



## State of New Jersey

### DEPARTMENT OF ENVIRONMENTAL PROTECTION

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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 November 22, 2011

**Board Members Present:** Art Becker (Chairman), Anthony Tirro (Vice-chair), Gary Poppe, Karl Muessig, Fred Sickels (morning only)

**Board Members Absent:** Richard Dalton, Carol Graff, Joe Yost, Joe Pepe

**Legal Staff Present:** Jill Denyes, DAG

**NJDEP Bureau of Water Allocation & Well Permitting Staff Present:**  
Pat Bóno, Steve Reya, Michael Schumacher, Brian Buttari, Melia Stoop, Terry Pilawski, (morning only)

**Other Division of Water Supply & Geoscience Staff Present:** Steve Doughty

**Member(s) of the Public:** none present

- 1. Call to Order** – A. Becker called the meeting to order at 10:08 am with a quorum present.
- 2. Review of Minutes from September 15, 2011 Meeting** –  
A motion to approve the minutes without change was made by G. Poppe, seconded by A. Tirro and approved unanimously with F Sickels abstaining. (F Sickels was not present for the September meeting.)
- 3. Review of Executive Minutes from September 15, 2011-**  
A motion to approve the minutes without change was made by G. Poppe, seconded by K. Muessig approved unanimously.
- 4. Review of November 9, 2011 Conference Call Minutes-** A motion to approve the minutes without change was made by K. Muessig, seconded by G. Poppe and approved unanimously.
- 5. Testing & Licensing Issues-**

**Certification of Exam Applicants for the December 15, 2011 Master, Journeyman, Journeyman B, Monitoring, Soil Borer and Pump Installers Exams–**

**Master** – A motion to certify the exam applicants was made by A. Tirro, seconded by G. Poppe and approved unanimously.

**Journeyman** - A motion to certify the exam applicants was made by G. Poppe, seconded by A. Becker, and approved unanimously.

**Journeyman B** – A motion to certify the exam applicants was made by F. Sickels, seconded by A. Tirro and approved unanimously.

**Monitoring** – A motion to certify the exam applicants was made by G. Poppe, seconded by K. Muessig and approved unanimously.

**Soil Borer** – A motion to certify the exam applicants was made by K. Muessig, seconded by A. Tirro and approved unanimously.

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

**Pump Installer Test Survey Discussion** – S. Reya presented the most recent Pump Installer Exam Surveys, which were collected from applicants at the October 4, 2011 exam. He noted that the voluntary survey, which is being used to evaluate how the Board can better assist applicants in preparing for the exam and/or revise exam questions, was completed by four (4) applicants. A. Becker stated that two (2) of the surveys, in which the applicants had a combined 18 years of field experience; noted that the test was difficult. Since more than half of the questions on the test relate to the field experience of the applicant, the Board expressed concern with the passing score percentage, which was again low on this exam cycle. The Board discussed the possible inclusion of questions regarding Variable Frequency Drive (VFD) pumping equipment, as a larger and larger percentage of the industry is now utilizing this technology. S. Reya will continue to report the results of the surveys from each test cycle at subsequent Board meetings.

**6. Board Business –**

**Reappointment of Board Members – Status Update-**

P. Bono said that the Board member appointment approvals have not been formalized since the Administrative Order has not yet been signed by the Commissioner's office.

**7. The dates for the 2012 Board Meeting Schedule have been set as follows:**

**Thursday-January 26<sup>th</sup>, 2012**

**Thursday-March 15<sup>th</sup>, 2012**

**Thursday-May 24<sup>th</sup>, 2012**

**Thursday-July 19<sup>th</sup>, 2012**

**Thursday-September 13<sup>th</sup>, 2012**

**Thursday-November 29<sup>th</sup>, 2012**

**Conference Calls, which are to be held for solely for the approval of well driller and pump installer exam scores, are scheduled for:**

**Thursday, May 3<sup>rd</sup>, 2012**

**Wednesday, November 7<sup>th</sup>, 2012**

**8. Baroid Geothermal Grout Discussion** – S. Reya discussed a November 7, 2011 independent laboratory permeability report, which submitted by Dr. Charles Landis, from

Baroid Industrial Drilling Products. This report contained the final permeability values for Baroid's geothermal grout products, which were installed at a New Jersey site in the presence of Board and Department representatives on August 9, 2011.

The products that were installed and tested for permeability were: Barotherm Max (which contains graphite as a thermally conductive material), Barotherm Gold (which contains 400 lbs. of sand and 50 lbs of bentonite in its most thermally conductive form) and Barotherm Gold 1.2 (which is identical to the Barotherm Gold 400 lbs of sand mix, except that the sand and bentonite are pre-packaged by the manufacturer rather than mixed onsite). S. Reya noted that nine of the ten samples tested were below the maximum permeability value specified in the well construction regulations ( $1 \times 10^{-7}$  cm/sec). The only value that exceeded the required value was one sample of Barotherm GOLD 1.2, which was taken from the "end of tremie last batch." Two other tests of this same product and four tests of Barotherm Gold - 400 lb. mix exhibited acceptable permeability. S. Reya questioned whether the Board wished to approve all three products since the field demonstration showed that the products could all be pumped and placed in accordance with manufacturer specifications and that the thermal compound (sand or graphite) remained in suspension within the grout slurry. Additionally, the only lab permeability value that does not meet the required value is from what was believed to be the final batch of grout, which may have contained excess water.

A. Becker suggested that R. Dalton review the permeability data before the Board recommends that the Department approve the mixes for use in New Jersey.

**G. Poppe made a motion recommending approval of the products provided R. Dalton reviews the recent lab submission and agrees that the products meet the requirements of the state well drilling regulations. A. Tirro seconded the motion and all members were in favor.**

S. Reya will forward the data to R. Dalton for his review.

#### **9. Licensing Topics -**

**Enforcement Activities** -P. Bono informed the Board of the Bureau's recent field activity. Both B. Buttari and M. Schumacher inspected and oversaw the installation of a public non-community well being drilled at a day care center in Northern New Jersey. This well was being drilled to replace the existing well, which had repeatedly exhibited bacterial contamination. P. Bono indicated that both B. Buttari and M. Schumacher's presence onsite ultimately ensured that the casing was properly grouted in place to minimize the chance of vertical contaminant migration.

Terry Pilawski, Chief of the Bureau of Water Allocation and Well Permitting, expressed the high value she places on field enforcement activities and noted that she wants an increased field presence within the program. G. Poppe agreed and said that this was the New Jersey Groundwater Association's loudest outcry; that with increased DEP presence the individuals constantly violating the state's regulations would be brought under control. T. Pilawski confirmed that she will be working with the Division of Water Supply and Geoscience staff, as well as Compliance and Enforcement staff, to increase the on-site presence.

**Proposed National Ground Water Association (NGWA) Licensing Program -**

S. Reya said that the regulation revisions, which are currently being drafted have delayed being able to develop the testing, licensing and continuing education program that will be administered by the National Ground Water Association. He did indicate, however, that he had recently spoken with NGWA Director, Kevin McCray about using one category of license (likely the Monitoring Well/Environmental Driller) to develop a pilot program that applicants could begin to use shortly. Upon adoption of the newest regulations, a full program could then be implemented and all applicants would then sit for the exam administered by NGWA. This would allow the Bureau to focus on other important tasks rather than administering the testing and licensing program for the Department.

**10. Regulations Update by Division of Water Supply & Geoscience presented by Acting Director Fred Sickels-**

F. Sickels said that the well regulations are the highest regulatory priority within the Division. As the Department intends to adopt nearly 20 different regulations in the upcoming year, he indicated that it is imperative that the well regulations are drafted as soon as possible to ensure that adoption of the regulations is not delayed. Finally, he noted that any changes to the regulations must be concise and streamlined to avoid delays in the process of updating the regulations.

A. Becker and F. Sickels discussed the fact that the adoption of new and updated regulations has been delayed for far too long. They both stressed that the new regulations will have to focus on existing technologies that are currently in use within the industry and also create a process for review of new technologies as they become available in the future. It is envisioned that the regulations will specify criteria and groundwater protection standards that new technology must meet, rather than specifying exact materials, which essentially prohibits the use of all materials not expressly approved in the regulations. The regulations will have to address the concerns of geothermal wells, but not restrict new and appropriate technologies as they become available.

**11. Field Program-** T. Pilawski, Chief of the Bureau of Water Allocation and Well Permitting, said that she intends to work with K. Muessig's staff, which has recently been merged into the Division, to assist with field inspections. She noted that an increased field presence would constitute a proactive approach to enforce the Department's regulations and focus on construction standards, rather than relying on paperwork review to catch violations of the well drilling regulations. G. Poppe stressed the importance of this approach and stated that he believes that the industry is aware that the Department currently conducts very few inspections, which has given many contractors the impression that they can violate the regulations with very little chance of any repercussion.

T. Pilawski also mentioned that she would like to coordinate some field training for NJDEP's enforcement staff as well as inspectors from county and municipal health departments. G. Poppe volunteered to assist with this effort.

**12. Proposed Revisions to the Regulations (N.J.A.C. 7:9D)-**

A. Becker suggested that Soil Borers & Monitoring Wells should be put into a new license category that would combine both existing license categories into one license. He felt that the industry has evolved to the point where there is a high degree of overlap between the environmental and geotechnical industries. Additionally, the skills required to drill and grout a soil boring (as is required for those drilled to depths greater than 25 ft.) are quite similar to those required of Monitoring Well Drillers. He also said that he

suspects that there are permanent monitoring and other environmental wells put in each day by individuals licensed as Soil Borers, as it is often impractical for companies to bring a second licensed driller out to a site to install the permanent wells. Combining the licenses, and corresponding well categories within the regulations, would also allow those with the new license to install cased geotechnical wells, such as inclinometers. The existing license structure prohibits Soil Borers from installing any type of well that has a permanent casing. A. Becker stated that the groundwater protection concerns and techniques are the same between Soil Borers and Monitoring well drillers so the Department would not be sacrificing any environmental protection by combining the two licenses. P. Bono noted that she intends to address this issue and streamline the appropriate sections of the regulations.

**11:45 AM F. Sickels left the meeting as he had to attend another meeting. Therefore, a quorum was no longer present after this point. The remaining Board members continued to discuss potential changes to the well regulations (N.J.A.C. 7:9D).**

**Topics that were discussed included:**

**Licensing:**

- Creating a vertical closed loop geothermal well driller license.
- Combining the Soil Borer and Monitoring Well Driller Licenses.
- Whether or not the Journeyman B license should be kept in place.
- How to "Upgrade" existing Soil Borers to Monitoring Well Drillers (it was suggested that a training course be offered.
- Whether or not to continue the testing and licensing program for the Journeyman Class B license.
- Should the experience requirement for a driller license be decreased from three (3) years to two (2) years.
- Should the experience requirement for a pump installer license be increased from one (1) year to two (2) years.
- It was proposed that a Master Well Driller applicant would still need to have five (5) years of documented experience. The requirement would be that the applicant would have to have a Journeyman license for three (3) years before sitting for the exam. This would include out-of-state drillers, who would be required to pass the Journeyman exam and then wait three (3) years before sitting for the Master exam. P. Bono explained that the regulatory portion of the exam would test out-of-state applicants on specific state requirements.
- Whether or not the submission of proof of assisting a licensed driller in the drilling of five (5) wells is still adequate and appropriate documentation for well drilling exam applicants.
- A specialty license for elevator borehole drillers must be created.
- A. Becker noted that the wording of the definition of "appurtenances" must be clarified. The jurisdictional issue concerning what licensee can install and repair water treatment and conditioning devices must be addressed in the regulations.
- G. Poppe noted that requirements should be set forth to detail the appropriate license that is required for sanitization and disinfection of wells.
- Appropriate licenses must be specified for those who are allowed to winterize water lines.
- A distinction needs to be made between permanent pumping equipment installation vs. sampling that are used in the environmental industry. This is especially important when individuals are working on recovery wells.

**Well Categories:**

- Clear distinctions between types of geothermal wells (open loop, standing column and closed loop) must be made. The regulations governing each type must be protective of groundwater. Each type of geothermal well must also be clearly defined within the definitions section of the regulations.
- Environmental and Geotechnical wells should be listed together in the new regulation since it is proposed that the new category of license that combines both existing Monitoring and Soil Boring licenses will be able to drill all of these wells. Distinction will be made between cased wells and uncased wells, however, to better stipulate appropriate construction standards. Methane gas wells should be moved into this category. They are not really category 4/special use wells as they are currently categorized. New remediation technologies, such as electrodes and other heating elements and temperature monitoring probes, should be specifically listed in this category.
- Wick drains and certain dewatering wells must be defined and regulated to prevent surface water from being injected directly into groundwater. G. Poppe and A. Tirro noted that a large volume of wick drains are drilled each year in New Jersey and they are all installed in a manner that directly contradicts the intent of the well drilling regulations, which is to protect groundwater. Very few wick drains have ever been permitted by the Bureau.

**General Provisions:**

- S. Doughty noted that section 1.6(e) refers to maintaining a well drilling area in a "sanitary condition" and that "proper containment" must be provided. It was suggested that these terms be clarified to describe exactly what they mean.
- The need for a company registration was discussed. This could potentially serve as an effective enforcement tool, if the Department is able to cease issuance of permits to registered drilling companies that repeatedly demonstrate violations of the well drilling regulations.
- There was a discussion of section 1.8(a) – it was suggested that the Department closely examine what type of proof will be required of an applicant to submit adequate documentation of his or her well drilling experience.

**13. Technical Topics- Geothermal System Updates:****Agreenability:**

S. Reya spoke briefly on the redesigned high efficiency closed loop geothermal system, which had previously been presented to the Board by the system's designer, Robert Jensen, from Agreenability. As recommended by the Board, a single site pilot project installation will be approved by the Bureau. Mr. Jensen will be informing S. Reya prior to the installation. S. Reya will then forward the information along to interested Board members so those interested can witness the installation.

**Hardin:**

S. Reya noted that he and B. Buttari observed a second installation of the Hardin GEX.4 specially shaped High Density Polyethylene (HDPE) geothermal well casing. A pilot installation of this system was conducted in Robbinsville Twp., with varied results. S. Reya stated that both Department staff and Board members observed various phases of that installation. The HDPE pipe in the pilot installation utilized two (2) .5" holes every two feet through which grout would flow to grout the annular space.

In the second installation, installed in Voorhees Twp., the pipe contained a revised grout port measuring .5" wide by 1.75" long. This pipe along with a typical HDPE u-bend loop was installed in one borehole while B. Buttari and S. Reya were onsite for purposes of studying the thermal properties of both the Hardin loop and standard u-bend. B. Buttari and S. Reya believed that the enlarged grout port size greatly increased the ability to properly grout the pipe in the borehole. The geothermal grout used onsite contained 200 lbs. of silica sand and 50 lbs. of bentonite. The larger opening of the grout port should be especially beneficial when using even higher sand content geothermal grouts, as well as cementitious thermally enhanced grout (Mix 111) for wells installed in consolidated formations.

One notable problem, however, is that a large number of the Hardin casings installed at the Robbinsville site have either been replaced by typical u-bends or have been proposed for replacement with the newest GEX.4. The reason for this was that the original Hardin pipes had a problem with the extrusion process, according to the Hardin representatives onsite during the Voorhees Twp. installation. They also reportedly indicated that the extrusion process has been refined to ensure that each half of the distinctively shaped loop meets the required pressure rating.

**14. The meeting was adjourned at 3:28pm.**