avenues that would permit the Department to approve such systems, provided all of the technical issues and Department's concerns were addressed. He also said that he would like to contact DCA prior to sending out a letter. A. Becker stated that he was concerned about illegal installations if the DX industry did not receive something in writing from the Department or the Board. J. Pepe thought that any letter should incorporate the threat of a fine to anyone caught installing an unapproved system.

Note: The discussion in Item 11 was interrupted by a fire alarm evacuation. The meeting resumed after a 20 minute break.

**12. Discussion of additional materials submitted for review by the Board**
Hardin Geotechnologies - Details for pipe used in closed loop geothermal system

The Board reviewed a January 16, 2009 email from Hugh Streep, Principal of NextGen Technology, which was in response to S. Reya's January 13, 2009 email requesting further pipe specifications, as per the Board's discussion at their November, 2008 meeting. The documentation and specification referenced in Mr. Streep's email had not yet been submitted, so there was no new material for the Board's review.

**Adjournment** - A motion to adjourn the meeting was unanimously approved at 3:56 pm.

State of New Jersey

Jon S. Corzine
*Governor*

Department of Environmental Protection

Mark Mauriello
*Acting Commissioner*

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STATE WELL DRILLERS AND PUMP INSTALLERS
EXAMINING AND ADVISORY BOARD

# State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for March 19, 2009

**Board Members Present:** Chairman Arthur Becker, Anthony Tirro, Richard Dalton, Joseph Pepe, Sr., Fred Sickels, Karl Muessig, Joe Yost, Gary Poppe.

**Board Members Absent:** - Carol Graff

**NJDEP Staff Present:** Steve Reya, Pat Bono, Tracy Omrod, Michael Schumacher (afternoon only), Brian Buttari (afternoon only), Julia Altieri (afternoon only),

**Other State Personnel Present:** D.A.G. Jill Denyes - Legal advisor to the Board

**Member(s) of the Public:** George Lindenmulder – Twin County Irrigation, LLC

**1. Call to Order -** The meeting was called to order by A. Becker at 9:35 am with a quorum present

**2. Review of Minutes from Jan. 27, 2009 Meeting -** A motion to accept the minutes without change was made by G. Poppe, seconded by T. Tirro and unanimously approved.

**3. Motion to approve the application for the April 9, 2009 Exams**

**Master Exam** – A motion to accept the Master Well Driller exam applicant list was made by G. Poppe, seconded by J. Yost and unanimously approved.

**Journeyman Exam –** A. Becker questioned why two men were not approved to sit for test. S. Reya responded, stating that one applicant, Matthew Lowry, was rejected for insufficient experience. S. Reya added that Mr. Lowry's application noted a specific project in which he had been actively involved with the drilling of several production and observation wells, however, the listed experience was confined solely to one project, not over a three year span, which is required by the regulations. According to S. Reya, the second applicant, Frank Goss, was rejected because one of the wells listed as experience

was a "change of use" permit. A Master Well Drill who had re-permitted the well completed the reference questionnaire for this well but was not actually the driller who originally drilled the well. A motion to approve the list of applicants was mad by J. Yost, seconded by R. Dalton and approved unanimously.

**Journeyman B** – The Board reviewed two applications from J. Olinger Drilling LLC employees, Keith Russel and Darrell Caton, Jr. Both applicants previously worked for Dunn & Dunn Inc. prior to their employment with J. Olinger Drilling LLC. John Olinger, from John Olinger drilling submitted a letter with each applicant noting that both applicants had the required three years of drilling experience, but could not obtain the required documentation from their previous employer due to "unanswered telephone calls and lost paperwork." Mr. Olinger also stated that he was a licensed well driller for many years while employed by Dunn & Dunn Inc. and could vouch for the fact that the applicants were drillers' helpers during that time period.

The letter that accompanied Mr.Russell's application noted that he had been drilling water wells for approximately 6 years. Mr. Russell began his employment with John Olinger in May of 2006. He worked for Dunn & Dunn Inc. from September 11, 2003 to April 2006. The reference questionnaire completed by Mr. Olinger noted that he had supervised the applicant from September, 2003 to February, 2009. Additionally, S.Reya noted that he located a copy of Mr. Russell's apprenticeship application (which is no longer required) in the Bureau's files. His apprentice program application was completed by Allen F. Dunn, of Dunn & Dunn Inc. His official enrollment date was September 1, 2004. Mr. Russell had also satisfied the criteria of submitting permits and records for wells he helped drill. Therefore, it appeared that Mr. Russell's experience met the standards required in the regulations. A motion to accept Mr. Russell's application was made by J. Yost. The motion was seconded by K. Muessig and approved unanimously.

The letter that accompanied Mr. Caton's application stated that he had been drilling water wells for approximately 3 ½ years. Mr. Caton began his employment with John Olinger in August 2008. Mr. Olinger had reportedly already left Dunn & Dunn, Inc. to start his own business prior to the period in which Mr. Caton had worked at Dunn & Dunn Inc. Additionally, three of the five wells listed on the reference questionnaire were drilled prior to August 2008, which was the date Mr. Olinger's supervision began, according to both the questionnaire and the "work experience" section of the application. Several Board members noted the fact that there was a lack of specific information with regard to the individual(s) contacted at Dunn & Dunn Inc. and the reason that documentation and signed/notarized reference questionnaires could not be obtained. The Board members discussed the fact that W-2 forms would also assist in verifying that the applicant had obtained the required experience. The application, as submitted will be rejected by the Bureau, as it is technically deficient with regard to the fact that the wells listed as experience were drilled prior to the supervised period. Board members suggested that the "rejection letter" should also provide the specifics the Board would like to review, should the applicant still be unable to obtain the required references prior to the next exam. Specifically, the names of former Dunn & Dunn Inc. employees who

supervised his work along with the problems encountered while contacting the references should be provided with the application. Documentation of employment history with Dunn & Dunn, such as W-2 income tax forms, would have to be furnished.

A motion to certify the applicant roster, with the two changes to the above applicants, was made by A. Tirro, seconded by G. Poppe and unanimously approved.

4. **Additional licensing issues-** P. Bono discussed a letter that was submitted by Harry Sussman, from EarthTech Energy Solutions. Mr. Sussman requested that the Board reconsider the application of one of his employees, Scott Costa. Mr. Costa's application was rejected by the Bureau of Exams and Licensing, as it did not contain a copy of his high school diploma or GED. Mr. Sussman stated that "in light of the fact that Mr. Costa meets all Board requirements and appropriately consulted with and followed the direction of the Board administrative staff regarding this one issue, we respectfully request that the Board allow Mr. Costa to sit for the April 9th licensing test." A. Becker stated that since the application was deficient at the time of the May first deadline, the Board and Department staff must reject the application.

5. **Pump Installer Exam question challenge** – George Lindenmulder, Twin County Irrigation, LLC, addressed the Board with regard to a March 9, 2009 letter he submitted in which he challenged the scoring of one question on his December 9, 2008 Pump Installer Exam. The question that he wanted the Board to review pertained to the installation of pump/well pits and pitless adapters. A motion to enter Executive Session was made by G. Poppe, seconded by A. Tirro and approved unanimously at 11:00 am.

6. **Executive Session** – 11:00 AM – 11:18 AM

7. **Pump Installer Exam question challenge** (continued) A. Becker thanked Mr. Lindenmulder for bringing the question to the attention of the Board members and stated that they recognized the confusion after reviewing his letter and supporting documentation. He also informed Mr. Lindenmulder that he would be awarded credit for his answer and would now receive a passing score on his Pump Installer Exam.

8. **Request for Technical Advice-** John Shevlin, Bureau of Safe Drinking Water, brought up proposed amendments to the New Jersey Safe Drinking Water Act (Act). The proposed amendments would require non-community water systems to demonstrate safe and reliable yield. Mr. Shevlin noted that Subchapter 13 of the act refers to safe and reliable yield must be demonstrated, however there are no standards that must be met. He indicated that there is merely guidance information. Mr. Shevlin indicated that he had recently been working with Karl Muessig's staff at the New Jersey Geological Survey to establish a safe yield pump test for such systems. Mr. Shevlin also stated that pump tests are currently performed on new wells only, however they are looking into the possibility of requiring tests to existing systems, as additions or modifications to the system are made. The proposed pump test would have a "pre-built" path for those systems currently

in operation and an "as-built" path for new systems. Mr. Shevlin stated that the proposed pump test would be performed for five consecutive days, but would not be "around the clock." He added that the theory of such a test was to prevent repeatedly opening up the well, which could lead to potential contamination and inadequate well cap seal problems. F. Sickels noted that since the day was to be conducted over five days, the individuals performing the tests would have to ensure that all water is discharged far enough away from the well that the recharge does not influence the pump test data. Mr. Shevlin said that the typical entities that would fall into the amended pump test requirements would be hotels, day care facilities, hospitals, large restaurants and retail establishments. J. Yost questioned whether holding tank capacity was also factored in when determining the safe yield. He also asked whether a step down pump test could be performed and later followed up with a long term test to determine the actual production of the well. K. Muessig indicated that the staff had attempted to keep the test simple, as the systems are not large public supply water systems pumping large quantities of water. Mr. Shevlin also noted that typically such tests are especially important in Northern New Jersey where there is generally much less water available. Mr. Shevlin asked the Board members whether they saw any physical problems that would arise within the pumping systems if such testing were required. All Board members agreed that as long as the well was not over pumped beyond capacity, there would not be any problems with the pumping equipment. They all felt that such a test would not stress the equipment beyond their design.

9. **Licensing Topics – Study Guide Material for Well Driller & Pump Installers-** S. Reya asked whether the Board members had any revisions or comments regarding the draft revisions to the study guide material for well drillers and pump installers. He added that he had not received any comments since the meeting. R. Dalton said that he believed the study guides for all exams should have a disclaimer stating that in the event of conflicting information within the recommended study material, the DEP regulations supercede all other references. He believed that some information in the ASTM standards, for example, is allowed in much of the country but prohibited by New Jersey regulations. The remainder of the Board members indicated that they would look at the draft study guide and submit comments and/or revisions to S. Reya to (or prior to) the May meeting.

**10. Program Updates –** P. Bono informed the Board that the Division of Compliance and Enforcement might soon be assuming the role of administering the testing for well drillers and pump installers. She had previously informed the Board that the Department planned to eliminate the Bureau of Exams and Licensing, which had previously handled this task, along with the administrative review and some data entry tasks associated with the applications. Additionally, she said that it is unclear how these changes would impact the program but said that it might actually limit the frequency of the exams (possibly even as few as one day per year), as the program would be administering the exams multiple programs within DEP. She added that she did not have any additional information and is currently awaiting further clarification. F. Sickels also said that they had explored options of contracting with a third party to administer the exams, however,

the duties would likely have to be transferred to the Division of Compliance and Enforcement rather than an outside agency. S. Reya said that the test dates and location have been reserved for the remainder of 2009, however, nothing beyond the December 2009 exams has been set up. F. Sickels said that he would follow up with management within the Division of Compliance and Enforcement.

P. Bono discussed a conversation she had recently had with the Florida licensing official. The official informed her of how their continuing education program was structured. P. Bono said that the NJ regulations call for a continuing education program to be in effect by 2011, however, the program has limited resources to institute such a program at the current time. The Florida official informed P. Bono that Florida contracted with a third party to administer their continuing education program. In their program, the driller/pump installer pays a tracking fee to the outside company based on the number of continuing education units (CEU) points taken, which are then certified, entered in a database and posted on a website. The licensing (state) representative is then able to view the website for approval of the CEU requirements. P. Bono thought a similar system would likely work for New Jersey and that it might be possible to handle most of the new licensing aspects "in house" while outsourcing the continuing education portion. A. Becker noted that Maryland has program similar to Florida's.

10. **Exam Revisions-**

S. Reya asked the Board for assistance to revise what he believed to be an incorrect question/answer on the Master Well Driller exam, in addition to revising the Pump Installer exam question from earlier in the day. A motion to enter Executive Session was made at 12:12 pm.

**11. Executive Session (Part 2)-** 12:12 PM - 12:27 PM

12. **Hardin Geothermal Pipe Update**

S. Reya informed the Board members that he had received material specification data for Hardin's BiSec 3.2 geothermal pipe. He said that the information was submitted in response to the following email request he sent:

> The Board members reviewed the material you submitted (which was attached to your October 7, 2008 email) and discussed the Hardin BiSec Geoexchange pipe at their November 18, 2008 meeting. The first attachment, HDPE properties, addresses the physical, mechanical, electrical, thermal, and optical properties of the material. It does not, however, indicate the Hydrostatic Design Basis (HDB) or pressure rating of the material, both of which were used by the Bureau when evaluating the use of the polyethylene pipe currently in use in New Jersey. The polyethylene pipe currently approved for use in New Jersey (through N.J.A.C. 7:9D-2.5(a)4) is required to be 160 psi with a 1600psi HDB at 73.4 degrees F (per ASTM D-2837). Based upon your submittal, there is no standard test (ASTM or other) that has been performed that can verify the pressure rating of the pipe. Additionally, the "MatWeb Material Property Data" sheet you supplied does not specify a specific material designation. The sheet is an overview of injection molded HDPE and doesn't apply to any particular rating

> of pipe. Therefore, the actual specifications of the proposed HDPE pipe are unclear. Even if the Board/Bureau were to ultimately approve such a request, we would need specific criteria by which we could refer to a particular specification of HDPE. Please provide additional information regarding the pipe pressure ratings, if available, at your earliest convenience.

The information provided by Mr. Streep, on behalf of Hardin Geotechnologies (Hardin), indicated that the material did appear to exceed the criteria established in N.J.A.C. 7:9D, according to S. Reya. R. Dalton, however, pointed out the fact that the submitted tables appeared to have been compiled by Hardin. He believed that the Board should require verification via an independent lab, just as the Board requires independent lab permeability testing when evaluating new grout mixtures. The consensus of the Board members was that independent verification of the data is required. S. Reya will contact Hardin representatives and have them provide the source of the data, which illustrates that the specified criteria was verified through the appropriate ASTM standard by an independent, certified lab.

Additionally, the Board discussed the grouting operation with regard to the non-standard grout method in which grout ports are utilized, rather that a tremie pipe being installed with the loop and then grouting the open annulus. S. Reya explained that Hardin had submitted a proposal to install such systems in which they would drill an oversize borehole (larger than they typically would with the Hardin Pipe). They would then grout the hole via the standard pressure grouting method with a tremie pipe. This method was proposed since they did not feel that the T-111 grout mix (cementitious thermally enhanced grout) could be pumped through the grout ports. Department representatives would also like to observe a test installation for one well in a consolidated formation and one well in an unconsolidated formation. A deviation request, including full details on the grouting procedure, borehole and casing dimensions, and the exact grout mixture that is being proposed, would have to be submitted with a drilling permit application. Finally, the deviation would have to acknowledge the fact that should the grout ports (in the case of the unconsolidated well) fail to adequately transmit grout into the annulus, the driller would overdrill the well and abandon the borehole. Alternatively, if they were able to pull the well, the borehole could be reamed out to a larger diameter and tremie grouted via the standard method of installing the tremie on the outside of the casing.

S. Reya and F. Sickels also discussed whether deviations would be required for both the consolidated and unconsolidated wells. S. Reya also suggested adding a separate well use to the database used by the Bureau of Water Systems and Well Permitting (Bureau). He felt that it would be helpful to be able to run a search in the system to determine where the systems were being installed and would allow the Bureau to better track any potential problems, since there are currently no known installations in the state. S. Reya stated that if deviations were not submitted, the closed loop geothermal permit

applications would appear the same as the typical polyethylene U-loop geothermal permits.

**13. Discussion of DX Geothermal Well Systems –** A. Becker states that he has done a significant amount of follow up to find additional information on these systems. He has heard there are problems with the copper and problems with the systems in general if they are not installed properly. He added, however, that there could be problems with any type of system if not installed correctly so he was not sure if such problems were actually a technology related issue. A. Becker added that due to the lack of data regarding potential harm to the state's groundwater resources, he doesn't think that DX is an appropriate technology for New Jersey at this time. He also questioned whether the Department would be sending a formal response to the DX community, making it clear that such systems are not currently approved. F. Sickels said that he would be talking to his chain of command and would ultimately like to issue such a letter. He also stated that the Michelle Putnam, Director of Water Supply, recently sent a letter to the Director of the Division of Codes and Standards within the Department of Community Affairs (DCA) essentially stating that the systems are illegal. Additionally, it reportedly requested assistance from DCA to have their code enforcers refer any potential violations to the Bureau.

**14. DEP Program Updates –** P. Bono provided an update regarding the Bureau's online permitting program, Epermitting. She stated that the program development (the portal and NJEMS) is moving along but it is not turned on as of yet. She believed that it would be in April for a pilot with a couple of companies and hoped that most companies would begin to use the program in May. M. Schumacher also explained how companies and licensed well drillers would sign up and access the program. P. Bono also said that staff has been working on the website to keep it up to date. She also informed the Board that new Webi reports could be run on the Department's website. Such reports could be run for well searches, lists of New Jersey licensed Well Drillers and Pump Installers and well drilling contractors (company list). A. Becker noted that he would like to receive communication on when Epermitting is up and running to inform members of the New Jersey Groundwater Association.

**15. Adjournment -** A motion to adjourn the meeting was made by A. Tirro, seconded by G. Poppe and unanimously approved at 2:45 PM.

State of New Jersey

Jon S. Corzine
*Governor*

Department of Environmental Protection

Mark Mauriello
*Acting Commissioner*

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STATE WELL DRILLERS AND PUMP INSTALLERS
EXAMINING AND ADVISORY BOARD

# State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for May 21, 2009

**Board Members Present:** Chairman: Arthur Becker, Vice Chairman: Anthony Tirro, Richard Dalton, Joseph Pepe, Sr., Carol Graff, Fred Sickels, Karl Muessig, Joe Yost, and Gary Poppe

**NJDEP Staff Present:** Steve Reya, Pat Bono, Tracy Omrod, Michael Schumacher, Brian Buttari, Julia Altier, and John Fields

**Other State Personnel Present:** D.A.G. Jill Denyes, Legal advisor to the Board

**Members of the Public:** Mark Sussman and Harry Sussman (Earthtech Energy Systems), Gus Schultes (A.C. Schultes), Dr. Lynn Stiles (Richard Stockton College), B. Ryland Wiggs (Earth to Air), Gary Nonemacher and Tom Fleck (United Drilling, Inc.) Two Representatives from GDS mechanical

1. **Call to Order -** The meeting was called to order by A. Becker at 9:45 AM with a quorum present.

2. **Review of Minutes from March 19, 2009 Meeting -** A motion to accept the minutes without change was made by A. Tirro, seconded by A. Becker and unanimously approved. A motion to accept the executive minutes without change was made by G. Poppe, seconded by R. Dalton and unanimously approved.

3. **Certification of the April 9, 2009 Master, Journeyman, and Journeyman B Exams**
   **Master Exam** – A motion to certify the exam scores was made by J.Yost, seconded by G. Poppe and unanimously approved.
   **Journeyman Exam** – A motion to certify the exam scores was made by K. Muessig, seconded by J. Yost and unanimously approved.
   **Journeyman B** – A motion to certify the exam scores was made by G. Poppe, seconded by R. Dalton and unanimously approved.

4. **Review of Test Applicants for the Pump Installer, Soil Boring, and Monitoring Well Exams on June 9, 2009**

   **Pump Installer** – A motion to certify the list of exam applicants was made by J. Peppe, seconded by G. Poppe and unanimously approved.

**Soil Borer** – A motion to certify the list of exam applicants was made by A. Tirro, seconded by R. Dalton and unanimously approved.

**Monitoring Well** –
S. Reya informed the Board that the exam applicant list did not include one applicant, Joel Meixsell, as his application had been rejected by the Bureau of Exams and Licensing for not including the correct application fee. Mr. Meixcell's application was submitted on an old application form which did not reflect the current changes and test fee. The request from the driller's employer, Vicky L. Alberalla, President of Advanced Drilling, Inc., alleged that NJDEP staff had sent her the incorrect form and therefore the Board should allow make an exception in this case. The well permitting staff were not aware of this situation since the administrative review of the test application is handled by another DEP program, The bureau of Exams and Licensing. Incomplete forms or forms without the proper payment are automatically returned to the applicant. By the time the form was returned with the correct amount, it was six weeks past the deadline of April 1st. Despite the fact that all application packages are made up "fresh" staff did check to see if any copies of the old application could be found to substantiate the mistake. Well permitting staff checked through Bureau supplies of the application packages to see if it was possible that an old application could have been mailed out by mistake, however, none could be found. (The older versions of the application were discarded two years ago.)

Several points were covered during discussion of this request with the board members. Although deficient, a payment was with the original application for the amount specified on the out-dated application form. A copy of the current application form is readily available on the Well Permitting website which spells out the correct fee required. The Department process does require a full fee amount in order for the application to be considered complete. The candidate was deemed to have the proper education and experience to sit for the exam. A. Becker noted that because the issue is the incorrect fee amount and not with the applicant's experience or ability, the Board may want to consider allowing the applicant to sit for the exam in this case. G. Poppe made a motion to recommend that the Department allow Mr. Meixsell, and only Mr. Meixsell, to sit for the exam by accepting his application based on the check amount made out for the former amount of the test. However, all Board members agreed that (future) applications without payments should be rejected. J. Yost seconded the motion. A. Tirro, J. Pepe, C. Graff, and K. Muessig were in favor of the motion. R. Dalton opposed the motion, stating that a current application containing the correct fee amount could have been downloaded from the Bureau's website at any time and submitted prior to the deadline. F. Sickels abstained from voting on the motion. A. Becker also abstained citing a potential conflict of interest based on his long-standing relationship with the requester. The motion passed. Therefore, Mr. Meixsell's name was added to the exam applicant roster with a status of "approved."

A. Motion to approve the Monitoring Well Driller exam applicant roster, now including Mr. Meixsell, was made by K. Muessig, seconded by C. Graff and unanimously approved.

As a side note, S. Reya explained that the Department will be disbanding the Bureau of Exams and Licensing formally on July 1st. The Bureau of Water Systems and Well Permitting will assume most of the duties previously performed by that Bureau for processing applications for all the well drilling and pump installer license examinations, including the administrative review process.

5. **Licensing Topics** –
Harry Sussman, Earthtech Energy Systems, addressed the Board to expand upon several issues he had detailed in a letter he submitted to the Board regarding the geothermal well drilling industry. H.

Sussman discussed his concerns regarding New Jersey's stringent licensing requirements, high exam failure rate and long wait time between exam cycles for the applicants who fail the exam. He felt that a system similar to that of the National Groundwater Association should be instituted for drillers in NJ. H. Sussman also supported the hiring of an outside company to physically administer the exams more frequently, thereby increasing the numbers of drillers at a faster rate. He suggested that the Board and the Bureau look for such alternatives in order to revise the current licensing program, which he believes is prohibiting eligible individuals from entering the industry.

6. **Guest Speaker: Dr. Lynn Stiles, Richard Stockton College** – Dr. Stiles discussed the geothermal system at Richard Stockton College as well as the general benefits and concerns of geothermal systems. He noted that he believes there are three problems with the installation of geothermal systems in New Jersey:
   - There is too much heat being put into the ground as systems are often not designed with balanced heating and cooling loads
   - There are not enough licensed drillers to perform the work
   - Utilizing one of the NJDEP approved anti-freeze solutions to prevent the circulating fluid from freezing in winter months affects the efficiency of the system.

   Dr. Stiles also discussed the fact that the system that was installed at Richard Stockton College had actually increased the ambient groundwater temperature by 14 degrees Fahrenheit. He also indicated that they had performed studies that showed that the temperature change could be documented by the fact that the thermal plume had moved 300' horizontally in five years. He added that the temperature change at that lateral distance was only a half a degree, but it was the maximum extent at which they had observed a change in ambient groundwater temperature as a direct result of their closed loop geothermal system.

   Dr. Stiles also discussed the duration of thermal response tests. He stated that thermal tests conducted on one loop should be performed for at least 48-50 hours to yield accurate results. He also indicated that thermal tests for the systems installed for public schools are often performed over and over, which add significant cost to the design and installation of such systems. He believes that the test results should be public record, as public funds often pay for such jobs. He indicated that the tests would not have to be performed repeatedly if a test had already been performed at a site with similar strata.

   Regarding DX geothermal systems, Dr. Stiles stated that he believed that the Department should require that the systems be grouted with one of the approved geothermal grouts. He added that the systems would be more efficient with the inclusion of such grouts so the installers would have an incentive to use them. Dr. Stiles also said that he would like to see documented proof that corrosion on the copper tubing would not be significant. He believed that sacrificial anodes could be installed to inhibit such corrosion, however, determining the appropriate amount and location of the anodes could be difficult to regulate. Specifically, he did not know whether the sacrificial elements should be installed every couple of feet on the loop or only at the top. He did believe that a system that would be both reliable for the homeowner and environmentally safe would be possible with proper cathodic design. He also added that good design would be important with such systems, however, it is no different than the importance of a sound design when dealing with water based closed loop systems or open loop standing column systems.

   A. Becker and Dr. Stiles discussed the potential problems with an underground release of refrigerant and the fact that very little documentation exists on what would happen should such a release occur. Dr. Stiles said that the grout utilized for the 3.5 acre, 1600 ton capacity, water based closed loop system at Stockton College was bentonite grout without the addition of any thermal enhancement

compound (silica sand). He added that he believed that the two grouts that would be appropriate for DX systems would be T-111 grout and thermally enhanced bentonite-based grouts

7. **DX Geothermal System Presentation, B. Ryland Wiggs, President of Earth To Air Systems (ETA)–**

B. Wiggs discussed the installation of his DX systems, which he hoped could ultimately be approved for use in New Jersey. The Earth to Air DX geothermal system uses T-111 grout to insulate the copper linesets. The refrigerant utilized in his systems is R-410A, however, the system would also work with R-407C. B. Wiggs indicated that neither refrigerant contained ozone-depleting chlorofluorocarbons (CFCs). He also stated that 410A requires higher system pressures in order to work, which necessitates additional compressor power than the earlier DX systems that use the older (R-22) refrigerants. B. Wiggs stated he is not aware of any leaks in one of his systems. He also informed the Board that his systems were unique in the fact that they had the option of coating the loops in a protective plastic coating. His company also requires the installation of grout around the coating, thereby creating a double layer of protection. A. Becker asked what the typical borehole dimensions would be for such an installation. B. Wiggs stated that the diameter is generally 4 to 5.5 inches. The diameter of the copper lines is 3/8" for the liquid line and ¾" for the vapor line. He indicated that the loop could be installed in boreholes up to 500 feet. B. Wiggs said that the polyethylene coating on the copper is a .1" thick on the "upper" part of the loop. He also stated that his company no longer uses any form of cathodic protection, rather they have elected to use the polyethlylene sleeves in areas with pH values that are too low or too high.

A. Becker asked B. Wiggs where his systems are typically installed. They are installed East of the Mississippi River and in Australia B. Wiggs said that. He also stated that they have installed close to 300 systems currently without any advertising, however, they have not sold very many systems in the U.S. A. Becker asked what percentage of those systems contained the polyethylene protective sleeve. B. Wiggs stated that only one system had been installed with the sleeve. He also added that copper failure would generally be due to the copper rubbing vertically within the borehole. Therefore, he suggested that New Jersey DEP require that all DX systems include T-111 grout and a polyethylene sleeve around the copper. B. Wiggs said that another benefit to his system is the fact that they drill deeper boreholes than typical DX system. He stated that this allows them to install systems while utilizing very little surface area at ground surface. He indicated that one 500' deep loop would have a capacity of five tons.

B. Wiggs then explained the fact that the U-bend of the copper loop is inserted in a protective plastic container, which is filled with T-111 grout prior to insertion into the borehole. He said that the only joint is in the bottom bend and it is encapsulated within the protective shell. The balance of the copper on each side of the loop is completely seamless according to B. Wiggs. A. Becker asked if it would also be possible to run the copper line seamlessly into the building that is being serviced. B. Wiggs stated that it would be possible to do so simply by ensuring that the copper reel is long enough to reach the building. R. Dalton asked what grade of copper is used in the ETA systems, to which B. Wiggs responded that it was L grade copper in accordance with ASTM specifications. He said that the copper is refrigeration grade and has thicker/heavier walls than standard copper tubing. A. Becker requested installation photos of the ETA systems and B. Wiggs said that he would be glad to submit photos to the Board and/or Bureau.

G. Poppe and S. Reya both asked for clarification on how the polyethylene sleeve would be installed on the U-bend, as two different diameters of copper tubing are used on each side of the bend. B. Wiggs indicated that the bend could be covered with polyethylene, which would be shrink wrapped around the U-bend.

8. **Review of Journeyman Exam Applicant Qualifications for Matthew Lowry, A.C. Schultes, Inc.-** S. Reya discussed an application he had rejected for the April 9, 2009 Journeyman Well Driller Exam. He indicated that he had rejected Matthew Lowry application because his work experience, as described on his application, did not meet the minimum requirements specified in the regulations. S. Reya stated that in his March 16, 2009 letter to Mr. Lowry, he cited the reason for the application rejection as the following:

> Section B - Work Experience
> Your duties and responsibilities, as listed in this section of your application, were "worked as helper at Howell site, drilling test wells, observation wells and running aquifer test." The five wells you listed on the two reference questionnaires were all drilled between August 15, 2008 and October 10, 2008. Additionally, the wells were all drilled for the same owner and were located on the same block, lot and street address. Your documentation confirms your drilling experience with regard to the "Howell" site, however, there is no information regarding your work experience for the remainder of the time your employer, A.C. Schultes, Inc., has employed you. Therefore, the Bureau of Water Systems and Well Permitting is unable to confirm that you have three years of well drilling experience, as is required by N.J.A.C. 7:9D-1.8(b)i.

Mr. Lowry responded in his letter, dated April 6, 2009, in which he provided further clarification of his experience which dated back almost five years. Mr. Lowry identified approximately twelve duties he performs on a daily basis. Some of the duties identified were: acting as a participant, observer and supervisor during the drilling a borehole, setting, gravel packing and grouting wells, performing geophysical logging and sieve analyses. Additionally, Mr. Lowry cited the definition of a Journeyman Well Driller in the regulations and added, "many of the items that I listed above for the work that I perform are not in the field. I have not stood at the controls of a drill rig every single day for three years. There is not one Journeyman applicant who can say they were at the controls of a drill rig every day for the last three years. One can argue that my experience with A.C. Schultes performing all of the above items, different percentages every day, every year, is better than an apprentice who is on the job site every day with a shovel in his hand." Mr. Lowry, therefore requested reconsideration of his application for the following (October 2009) exam. August Schultes, IV stated that he agreed with Mr. Lowry's assertion that he is qualified to sit for the Journeyman exam. A. Tirro asked whether Mr. Lowry had actually worked in the field performing the duties he described in his letter. Mr. Schultes said the he had performed all of the listed duties, including working onsite, however, he is does not work in the field every day. A. Becker, J. Yost and G. Poppe all stated that based on the information detailed in Mr. Lowry's letter, he appears to be a qualified applicant. They all agreed that the information specified in his original application did appear to be deficient with regard to the three year well drilling experience requirement. F. Sickels stated that the applicant was clearly qualified take the exam. He made a motion to allow Mr. Lowry to sit for the next Journeyman exam based on the revised information that he submitted to the Bureau. The motion was seconded by J. Yost and approved unanimously.

A. Schultes asked about the status of adopting revisions to the current regulations; he had submitted written comments to the Department when the regulations were amended in 2007. At that time, however, he was told that "technical changes" could not be made until a later date. P. Bono stated that the current regulations do not expire until 2012 and that staff would be working on revisions in about 18 months before that.

9. **Licensing Topics –**
**Elevator Shaft drilling-** S. Reya discussed how Tom Fleck, Field Superintendent of United Drilling, Inc., had recently contacted the Bureau with concerns regarding the construction, licensing and

permitting requirements for elevator shafts. He also said that the "well" definition specified in section, 1.5, of NJAC 7:9D categorizes an elevator shaft of a well, therefore, it is subject to the permitting, licensing and construction requirements of the regulation. Elevator shafts are categorized as category 4 wells in NJAC 7:9D-2.1 and are subject to the construction requirements of such wells. S. Reya noted hat a search of the Bureau's database has yielded less than ten elevator shaft permits in the last ten years indicating a clear lack of compliance and enforcement of such requirements. It was noted that drilling elevator shafts is such a specialty that these individuals would never be doing any other type of drilling; whereas the Journeyman license enables the driller to install many different types of wells. T. Fleck raised the conflict that experienced elevator shaft drillers would never qualify to take for the Journeyman or Journey B exam; especially in view of the requirement that they work under the supervision of a New Jersey Licensed well driller. T. Fleck mentioned that the experience requirements detailed in the regulations make it nearly impossible for companies performing these services to acquire the proper licenses. He also noted that without the license, a company would be prohibited from applying for drilling permits for elevator shaft.

T. Fleck and Gary Nonemacher, President of United Drilling, brought up the fact that in the Subsurface and Percolating Waters Act (specifically, 58:4A-16), it states that "the department may license without examination, upon payment of the required license fee, applicants who are duly licensed under the laws of any other state having requirements deemed by the department to be at least equivalent to those of this state." They questioned whether they could be issued a license based on the fact that they had been previously licensed in Minnesota and in two counties in Florida. Both men stated that Minnesota was the only state they were aware of that had a state license and written exam solely geared toward elevator shaft installation. They asked whether a New Jersey License could be issued based upon reciprocity since they had demonstrated that they met the requirements of Minnesota's program. S. Reya also brought up whether or not it would be possible to create a certification for elevator shaft drillers, since they do not actually drill the remainder of the well types afforded a Journeyman/Journeyman B driller. He noted that he had once been informed that certification types had been done in the past, as regulation changes were not required if the category was a certification not truly a license. J. Denyes stated that she would look into the regulations to determine if this was possible, however, she did not believe a new category could be created if it wasn't referenced in the regulations. The United Drilling representatives also stated that they would sign some type of agreement/affidavit in which they would agree to only drill elevator shafts if issued a Journeyman Class B license. J. Denyes said that she would have to look further into the applicable laws and regulations to see if the certification, conditional license or licensing without exam due to an equivalent out of state license would be possible. P. Bono and S. Reya will also work with J. Denyes to see if there is any conflicting information between the well construction regulations and Department of Community Affairs regulations, which regulate elevator construction.

**Changes to Licensing Program-** P. Bono discussed potential changes to the licensing program. She asked the Board for feedback on whether the Bureau should consider an approved exam applicant to be approved for a one-year period. By instituting such a system, she believed that the Bureau would no longer have to reject applicants who are now being rejected due to application deficiencies despite the fact they may have already taken the exam multiple times. P. Bono said that the Bureau was considering instituting this system to reduce the number of applicants who are rejected for deficient applicants and it would also reduce the amount of staff resources spent on processing the applications if they were approved for a full year. These additional staff resources could potentially be used to administer all well drilling exam categories on all four testing dates throughout the year. She also stated, however, that the regulations allow an unsuccessful applicant to review their exam within 30 days of receipt of their scores. She felt that this poses a problem, as applicants would then be reviewing weeks prior to re-taking the exam. J. Pepe and C. Graff both stated that they did not believe applicants should be afforded the opportunity to review their exams. Since the regulation

allows it, however, The Board agreed to let the test applicants take the test with same application. The applicant would be required to submit a full application again after a one-year period. The Board members also suggested that if an applicant chooses to review the exam, he or she should be required to sit for the exam cycle that is six months after the original exam. This would prohibit applicants from reviewing their exam and sitting for exams on back to back cycles. P. Bono also said the Bureau will ultimately be looking for a long term solution in which the administration of the exams is handled via an outside part (as has been discussed at previous Board meetings).

10. **DEP Program Updates** – P. Bono said that there are some new well search tools on the Bureau's website. The well search allows users to view basic information about wells that have been installed on a particular property. It does not allow the user to print well permits, records or decommissioning reports. She also said that all approved Board minutes will be posted on the website shortly. P. Bono also noted that the Bureau's electronic permitting program, EPermitting, has been turned on and has been utilized successfully by several well drilling companies as well as the New Jersey Geologic Survey. She also said that the Bureau will soon be sending out another newsletter, which will contain EPermitting updates. Additionally, she noted that Michael Schumacher from the Bureau had recently attended the New Jersey Groundwater Association (NJGWA) meeting to train members on how to use the program. A. Becker brought up proposed study material revisions, which have been in the works for several months. He stated that he may want to work with NJGWA to look into putting out a more comprehensive guide and practice test, not simply a study guide that references other texts. He also expressed concern regarding the cost of some of the referenced study guides, such as Johnson's Groundwater & Wells. Some Board members, however, felt that any applicant who wished to work in the industry should invest in such materials regardless of whether they need it for the exam or not. A. Becker asked S. Reya whether there were any updates on the Hardin Bi-Sec geothermal pipe. S.Reya stated that he had not received any additional information from Hardin since the issue was last discussed with the Board. A. Becker also asked F. Sickels whether he had drafted a response letter to the DX community that had proposed installing systems in New Jersey. F. Sickels stated that he has written many letters stating the Bureau's position on DX systems. He and P. Bono also discussed mechanisms for approving DX systems, provided the technology was deemed environmentally safe. J. Denyes noted that she believed the approval of such systems would not be possible without a regulation change. F. Sickels added that they had explored waivers and pilot programs, however, neither approach was appropriate, and he too believed a change to the regulation would be required.

11. **Adjournment** - A motion to adjourn the meeting was made by G. Poppe, seconded by C. Graff and unanimously approved at 3:52 PM.

State of New Jersey

Jon S. Corzine
*Governor*

Department of Environmental Protection

Mark Mauriello
*Acting Commissioner*

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STATE WELL DRILLERS AND PUMP INSTALLERS
EXAMINING AND ADVISORY BOARD

# State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for July 16, 2009

**Board Members Present:** Anthony Tirro, Richard Dalton, Fred Sickels, Karl Muessig, Joe Yost, Gary Poppe

**Board Members Absent:** Art Becker, Joe Pepe Sr.

**NJDEP Staff Present:** Steve Reya, Pat Bono, Tracy Omrod, Michael Schumacher (am only), John Fields

**Other State Personnel Present:** D.A.G. Jill Denyes - Legal advisor to the Board

**Member(s) of the Public:** Keith Barrack- Florio, Perrucci, Steinhardt & Fader

1. **Call to Order** - The meeting was called to order by A. Tirro at 9:40 am with a quorum present

2. **Review of Minutes from May 21, 2009 Meeting** - A motion to accept the minutes without change was made by G. Poppe, seconded by C. Graff and unanimously approved.

3. **Certification of the June 9, 2009 Pump Installer, Soil Borer and Monitoring Exams**

   **Pump Installer** – A motion to accept the scores was made by F. Sickels seconded by G. Poppe and unanimously approved.
   **Soil Borer** – A motion to accept the scores was made by F. Sickels seconded by C. and unanimously approved.
   **Monitoring** – A motion to accept the scores was made by J. Yost seconded by F. Sickels and unanimously approved.

4. **Minimum Passing Score for Well Driller/Pump Installer Exams**

F. Sickels asked the other Board members about the rationale for the requirement that exam applicants obtain 80% on all portions of an exam to receive a passing score. He questioned whether lowering the passing score to 70% or 75% would be appropriate. F. Sickels noted that he was concerned with the fact that so few applicants pass the well driller and pump installer exams. C. Graff stated that she believed the

passing score was 70% many years ago, however, the standard was raised to 80% at some point. F. Sickels stated that he believed the issue of lowering the standard warranted further discussion. J. Yost noted that he had recently reviewed the exams and felt that they were not very difficult. K. Muessig expressed concern with the potential transitional phase where applicants have been held to the 80% standard until now. He felt that lowering the standard would cause recently licensed individuals and those who had recently failed their exams to feel as though they were held to a higher standard than more recent applicants. S. Reya noted that two out-of-state applicants who had recently taken the monitoring well driller exam had informed him that they felt the exam was difficult, yet fair. S. Reya also stated that the applicants told him that the technical portion of the exam contained everything a driller in that field should know and would be expected to be tested on, while the regulatory portion was contained within the study material sent out to them by the Bureau. Therefore, S. Reya questioned whether the high failure rate could at least partially be attributed to a lack of experience and/or effort on the part of the applicant. A. Tirro stated that the licenses would not be "given away" should the passing grade be lowered, the standard would simply be lowered a little bit. J. Yost said that he believed that lowering the scores would ultimately license a lot of individuals who aren't qualified to perform the work they would be licensed to perform.

R. Dalton suggested the possibility of requiring that an applicant obtain an average score of 80% provided the regulatory portion of the exam is the higher of the two. S. Reya pointed out the fact that the Department's computer program, NJEMS, is currently designed to issue a license invoice or a "fail letter" when the scores are inputted into the system. He stated that there is currently no mechanism by which NJEMS could average the two scores. He expressed concern with altering the data in order to make the system work. J. Yost again stated that the passing score should not be lowered, as he does not think that applicants prepare for exams the way they should. He believed that this is often the case because applicants are frequently asked to take an exam by their employer, therefore, the applicant isn't motivated to study for the exam. F. Sickels again expressed concern with the extremely high failure rate of the exams and added that something had to be done to increase the passing rate. A discussion ensued regarding different strategies to lower the minimum passing score. P. Bono noted that a small percentage of applicants who fail the exams actually make an appointment to come in to the review their exams. She felt that this opportunity, which is allowed by the regulations, is not being utilized by many applicants meaning they are not doing all that they can to ensure improving their scores from one test cycle to the next. F. Sickels again added that he wants to do something to see what percentage of applicants would pass if the minimum score is lowered or an averaging of the multiple sections is allowed. The minimum score on each portion is stipulated in the regulations, however, meaning that it is unclear what could be changed in the immediate future.

**5. Licensing of Closed Loop Ge thermal Well Drillers**

F. Sickels described a meeting where he had recently met with former Governor Florio, the energy director from the current governor's office (Mr. Esser?) and Harry Sussman (who had addressed the Board at the May 21, 2009) regarding the need for more drillers in the ge thermal well drilling industry. F. Sickels noted their concerns regarding the difficulty that ge thermal drillers experience when trying to apply for a NJ drilling license; specifically, the experience qualifications. F Sickels further explained that he believed Mr. Sussman's concerns to be valid and hoped that the Board and the Bureau could assist in resolving the issue of what can be done to license additional ge thermal drillers who are qualified (specifically those who drill closed loop ge thermal wells). The problem, F. Sickels noted, is that the regulations categorize closed loop ge thermal wells as category 4 wells and only a Journeyman B or higher licensed driller can install these wells. In order to apply to sit for these license exams, the applicant must demonstrate that he/she worked under the supervision of a Journeyman B, Journeyman or Master well drillers and have assisted in drilling category 1 and 2 wells. These three license classes are essentially water well licenses. Therefore, ge thermal well drillers must have experience drilling water

wells in order to apply for the exams; this would exclude those who drill only closed loop ge thermal wells. F. Sickels also said that he had recently spoken by phone with the Board's former legal advisor, DAG Helene Chudzik, regarding the predicament of closed loop ge thermal well drillers and the "catch 22" where applicants cannot qualify for a license that is required for their line of work even after working in the industry for the required timeframe. He also added that P. Bono and S. Reya had found a citation in the regulations (N.J.A.C. 7:9D-1.7(a)), which appeared to give the Board the authority to recommend additional license categories for establishment by the Department. H. Chudzik reportedly informed F. Sickels that she did not believe new license categories could be created without changing the current regulations. DAG J. Denyes agreed, stating that a new category (closed loop ge thermal well driller) could not be created without a formal rule writing and public comment process. A. Tirro indicated that at the time the regulations were originally written (prior to being adopted in 2001) the Board, under H. Chudzik's guidance, specifically included that section so that new categories could be added without waiting several years for a regulation change. K. Muessig suggested attempting a limited rule revision to incorporate the change and attempt to have it expedited since energy efficiency is a high priority within the governor's office. F. Sickels said that he believed that the rule cannot be opened for limited revisions but that the entire set of regulations would then be subject to comment. Since the regulations need numerous revisions, he was concerned that the amount of time and effort needed to address other technical and administrative provisions would overshadow the department's ability to deal with this specific licensing issue. Finally, he noted that the last time the regulations were changed, the Bureau agreed to perform a comprehensive revision at the time of the next re-write and he did not want attempt this prematurely.

F. Sickels said that he had also explored a second option in a phone call with Chairman A. Becker regarding the concerns of several staff members in which the standards for a Journeyman license would ultimately be lowered. This could potentially allow individuals who had traditionally performed drilling of specialized well types to become licensed to drill many types of wells, including potable wells, and they would also essentially become pump installers without any experience or demonstrated knowledge of pump equipment. F. Sickels brought up the fact that there isn't a way to create a sub-class of the jouneyman or journeyman B license that would limit the licensee to performing limited well types, such as closed loop ge thermal wells. G. Poppe said that these drillers would still be drilling through confining units and would still be required to grout the boreholes and would need to take into account the same environmental impacts as those who drill potable wells. His concern is that although the proposed action would enable more ge thermal well drillers to sit for the exams, their licenses would then enable them to drill many types of wells, including potable, in response to shifts in market demands. DAG Jill Denyes confirmed that once issued, the Department would not be able to restrict the types of wells drilled. He felt that issuing an unrestricted journeyman/journeyman B license could adversely affect the industry as the newly licensed individuals begin branching out in the industry, performing or overseeing work that they never experienced prior to obtaining a license.

F. Sickels indicated that the governor's office is concerned about the number of pe ple available to perform the amount of work within the industry. He stated that he believes that the long-term solution is to create a new category of license for such drillers. P. Bono asked whether it would be possible to create an interim license, prior to the next rule change that is restricted to only this category of wells in accordance with the provision in the regulation discussed earlier. DAG J. Denyes stated that this would not be possible without a rule change. F. Sickels questioned whether such applicants could pass the journeyman exam even if we accept their experience and allow them to sit. P. Bono said that she was concerned that if the Department issues them a Journeyman license the person could then go out and drill nearly any type of well within the state. F. Sickels again said that the "catch 22" is unfair and the Department could be challenged on that issue. C. Graff suggested that the applications should be reviewed and interpreted to allow for approval of test candidates with three years of drilling experience, regardless of the type(s) of wells drilled. S. Reya stated that the exams would contain pump

installation/repair and well development questions, which would be both difficult and foreign to drillers who have never had any experience performing such tasks. He also noted that if the applicants studied from a reference manual and did pass the test, the applicant would then be licensed to construct or repair wells and pumping systems without ever having actually working on pumping equipment in the field (no experience) under the supervision of a licensed pump installer. G. Poppe posed the possibility of allowing geothermal drillers to take the National Groundwater Association's geothermal certification and having New Jersey accept that in lieu of sitting for the pump installer section of the exam.

Keith Barrack, from Florio, Perrucci, Steinhardt & Fader, addressed the Board stating that his clients, Harry and Mark Sussman, intend to hire licensed well drillers to construct closed loop geothermal wells that range from 4,000 to 5,000 ft in depth. (Note: DEP staff believe that the reported depths are in error. 400-500 feet would more likely be the maximum.) Mr. Barrack stated that the Sussmans have been having a difficult time finding qualified individuals to perform the work. He also indicated that his office would be willing to assist the Bureau, Board or the Board's legal council to attempt to expedite a rule change to create an appropriate license category, as he felt that the Governor's office would support this legislation.

S. Reya noted that the definition of a "journeyman well driller" in the regulations (N.J.A.C. 7:9D-1.5) in which it states that a licensed jouneyman would be required to have "at least three years of experience under the supervision of a New Jersey licensed master or journeyman well driller in the trade, business, or calling of well drilling, with concentration in the practical construction of wells, and the installation and repair of well pumping equipment and appurtenances thereto..." He questioned whether the Bureau could legally license geothermal drillers as journeyman drillers, even if they passed the exam, since they would not have any experience with installation and repair of well pumping equipment and/or associated appurtenances. He also noted that the individuals would essentially become licensed pump installers regardless of whether or not they had ever installed a water supply well that would include pumping equipment. DAG J. Denyes stated the experience criteria listed in section 1.8 of the regulation, in which it specifies three years of well drilling experience under the supervision of a master or journeyman well driller would take precedent, therefore, the pump installation experience stipulations in the journeyman definition would not be required.

A discussion about out-of-state applicants ensued. The Board members agreed that the current criteria for NGWA certifications would remain the same. Out-of-state geothermal drillers, therefore, would not be required to pass the NGWA geothermal category but they would be required to pass all other sections that would be required of a typical journeyman applicant. M. Schumacher pointed out the fact that by changing the minimum experience to allow for the drilling of any type of wells for a three year period, individuals who had only ever drilled soil borings would be licensed to construct and grout wells. A. Tirro stated that he believed that closed loop geothermal drillers should be allowed to sit for the journeyman exam. J. Yost, G. Poppe, C. Graff and K. Muessig agreed. Several Board members indicated that the application should not require "water well" drilling experience.

**G. Poppe made a motion to allow individuals with three years of well drilling experience to sit for the journeyman exam. A. Tirro seconded the motion and all were in favor.**

S. Reya asked how the applications could be revised to reflect this change in policy. He questioned whether the journeyman application would require permitted wells, whether borings (permitted or un-permitted) would be acceptable, or whether the Board wanted to require minimum depths of the wells/borings or if any other construction criteria, such as grouted wells/borings, would be required. Also, he questioned whether the applications for all other license categories would be revised. He did not feel as though the journeyman application could be revised to become the easiest license to qualify for without altering the application standards of the "lesser" license categories. He thought that since the

journeyman license is the highest category of license one can obtain without already holding a license (upgrading from a journeyman to a master), it could not have an application process that is easier than that of a monitoring well driller or soil borer. F. Sickels indicated that the Bureau would work on the application revisions independently, at a later date.

**6. Changes to the License Testing Program**

P. Bono discussed changes in the licensing program, which will be publicized in the Bureau's upcoming newsletter. She said that exams for all license classes would be offered at each of the four test dates offered annually. This change would be effective beginning on the December 10, 2009 exam, according to P. Bono. Additionally, she said that once application is approved, it would now be considered valid for one year. All applicants who failed the exam would simply be required to submit a streamlined application containing their current address and the exam fee, which would remain unchanged. P. Bono also informed the Board that applicants would have to wait a minimum of 30 days to take a test should the applicant review a failed test. This would mean that applicants would generally not be able to review a failed exam if attempting to sit for consecutive exam cycles. F. Sickels indicated that the Bureau staff would continue to investigate contracting a third party vendor to assist in administering the licensing program. He suggested a possible scenario in which the NGWA test is utilized as the basis for the exams, however, a New Jersey regulation section must also be taken.

**7. Proposed Revisions to Current Well Driller & Pump Installer Exam Study Guides**

S. Reya discussed the status of the study guide revisions that the Board had recently reviewed. He said that A. Becker had expressed concern with the high price of the Johnson "Groundwater & Wells" text and felt that NGWA may offer a comprehensive study guide at a more reasonable price. He also thought that if applicants had a smaller, more concise reference, test scores might improve. C. Graff noted that the Bureau could still recommend the Johnson text but state that it is recommended but not mandatory. P. Bono states that once the study guide draft is finalized, the format will be cleaned up. Much of the information that S. Reya compiled in the revision may now need to be changed, however, if the Board chooses to change from the Johnson manual to a NGWA study guide. R. Dalton brought a copy of NGWA's "Manual of Water Well Construction Practices" to the meeting for review. A. Tirro volunteered to work with S. Reya prior to the next Board meeting and review the NGWA book to determine it's suitability a study guide reference.

**8. Elevator Shaft Driller Update**

S. Reya said that he had recently contacted the Department of Community Affairs (DCA) to determine what aspects of elevator shaft installation their program covered. He said that in speaking with a representative from their Elevator Safety Unit, he was informed that all elevator installations or modifications are permitted. DCA regulates the piston for the hydraulic cylinder, liners and cathodic protection systems that ensure that the piston does not corrode and release fluid into the shaft. S. Reya stated that DCA does not regulate how the actual shaft is installed into the ground and does not have any construction nor licensing requirements that would conflict with the well drilling regulations. The Board discussed potential avenues through which they could license the representatives from United Drilling who had addressed the Board at the last meeting. Both men held licenses in Minnesota and in two counties in Florida. New Jersey, however, does not currently have an elevator shaft driller license and the "lowest" allowable license that would enable elevator shaft drilling is a journeyman B. It did not appear that the Board could consider out of state experience as equivalent to a license in New Jersey and thereby license the individuals without examination. The Board members noted that the individuals from United Drilling could utilize the out-of-state experience route to qualify to sit for the journeyman or journeyman B exam since they appeared to have extensive out-of-state experience. This would mean that the

individuals would have to acquire NGWA certifications in the appropriate categories prior to sitting for the New Jersey exams. They would also be tested on well pumping equipment, well development and questions regarding potable/non-potable water supply wells on the New Jersey exam, as the journeyman/journeyman B license would allow them to drill multiple categories of wells. F. Sickels stated that the rules are the rules and the Bureau and Board cannot allow such applicants to sit for the exam if they have only obtained in-state experience, which likely was not obtained under the supervision of New Jersey licensed well drillers. J. Yost suggested contacting the elevator union to determine ways that their industry could come into compliance with the drilling regulations. R. Dalton, K. Muessig and F. Sickels also discussed working with DCA to resolve the issue.

F. Sickels noted that he believed that the long term solution to the elevator shaft drillers would be to add a new license class to the drilling regulations. Currently, however, such applicants have two choices: hire a New Jersey Licensed drillers to be onsite and work under their supervision or obtain a license through the out-of-state application process.

**9. Discussion of additional materials submitted for review by the Board (Earth to Air DX System)**

F. Sickels stated that there might be a way that the Department could approve the copper tubing that has been proposed for DX system installations, provided it is completely encased in a plastic coating. He also stated, however, that the regulations are very specific regarding the water-based circulated fluids that are approved for use in closed loop systems. The Department cannot approve the refrigerants that have been proposed for use in DX systems unless the regulations are revised to reflect such technology. A rule change would be required because there is no vehicle that would allow the use of the refrigerants. F. Sickels felt that such a rule change could potentially be several years away. P. Bono said that she intends to make sure we have the correct information from Earth to Air so the relevant information is available for review and incorporation into the next set of regulations. She also stated that the DX community is awaiting answers regarding the fate of DX installations in the New Jersey. F. Sickels stated that he believes that systems that use copper tubing encapsulated in plastic tubing would be less of a risk to groundwater contamination than systems that use cathodic protection systems, which require maintenance. He also expressed concerns with the extreme temperatures to which DX systems subject the grout material and questioned whether a competent grout seal could be expected in such systems.

10. **DEP Program Updates**

P. Bono informed the Board that since turning on the E-permitting service, the Bureau has received 305 well permit applications, 12 well records and 0 abandonment reports. G. Poppe stated that the process is relatively smooth and quick. He added that there are a few things different in the well record submittal process as compared to how the paper submittals have traditionally been handled. He also said that he has been working with M. Schumacher to resolve some of the glitches he has encountered. There are 11 different companies using the system, according to P. Bono.

P. Bono said that there is a request for the next board meeting from P. Cicalese in regards to pump installer/well driller and master plumber license jurisdiction. G. Poppe states that towns are implementing electrical permits now, which has made the issue even more complex. He stated that he would supply the Board/Bureau with a letter from DCA for discussion at the next Board meeting. It was also suggested that P. Cicalese and J. Pepe be contacted if any further information is required. P. Bono said that she and some other Bureau staff are working on putting out another newsletter to the drilling community, which they hope will be out soon. G. Poppe asked if there is anything going on with enforcement. P. Bono stated there has some recent illegal drilling activity that appropriate action has been taken.

**11. Adjournment**

A motion to adjourn the meeting was made by G. Poppe, seconded by F. Sickels and unanimously approved at 2:18 PM.

State of New Jersey

Jon S. Corzine
*Governor*

Department of Environmental Protection

Mark Mauriello
*Acting Commissioner*

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STATE WELL DRILLERS AND PUMP INSTALLERS
EXAMINING AND ADVISORY BOARD

# State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for Sept. 17, 2009

**Board Members Present:** Chairperson Art Becker, Vice Chairperson Anthony Tirro, Richard Dalton, Carol Graff , Karl Muessig, Joe Pepe, Gary Poppe, Fred Sickels and Joe Yost

**Board Members Absent:** none

**NJDEP Staff Present:** All members John Fields, Acting Bureau Chief of BWS&WP, (am only) Steve Reya, Pat Bono, Tracy Omrod, Michael Schumacher (pm only), Brian Buttari (pm only),

**Other State Personnel Present:** D.A.G. Jill Denyes - Legal advisor to the Board

**Member(s) of the Public:**

**1. Call to Order –**
The meeting was called to order by A. Becker at 9:35 AM with a quorum present.

**2. Review of Minutes from July 16, 2009 Meeting –**
The draft minutes for the July 16th meeting submitted to the Board members for their review contained a lengthy write-up of the discussion which took place regarding grading and scoring of license exams as well as a description of recent activities from outside parties requesting the department to change the application process to allow geothermal well drillers to sit for the Journeyman B exam. Some members felt that the minutes were too detailed but that the motions voted upon at the meeting were presented accurately. After some discussion, it was decided to adopt the minutes with minor changes. Board members and DEP staff agreed that less detail is needed for the minutes of future meetings. A motion to accept the July minutes, with the minor changes was made by F. Sickels, seconded by G. Poppe and unanimously approved.

**3. Review and Certification of the October 6, 2009 Master, Journeyman, and Journeyman B Test Applications**

**Master** – A motion to approve applicants was made by F. Sickels, seconded by T. Tirro and unanimously approved.
**Journeyman** – One applicant on the roster, Richard Gregory, was applying to sit for the exam because he had allowed his Journeyman license to expire as of June 30, 2008. Mr. Gregory submitted an application for the October 6, 2009 Journeyman exam, however, his application indicated that he had never received a high school diploma or GED, which is requirement for new applicants. P. Bono had consulted the Board's legal counsel, DAG Jill Denyes, on this issue prior to the Board meeting as to whether or not the high school diploma/GED requirement specified in NJAC 7:9D applied to those applicants who were previously licensed. DAG J. Denyes noted that the regulations make a distinction between a licensee who fails to renew his or her license and applicant for a new license. She further noted that the regulations do not allow for a previously licensed individual to simply pay a late fee to have the license reinstated once the grace period had expired. However, this distinction also indicates that applicants do not have to satisfy all the same all criteria as a new applicant for a license.

Mr. Gregory was listed as "pending" because of his Journeyman license expired on June 30, 2008 and Mr. Gregory failed to renew. Mr. Gregory submitted an application for the October 6, 2009 Journeyman exam, however, his application indicated that he had never received a high school diploma or GED. S. Reya noted that he and. S. Reya felt that R. Gregory should be changed from "pending" to "approved" on the Journeyman Exam applicant roster. A motion to approve the exam roster, with this one change, was made by G. Pope seconded by K. Muessing and unanimously approved.
**Journeyman B** – A motion to approve the applicants was made by G. Poppe, seconded by A. Becker and unanimously approved.

4. **Challenge to Pump Installer test by Mark Colangelo** – The Board entered executive session to discuss the grading of three questions on Mr. Colangelo's June 9, 2009 Pump Installer Exam. As a result of the discussion, a motion to have the exam score remain as initially graded was made by C. Graff, seconded by J. Yost, and approved by all except G. Poppe, who abstained.

5. **Study Guide Materials-** Since the last Board meeting, A. Becker, A. Tirro and S. Reya met to discuss developing a comprehensive study guide that would give exam applicants a better idea of the pertinent information they should be studying prior to taking a well drilling or pump installation exam. A. Becker indicated that the test might have to be tailored to meet the study material (preferably confined to one or two texts) rather than tailoring the study material to the test if a limited number of references were to be used. He had hoped that only one reference would have been needed, but recent revisions to revised Johnson's "Groundwater & Wells" no longer contained a significant amount material contained in the previous edition. Specifically, the drilling methods, mud and air rotary, were now only discussed in a limited capacity in the text, which made finding a reference for many of the exam questions difficult. The group had concluded that a minimum of five texts would be needed to find answers to questions in some of the longer exams, such as the Journeyman. The Board members discussed the possibility of having the DEP staff and the Board members write their own study material for licenses applicants. C. Graff volunteered to look into copyright laws regarding existing texts to see if such works could be compiled into one guide, as she believed that writing original material would be far too time consuming and difficult. The possibility of using the National Groundwater Association (NGWA) exams was raised since study guides exist for these exams. They also discussed the feasibility of adding a New Jersey regulation section to their pre-existing exam to ensure that applicants are tested on New Jersey-specific information. This approach would mean

that the Bureau and Board would not be required to develop study material, with the exception of providing applicable rules and regulations to the applicant. Another approach that was discussed would be to still write the exams "in- house" but contract an outside company to administer the exams. A. Becker said that he would be willing to look into outside testing companies. C. Graff noted that she would ideally like to scan documents and compile a PDF file with the scanned image to give to the exam applicants.

6. **DEP Program Updates- E-Permitting** – DEP staff provided an update on the e-permitting program. M. Schumacher stated that 812 permits have been issued electronically. The first one issued was May 14 2009. He added that currently approximately 15% of the permits are submitted in electronically. Additionally, he noted that over one half of the 812 have come from one company. Fourteen companies have successfully submitted permits electronically; however, M. Schumacher hopes that more and more companies will begin utilizing the program. He said that thus far, few well records or decommissioning reports have been submitted via e-permitting. G Poppe and A. Becker discussed how beneficial e-Permitting has been for them. Overall, they are pleased with the program. It is stated in the upcoming newsletter that the Bureau is encouraging drilling contractors to begin to only submit electronic permits, rather than continuing to submit "paper" permits.

7. **Additional DEP Program Updates-** G. Poppe expressed concern over the amount of time the Bureau currently takes to process the individual well search questionnaires required for the decommissioning of wells. He asked if it was necessary to continue this process as it slows down the ability of the driller to proceed and sometimes results in excavations being open for a period of time. P. Bono noted that staff are often able to locate the well record so that the driller is able to decommission the well properly. The concern of the Department is that, without a well record in hand, the driller has no incentive to properly decommission the full depth of the well or may be unaware that the well may have more than one casing/annulus.

8. **United Drilling Letter** – The Board reviewed a September 16, 2009 letter from representatives of United Drilling, Inc. The representatives of United Drilling requested that "the DEP relinquish its governing authority over elevator bore holes to the DCA (New Jersey Department of Community Affairs)." The NJDEP laws and regulations require that licensed well drillers of the proper class drill the boreholes that are installed for the purposes of elevator shaft installations and require the approval of a well drilling permit prior to each installation. United Drilling's representatives note that they had only recently learned of such regulations and have claimed that the majority of the elevator shaft drilling industry is not in compliance with these laws and regulations. Company representatives had addressed the Board at a previous meeting and expressed concern with the fact that their drillers would be unable to qualify for a Journeyman/Journeyman B license, as they would be able to list Category 1 or 2 wells on their application, nor would they have worked under the supervision of a New Jersey licensed well driller. This is the same licensing problem that geothermal well drillers are having. Their letter also notes that DCA regulates PVC liners and leak detection monitoring systems to ensure that hydraulic fluids are not released from the elevator's hydraulic cylinder. Therefore, United Drilling felt that such installations did not pose any environmental risk beyond other construction caisson holes, which are not regulated by DEP laws and regulations.

P. Bono noted that because the licensing and permitting requirements are stated in both the law (N.J.S.A 58:4A) as well as in regulation (N.J.A.C. 7:9D), relinquishing jurisdiction did not seem to be something that could be done without a legislative change. F. Sickels said that legal

guidance is required to determine what could be done to address the problem both immediately and as a long term solution. A. Becker said that he would be willing to talk to Mark Ziegenfuss, a licensed well driller involved in the elevator shaft drilling industry, to make sure there aren't any additional environmental concerns of which the Board should be aware. S. Reya asked if, as a result of the Board's last meeting, individuals with only in-state elevator shaft drilling experience would be qualified to sit for the exam, provided they had worked under the supervision of a licensed driller of the proper class. The Board concluded that they would be allowed. Any such applicants, however, would still be required to sit for the Journeyman or Journeyman B license, which would include questions on all types of wells and pumping equipment, many of which would be unfamiliar to these drillers. The conclusion is that either a legislative change is needed to exempt this activity from well permitting or a regulatory change is needed to establish a separate license for drilling elevator shafts.

**9. Licensing Topics (continued from July meeting)** – P. Bono explained that, following the Board's decisions to modify the experience requirements for Journeyman B licenses, it would seem to make sense to alter some of the experience requirements for other licenses as well. These were presented in a chart. which detailed the current application requirements for each license category. Those requirements are as follows.

**Application requirements to demonstrate well drilling experience by license category:**
Dewatering: Five dewatering wells where one is permitted and greater than 25 feet.
Soil Borer: Five Category 5 wells where one is permitted and greater than 50 feet.
Monitoring: Five Category 3 wells where two were constructed utilizing the oversize borehole method
Journeyman B: Five Category 1 or 2 wells
Journeyman: Five wells where three are Category 1 or 2 wells and two are Category 3 wells.
Master: 2 years of experience as a licensed journeyman. Any five wells (applicant is the driller of record)

The Board members determined that the current requirements for Dewatering, Soil Borer, and Master well driller licenses should remain unchanged. Applicants for Monitoring, Journeryman B, or Journeyman will now be required to list any five permitted wells and/or soil borings to qualify for these exams. G. Poppe made a motion to modify the application requirements for these three categories. The motion was seconded by A. Tirro and approved by all Board members, with the exception of F. Sickels who was not present at the time of the motion.

The reference requirements will remain unchanged. S. Reya raised the issue of the regulation requirements, which essentially state that applicants must work under the supervision of a licensed reference who holds the same license or "higher" than the one for which the applicant is applying. His concern is that applicants are limited in their mobility based on the level of license supervision they receive. These oversight requirements are stipulated in the regulations. The consensus of the Board members is that the applications would have to be consistent with such requirements until the regulations are revised. Bureau staff will work to revise the current applications to reflect the new requirements and email them to the Board members for comment prior to the next scheduled meeting.

**10. Adjournment-** A motion to adjourn the meeting was made by K. Muessig, seconded by D. Dalton and unanimously approved at 3:10 PM.

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHRIS CHRISTIE
*Governor*

KIM GUADAGNO
*Lt. Governor*

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STATE WELL DRILLERS AND PUMP INSTALLERS
EXAMINING AND ADVISORY BOARD

BOB MARTIN
*Acting Commissioner*

# State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for Nov. 19, 2009

**Board Members Present:** Art Becker (chairperson), Richard Dalton, Fred Sickels, Karl Muessig, Gary Poppe, Joe Pepe, Carol Graff, Joe Yost

**Board Members Absent:** Anthony Tirro

**NJDEP Staff Present:** Steve Reya, Pat Bono, Tracy Omrod, Michael Schumacher (pm only), Brian Buttari (pm only), John Fields (pm only)

**Other State Personnel Present:** D.A.G. Helene Chudzik (am only)- Legal advisor to the Board

**Member(s) of the Public:** Peter Cicalese (Clinton Water Treatment Services), Peter Cicalese Jr. (Clinton Water Treatment Services)

1. **Call to Order** - The meeting was called to order by A. Becker at 9:50 am with a quorum present

2. **Review of Minutes from Sept. 17, 2009 Meeting** – Carol Graff made a motion to delete the majority of the second paragraph of the "Journeyman section (within item 3). The entire paragraph, with the exception of the actual motion, will be omitted from the final minutes since it is nearly identical to the first paragraph. The motion was seconded by Art Becker and approved unanimously.

A motion to approve the minutes with the change noted above was made by Gary Poppe, seconded by R. Dalton and approved unanimously.

**Review of Executive Minutes** - A motion to accept the executive minutes was made by R. Dalton, seconded by K. Muessig and approved unanimously. It was noted that there were two minor "typos" which were corrected.

3. **Review and Certification of the Oct. 6, 2009 Master, Journeyman, and Journeyman Exam Scores**

**Master** – A motion to accept the scores was made by F. Sickels, seconded by G. Poppe and approved unanimously.
**Journeyman** – A motion to accept the scores was made by G. Poppe, seconded by F. Sickels and approved unanimously.
**Journeyman B** – A motion to accept the scores was made by F. Sickels, seconded by R. Dalton and approved unanimously.

**Review and Certification of Well Driller & Pump Installer Exam Applicants for December 10, 2009 (all license categories) –**

**Master** – A motion to approve the applicant list was made by G. Poppe, seconded by R. Dalton and unanimously approved.
**Journeyman** - A motion to approve the applicant list was made by G. Poppe seconded by F. Sickels and unanimously approved.
**Journeyman B** - A motion to approve the applicant list was made by R. Dalton, seconded by A. Becker and unanimously approved.
**Monitoring Well** - A motion to approve the applicant list was made by G. Poppe, seconded by C. Graff and unanimously approved.
**Soil Borer** - A motion to approve the applicant list was made by C. Graff, seconded by G. Poppe and unanimously approved.
**Pump Installer** – A motion to approve the applicant list was made by F. Sickels, seconded by J. Pepe and unanimously approved. G. Poppe noted that one of his employees was on the list and wanted to ensure that he was not creating a conflict of interest issue by certifying the applicant list. H. Chudzik advised G. Poppe that staff members of the Bureau of Water Systems & Well Permitting reviewed all applications for compliance with the regulatory and application requirements.

Prior to voting, Board members noted that pass rates for test candidates is very low. J. Pepe suggested that the Department increase the required amount of work experience to sit for the licensing exam from one to two years. He felt that advances in pumping equipment technology and the variety of issues encountered in the industry now necessitate a greater experience requirement before an applicant should be allowed to sit for a test. He felt that this was a main reason for the low exam scores and high failure rate. Additionally, A. Becker stated that the three-year experience requirement for all categories of well driller exams might be excessive. He felt that the experience requirements for all license categories should be re-evaluated when the regulations are revised. The current rules sunset in March, 2012.

4. **Proposed Board Meeting Dates for 2010**– The Board members discussed a list of proposed meeting dates for 2010. There were scheduling conflicts with several Board members, which resulted in changing the proposed January and March dates. The meeting dates for 2010 will be as follows: January 14, March 16, May 20, July 15, September 16 and November 18.

5. **Licensing Topics** – Peter Cicalese, owner of Clinton Water Treatment Services, addressed the Board to discuss the role of pump installers and plumbers within residential homes. P. Cicalese indicated that he received his pump license 25 years ago. He said that local municipal code inspectors have recently caused problems for he and his company, as they were not consistently interpreting and applying Department of Environmental Protection (DEP) and Department of Community Affairs (DCA) regulations. Specifically, he said that the issue over work jurisdiction between licensed

Master Plumbers and licensed Well Drillers and Pump Installers had become contentious in many municipalities. He stated that typically the defining point between the two individual licenses was the house valve. He added that from the bottom of the well to the house valve was Pump Installer/Well Driller work and everything on the opposite side of the valve was clearly under the jurisdiction of Master Plumbers. This meant that the Pump Installers/Well Drillers would also be able to install water treatment, provided it is on the "well side" of the house valve. P. Cicalese also said that he is unable to acquire the permits that local inspectors are now requiring because he is not a licensed Master Plumber and does not feel that he needs one to do the work in question. G. Poppe noted that he obtained a letter in the past, which was a DCA interpretation of the rules, and it indicated that the line between the well, well tank and water conditioning were under the purview of DEP. The Board also discussed the duties that are regulated by DEP through N.J.A.C. 7:9D-1.7(b), which authorizes pump installers to "install or replace well pumping equipment and appurtenances, storage tanks and appurtenances and connecting lines between a well and storage tank." This led to a discussion over the lack of a clear definition of "appurtenances" and how the word could be open to different interpretations amongst local inspectors. G. Poppe said that he would provide Bureau staff and P. Cicalese with the above-referenced DCA letter. This letter is also believed to reference the fact that "appurtenances" had historically been interpreted to include water treatment equipment installation.

6. **Study Guide Materials Update** – C. Graff stated that she researched Google to see if it would be possible to have Johnson's "Groundwater & Wells" and other recommended study texts scanned and put into an electronic study guide for exam applicants. She indicated that Google now scans things and makes them available to the public. Unfortunately, however, she found that it would not be feasible because a text such as "Groundwater & Wells" would cost several times the price of actually purchasing the book. The Board and Bureau will have to explore alternative ways to create a study guide to better assist exam applicants.

6. **Elevator Drilling Update** – P. Bono discussed how she, J. Fields and S. Reya met with representatives from the Elevator Safety Unit within the Department of Community Affairs (DCA) to attempt to resolve the permitting and licensing requirements for companies that solely drill boreholes for the installation of elevator pistons. J. Fields and S. Reya also mentioned the fact that DCA staff advised them that the terms "elevator shaft" that is referenced in both the Department's well drilling law and regulation is incorrect. DCA staff advised them that the shaft is actually the above-ground structure in which the elevator car rides. Therefore, DCA felt that language referring to the drilling of elevator shafts meant nothing to those in the industry because shafts are constructed not drilled. They indicated that the casing in which the hydraulic cylinder sits is what the DEP regulations are actually attempting to regulate. DCA staff did indicate that they do regulate the construction and installation of the piston. Specifically, they regulate the cathodic protection controls and containment systems that are designed to prevent the release of hydraulic fluid into groundwater, should a hydraulic leak occur. A. Becker also discussed a conversation he had recently had with a New Jersey Licensed Well Driller who has historically installed a large number of elevator casings within New Jersey. This driller informed him that 20-inch casing could be installed in the ground via a dual rotary rig. These installations do not contain any grout or backfill material and have only a very small micro-annulus. The other way to install the casings would be to drill an oversized borehole, via a rotary drill rig and either grout or backfill the annular space. A. Becker said that he was also told that once the casing has been installed by the drilling contractor an elevator company comes in and uses either PVC or polyethylene pipe to surround the piston for purposes of containing potential hydraulic fluid releases. He stated that there is annular space between this "can" and the casing, which is not grouted. Finally, the driller informed him that the boreholes for such installations are typically around 35 feet deep and occasionally as deep as 60-65 feet. A. Becker indicated that the elevator industry appears to be self-regulating with regard to creating a potential fluid release.

At the meeting, DCA representatives stated that they could incorporate grouting requirements into their regulations, which would allow the DEP to cease regulating that aspect. As discussed in previous meetings, the DEP does not regulate any type of construction type drilling, other than elevator work. This work is regulated through the law and regulations; however, very little compliance has been achieved within the state (only three well permits have ever been issued for this use). F. Sickels, C. Graff and J. Yost all cautioned about getting too far away from the regulations because they felt that it would set precedent and may limit the scope of activities that the Department should and could regulate in the future. DCA will reportedly be drafting a letter to DEP staff regarding proposed changes to regulations. This letter would propose transferring the governing authority of the drilling for elevator related issues to DCA, and incorporates the DEP grouting and casing installation requirements into DCA oversight.

7. **Licensing Topics** – P. Bono requested clarification from Board members regarding recent changes to reviewing applicants' qualifications that were recommended by the Board at the last meeting. She also requested clarification on what the Board expected in terms of experience in order to sit for the master well driller exam. When reviewing the recently agreed upon changes by Board members, staff had noticed that applicants with no experience drilling water wells would now qualify to sit for the master's exam. This raised a concern since as master drillers construct public community water supply wells. This situation was created when the requirements for both Journeyman and Journeyman B exam applicants were changed to include any well category. The old process would have required Journeyman and Journeyman B applicants to demonstrate the experience in drilling potable wells, so water well experience was covered at a "lower" level license. In order to rectify this situation, P. Bono proposed changing the application requirements for the Master exam to cover this gap. After considerable discussion, the Board members and Bureau staff agreed to change the experience requirements for the master's exam to requiring five (5) wells from category 1, 2 or 3 (any combination) within a three (3) year period. The rationale for this was that these categories all represented wells that supplied water, regardless of whether the water is potable or non-potable. This would ensure that all applicants would at least have some experience with wells that supply water and with the construction requirements of such wells.

8. **Well Driller Exam Application Revisions** – P. Bono discussed how the Bureau would incorporate the above change as well as many other changes that have to be made as a result of the past few Board meetings. She also talked about making checklists on the application coversheet to make sure applicants are filling out the application correctly.

9. **Geothermal Discussion** – S. Reya discussed a proposal he had recently received (by submission on November 18th) a request for the Department to consider accepting a new closed-loop geothermal system which consists of an outer pipe (approximately 3 inches in diameter) comprised of Fiberglass/Carbon and an inner tube (1 ¼" diameter) consisting of spiral-finned PVC pipe. The installer of these systems, Able Environmental, reports that loops are typically installed to a depth of approximately 300 feet. S. Reya also indicated that applicant is proposing to use a grout mix which is not currently approved for geothermal wells grout in New Jersey. The representatives from Able Environmental, however, had assured him that the system would also work with one of the already-approved bentonite-based geothermal grout mixes. Since the outer casing of fiberglass/carbon is not currently approved, a deviation would be required to install such a system. The manufacturer of the system, Kelix Heat Transfer Systems, provided some data on the strength and pressure ratings of the outer pipe. Board members discussed how approving such a system could only be done if the manufacturer could demonstrate that the pipe is actually equal to, or stronger than, the 160 psi polyethylene piping currently approved in the regulations. Additionally, S. Reya noted that the chemical composition of the epoxy used for attaching the threaded sections of outer pipe would also

need to be reviewed prior to approval. The system specifications call for water as the circulating fluid for heating-cooling exchange. Able Environmental may consider adding a small amount (approximately 10%) of one of the Department's previously approved anti-freeze mix; this would be acceptable within the current regulations. In their submission, Able Environmental offered to demonstrate the installation of a system for the Department and Board members to witness. F. Sickels pointed that the regulations allow the Bureau to issue deviation approvals based on site specific conditions, but there is no specific provision mentioning materials as the basis for the deviation. Board members indicated that any approval should be based on demonstration that ASTM strength standards, such as compressive strength of the casing, must be met. They requested additional information on the Fiberglass/Carbon corrosion properties for further review. S. Reya will contact the drilling contractor and/or the system manufacturer to request the above information prior to the next Board meeting in January.

10. **Nebraska Grout Conference** – S. Reya presented the highlights of a seminar he had recently attended entitled "Nebraska Grout Study Report Release and Conference." Board members were very interested in hearing the details of this report as these studies represent the first in-situ data of it's kind. Conducted by the Nebraska Grout Task Force, the study has covered a ten year span in which the effectiveness of various grouts were viewed by installing a clear well casing in numerous wells installed in multiple locations throughout Nebraska. After installation, regular downhole camera inspections were performed on the wells to visually determine the integrity of the grout seals. Additionally, dye tests were conducted to better quantify the actual performance of the grout seals. The released study results include all work performed between 2001 and 2007. The Task Force intends to conduct future studies to pursue the effectiveness of additional grout mixes based upon some of the problems with they have observed with current grout mixes. To date the majority of the problems that were noted in the study pertained to the unsaturated portions of the borehole. The Task Force, which is partly comprised of representatives from three bentonite suppliers, is currently developing and testing many new grout mixes in an attempt to create more effective grout mixtures. S. Reya believes that the information will provide the Department with much needed information when revising New Jersey's well drilling regulations;

11. **DEP Program Updates – ePermitting-** M. Schumacher reported the Bureau recently issued the1600$^{th}$ electronic permit. He added that 30 different companies have now submitted e-permits and that approximately 20% of all permit submittals have been electronic. Most are of the well permit applications received through the ePermitting portal have been for monitoring wells.

    G. Poppe raised a complaint on the turnaround time his company experiences regarding completion of well searches and searches approvals of decommissioning plans. He stated that the average turnaround time is approximately four to six weeks and requested that the Bureau attempt to return decommissioning approvals in a more timely fashion.

    A. Becker discussed the pass/fail rates for the National Groundwater Association (NGWA)'s well driller and pump installer exams. At previous meetings the Board discussed the potential of utilizing the NGWA exams, or possibly a modified version of them with a section focused on New Jersey regulations. A. Becker noted that the exam fail rate is fairly high in most categories offered by NGWA, therefore, he did not believe the exams were as easy to pass as some Board members indicated in previous meetings.

12. **Authority of the Board-** A. Becker raised the topic of the powers and duties of the Board, as stipulated in N.J.S.A. 58:4A-12. He stated that according to this law, the Board can make recommendations to have a licenses suspended, hold hearings, look into complaints and send referrals to the commissioner of the Department regarding violations of the regulations. A. Becker stated that

he would like to start addressing enforcement problems in the industry. He also said that states such as North Carolina publish violations in their newsletter, which he feels acts as a deterrent and is a technique which could be used in New Jersey. A. Becker will check with H. Chudzik for clarification on Board duties. He would like to have the Board start to develop a process for enforcement follow-up so that important issues and egregious violations could be dealt with or referred to the Commissioner for action. G. Poppe voiced concern with the number of unlicensed individuals working in the industry and the amount of drilling that is done without permits. A. Becker would like the next Board meeting agenda to list a follow up item for further discussion on the Board's authority to suspend or revoke licenses.

13. **Adjournment** - A motion to adjourn the meeting was made by C. Graff , seconded by D. Dalton and unanimously approved at 3:20 PM.