



# 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 July 21, 2011**

**Board Members Present:** Art Becker (Chairman), Anthony Tirro (Vice-chair), Gary Poppe, Joe Yost, Joe Pepe, Richard Dalton, Karl Muessig (exited AM session at 10:52; returned for PM session), and Fred Sickels (exited AM session at 10:52; returned for PM session).

**Board Members Absent:** Carol Graff

**Others Present:** DAG Jill Denyes, Legal Advisor for the Board (present for morning session starting @ 10:44AM)

**NJDEP Staff Present:**

Water Supply Staff present for all or part of the meeting - Pat Bono, Steve Reya, Julia Altieri, Michael Schumacher, Brian Buttari, Melia Stoop (BSDW), Terry Pilawski (BSDW), Steve Doughty (DWS), Jeff Hoffman (Water Compliance and Enforcement), Melisa Hornsby (Water Compliance and Enforcement)

**Member(s) of the Public:** Mark Lombardo from A.C. Schultes, Inc. (until 10:35AM), Robert Jensen and Alex Mayorga from Agreenability, Lance MacNevin and Mike Maher, from REHAU Inc. and Dennis Duty from Baroid.

1. **Call to Order** – A. Becker called the meeting to order at 9:36 am with a quorum present.
2. **Review of Minutes from May 26, 2011 Meeting** –  
A motion to approve the minutes without change was made by A. Tirro, second by R. Dalton and approved unanimously.
3. **Certification of Test Scores for June 14, 2011 Master, Journeyman B, Monitoring, Soil Borer and Pump Installers Exams**–

**Master**– A motion to certify the applicant scores was made by G. Poppe, seconded by J. Yost and approved unanimously.

**Journeyman A** A motion to certify the applicant scores was made by G. Poppe, seconded by F. Sickels and approved unananimously.

**Journeyman B** – A motion to certify the applicant scores was made by Dick, Tony

**Monitoring** – A motion to certify the applicant scores was made by Joe Y, Karl

**Soil Borer** – A motion to certify the applicant scores was made by. Tony, Fred

**Pump Installer** – A motion to certify the applicant scores was made by Gary, Joe P

#### **4. Licensing Topics-**

##### **Pump Installer Exam Challenge-**

Mark Lombardo, from A.C. Schultes Inc., discussed a June 15, 2011 letter he submitted to the Board regarding the scoring of his April 4, 2011 Pump Installer exam. Specifically, Mr. Lombardo felt that Question 11 on the technical portion of the exam, which pertains to the proper depth for setting submersible pumps, should have been marked differently. He added that the wording of the question was vague and did not provide enough information for him to answer it properly although he knew the technical material that the question appeared to be designed to test.

A motion to discuss the question in executive session was made by G. Poppe, seconded by F. Sickels and approved unanimously at 9:59 am. The Board returned to open session at 10:32 am.

A. Becker informed Mr. Lombardo that his request to have his grade changed on the technical portion of the exam was denied. He added that although the Board felt that he understood the concept of the question; his answer was incorrect based upon the actual wording of the question. He also informed Mr. Lombardo that the Board shall look into a one year history of this test question to see how many applicants had difficulty with this question and will take steps to revise if necessary.

##### **Supervision of Testing Concerns –**

S. Reya stated that he received a phone call while the test was being administered in which the caller said that two other testers were cheating. The caller indicated that two people had open books while taking the test. S. Reya reported that he called the proctor at the test site to relay the caller's concern while the individuals were still working on the test but the proctor could not verify the charge. Since the charge could not be verified, S. Reya proposed that the Board certify all the exam results for the day but suggested appropriate action shall be taken to prevent cheating on future exams. DEP will now ensure that no study material is brought into the testing center to eliminate this problem.

##### **Reappointment board members-**

An Administrative Order for reappointment of Board members has been sent to the Commissioner's office, but no official response has been received yet. All members are to be reappointed except for Fred Sickels. He has made the recommendation that Steve Doughty, from the Division of Water Supply, be appointed to the Board in his place. F. Sickels noted that due to increased responsibilities as the Acting Director of Water Supply, his schedule often precludes him from participating fully as a Board member. He thanked the Board members for their service and assistance to him over the time he spent as a Board member.

##### **Regulation Revision Update-**

F. Sickels said that the well regulation is his top priority within the Division of Water Supply and that as Acting Director he has placed this regulation's importance above all others within the Division. A. Becker handed out two letters from (one from himself and one from George Strycker, on behalf of the New Jersey Groundwater Association (NJGWA)) that were recently sent to the DEP Commissioner, Bob Martin. Both letters urged the Department to proceed with the regulatory revisions needed for the industry. G. Poppe added that he is also in the process of submitting a letter as president of NJGWA, which essentially reiterates that new regulations are essential to properly oversee the drilling industry. A. Becker said that the industry is dedicated to having the rules updated and not taking "no" for an answer.

##### **Pump Installer Survey –**

Four Pump Installer Exam surveys were returned to the Bureau. The Board reviewed the responses in an attempt to determine the reason for the high failure rate of the pump installer test applicants. The survey responses indicate that most application knowledge comes from on-the-job training. J. Pepe suggested that the length of time each applicant has worked in the industry should be included on the survey. S. Reya will revise the survey that is included with all Pump Installer exams and report the results of those surveys at the Board meeting following the exam.

**5. Enforcement Activity –**

J. Altieri and Jeff Hoffman of Water Compliance and Enforcement have been continuing with the enforcement field offices. She noted that Mr. Kavlunas is still waiting for a response regarding the well decommissioning issue that was brought before the Board at their last meeting. S. Reya will go out to the site to check current conditions at the site (overhead power lines and reports of washouts due to adjacent farm irrigation) to determine the validity of Mr. Kavlunas' concerns.

Out of seven drilling companies that received Administrative Orders and Notice of Civil Administrative Penalty (AONOCAP) letters, five have responded and requesting hearings. There is a significant backlog of Department hearing requests and J. Altieri has been notified of that any have been scheduled as yet. All documents currently being sent to enforcement are for chronic, repeat offenders or serious construction violations.

J. Hoffman, from the Department's Central Region of Water Compliance and Enforcement, said that well drilling enforcement is now a line item in Enforcement's annual work plan. This is the first time well drilling violations has been listed, which equates to it being a higher priority within the Department's enforcement program. He added that they are also currently attempting to pursue license suspensions and revocations for well drillers with egregious violations. J. Hoffman indicated that the Board needs to be involved in the license suspension/revocation and that the DEP cannot proceed without the Board based on provisions in the current regulations.

**6. Board Process for Conducting a Hearing-**

J. Denyes, DAG, developed a procedure to conduct hearings, which she believes to be in accordance with both the wording of the statute and the rights of the licensed individual. She provided a handout labeled "Well Drillers and Pump Installers Advisory Board Hearing Procedure," which detailed the procedure. J. Denyes stated that a court stenographer is not required and that the Board hearing is an informal process. Rules of evidence and motions are also not needed at a Board hearing. The end result of the hearing would be that the Board's recommendation to the Department (Commissioner) would be recorded as a resolution. As discussed at previous meetings, the Board has authority to recommend license suspension/revocation to the DEP commissioner while the Department has the authority to issue fines and other required corrective action. M. Schumacher suggested that hearings before the board should be audio recorded.

**7. National Ground Water Association (NGWA) Certification Program Update-**

The DEP purchase order to utilize the services of NGWA was recently approved. S. Reya indicated that the funds have been approved will allow the Bureau to begin to setting up the proposed testing, licensing and continuing education program that would be administered by NGWA. A partial implementation of this program is envisioned prior to a full mandatory implementation, which cannot occur until after the new regulations become effective. P. Bono noted that NGWA needs to file some forms with the New Jersey Treasury, which they are currently in the process of doing.

**8. Program Updates-**

**Historic Well Document Project**– The historic well record data entry project is currently on hold with regard to the work being performed on overtime, as was the case with the vast majority of the work on the project. Some staff members within the DEP's Site Remediation Program have recently been working on this project with the Well Permitting staff. P. Bono anticipates that this project will take approximately two more years to complete if work progresses uninterrupted.

**Rule development**– P. Bono listed the main sections of the regulations that are slated to be changed and noted that she would like to have one or two licensed well drillers from the Board included on the rule writing team if permitted by the Department.

**Well Searches**– M. Schumacher provided an update on a new public well search tool he has been developing, which would allow users (well drillers, pump installers, health departments and homeowners) to access the Department's well permits and well records through the DEP website. There are still data security concerns associated with releasing some of this information. The question of what information is public information and what is not is currently still under discussion.

#### 9. **Agreenability Geothermal System-**

Robert Jensen, President of Agreenability, discussed his re-designed geothermal system. Mr. Jensen summarized the geothermal design presentation he made at the Board's at the September 2010 meeting. At that meeting he requested approval to install his geothermal system in the New Jersey. At that time the Board recommended that the Bureau allow a single well installation for use as a pilot program for conducting thermal testing, which Mr. Jensen indicated was necessary to investigate the efficiency and economic viability of the design. The Board did not recommend approval of the system for use throughout the state, as several members expressed concerns about the ability to grout the entire annular space around the geothermal loops. The Agreenability system consists of four polyethylene loops (eight pipes) and one center pipe, which the loops surround in a spiral pattern. Approval of the total system for use throughout the state was not to be granted until Agreenability demonstrates that complete grouting of the system can be accomplished without creating vertical conduits in the grout column. It was believed that loop orientation could potentially lead to channeling of the grout seal. Mr. Jensen stated that as a result of the meeting, he redesigned the system to allow complete bottom to top grouting and ensure the elimination of voids.

Changes to his original design include a larger center pipe (2-inch diameter) and increased spacing between the outer pipes (of which there are eight). Additionally, Mr. Jensen stated that the center pipe is now ported to allow grout to flow out through the holes. His current design calls for the ported center pipe to be constructed from polyethylene pipe, but he requested flexibility with the material used for the center pipe. Future designs may call for corrugated pipe material for the center pipe. Mr. Jensen noted that this is a non-pressure bearing part of the system so the material strength specifications are not relevant. His current design calls for center pipe holes measuring .5 inches in diameter. Two holes would be placed every linear foot of the pipe. Mr. Jensen explained that the outside diameter of the geothermal pipe assembly measures approximately 4.475 inches in diameter and the outer pipes are .75 inch. He also discussed a design schematic he submitted to the Bureau on July 15, which detailed eight holes in the center pipe. He indicated that this number of holes is not necessary, and would like to propose the installation containing two holes per interval, as discussed above. Mr. Jensen's assistant, Alex Mayorga, confirmed this through computer modeling and presented a printout of the estimated grout flow characteristics to the Board. The required flow rate of the grout (estimated at 25

gallons per minute) would not necessitate any more than two half inch holes every foot according to Mr. Mayorga's computer modeling results.

The center pipe would not be used as a tremie pipe; a tremie would actually be inserted inside the center pipe and gradually removed during the grouting process. Mr. Jensen noted that he hopes to install his system in a borehole measuring 5 7/8" in diameter. He believed the spacing from one of the outer pipes to another to be approximately .5" and nearly infinitely long, so he didn't believe this spacing would restrict the flow of grout any more than the perforated holes in the center pipe. He also said that Geothermal Services Inc., a NJ drilling contractor, installed a test well installation in New York. This system was based on his original design, but demonstrated that the product was both easy to install and achieved the required efficiency numbers. Therefore, he is now ready to proceed with obtaining state-wide approval for his system, rather than the previous approval, which was for the purpose of installing one test well.

Several Board members noted that they would like to see an actual sample of the system material before recommending approval. Mr. Jensen stated that it would be several weeks before an actual section of material will be available for inspection. The Board members also suggested that if approval of the system is granted, a trial site-wide installation containing a reasonable number of wells (not several hundred) should be approved. It was suggested that Bureau staff arrange to be onsite and check the grout volumes used onsite to verify that the boreholes are taking the required, theoretical volume of grout material.

**Motion:**

K. Muessig made a motion that the system be approved for a site-wide installation, provided the Board inspects the design and that it meets the specifications detailed by Mr. Jensen. The motion was seconded by G. Poppe and approved unanimously.

It was also noted that the schematic provided by Mr. Jensen should be revised to include the actual layout of the grout holes in the center pipe and the spacing distance between the outer pipes should be listed on the schematic. Mr. Jensen will coordinate with S. Reya.

**10. Baroid Geothermal Grout Mix Field Demonstration-**

Dennis Duty, from Baroid Industrial Drilling Products, stated that he had arranged for the Geothermal Services to pump several Baroid Geothermal Grout products at Ocean county College on August 9, 2011. These pumpability tests will be conducted with the presence of Board members to verify that the mixes are able to be pumped in the ratios specified by Baroid. Independent lab permeability values have been submitted for Barotherm Gold and Barotherm Max, which have both been demonstrated to not exceed the Department's maximum allowable permeability value. Pumpability tests of Barotherm Max (which contains graphite as a thermally conductive material), Barotherm Gold (which contains 400 lbs. of sand and 50 lbs of bentonite) and Barotherm Gold 1.2 (which is identical to the Barotherm Gold 400 lbs of sand mix, but the sand and bentonite are pre-packaged). R. Dalton asked that the full lab sheets for the permeability tests be submitted to S. Reya, as the previous submissions contained only the lab summary table. Grout samples will be obtained onsite and again tested for permeability. If the pumpability demo and permeability values are acceptable, the Department will approve all mixes.

Mr. Duty also discussed a product similar to the DEP-approved cementitious thermally enhanced grout (Mix-111) that is being designed for rock wells, but will be a more pumpable mix for deep geothermal well installations. Mr. Duty stated that the new product will still be cement based and will have similar permeability and thermal conductivity values, but will be easier to mix and

pump. A. Becker instructed Mr. Duty to submit a letter to the DEP requesting consideration for this grout to be used in NJ.

**11. REHAU Inc.– PEXa Cross-linked Polyethylene Geothermal Piping-**

Mike Maher and Lance MacNevin, from REHAU Inc. stated they are requesting approval to use PEXa cross-linked polyethylene piping for geothermal well installations in NJ. They noted that the International Ground Source Heat Pump Association (IGSHPA) approved PEXa piping in 2008. PEXa eliminates the weld at the bottom of the loop since it is able to be bent in a very small radius. This means there are no seams within the vertical portion of the geothermal loop. The wall thickness of PEXa is reportedly maintained during bending. PEXa cannot be butt-fused but a compression fitting can be used. The ribs on the brass portion of the compression fitting are pressed into the pipe. The joints in the horizontal piping are also wrapped in a sleeve through heatshrinking as an added protection. These compression fittings are specific to PEXa piping, which was reportedly a requirement of the IGSHPA approval. A second way to join sections is via electrofusion. This joining material can join PEXa to PEXa or PEXa to High Density Polyethylene (HDPE) material, whereas the mechanical compression fitting can only join PEXa to PEXa.

They added that the burst pressure of the pipe is 800 psi and that the pipe is rated at 160 psi at 73.4 degrees F, which is equal to the pressure rating of HDPE currently approved for use in NJ. Additionally, PEXa is rated at 180 and 200 degree F. According to the REHAU representatives, HDPE does not have a rating at these elevated temperatures and that at higher temperatures, PEXa is stronger than HDPE. A glass polyester loop tip is installed on every loop, which both aids in installation of the loop and protects the loop material during insertion. REHAU also has a loop tip that allows installation of two loops within on borehole. Finally, they noted that their product has not yet been certified by NSF International, their certification program is under development. Mr. MacNevin stated that he very much aware of the criteria being developed as he is a member of the NSF Certification Board. An exact date of when the certification will be obtained is currently unknown.

A. Becker asked if this material conforms to the closed loop geothermal piping material specified in the well drilling regulations, N.J.A.C. 7:9D-2.5(a)4.1 (located on page 35). Lance MacNevin stated that although PEXa is made from HDPE, the ASTM standards cannot be applied. The material is HDPE, however, once it is cross-linked it must be evaluated using a different set of ASTM standards. He stated that the pipe is not deficient with regard to materials listed, however, it is different than that material so it cannot be evaluated using the same tests and criteria. A. Becker questioned whether there are any characteristics of PEXa that would be considered to be lower than HDPE.

Mr. MacNevin noted that there are two characteristics of PEXa that would be considered to be lower than HDPE:

- 1) UV resistance rating for PEXa is currently rated at 1 year. This is achieved via a gray coating that is applied to the material. This rating is less than HDPE, however, the Board members indicated that the UV protection is not relevant for a pipe that is installed to be installed within the ground (other than outdoor storage considerations).
- 2) The Hydrostatic Design Basis (HDB) of PEXa is listed at 1250psi. Mr. MacNevin indicated that this is due to the fact that the PEXa (crosslinked HDPE) is less dense than typical HDPE. The strength gained by crosslinking allows the pipe material to be less dense. He added that the pipe material is still rated at 160 psi at 73.4 degrees F, which would be more relevant than the HDB since it is much more comparable to a working pressure rating.

He indicated that in all other respects, specifications for PEXa meet or exceed those of standard HDPE.

A Becker suggested that REHAU provide comparative document comparing PEXa and HDPE. He noted that he would like them to provide corresponding ASTM tests for PEXa and HDPE to demonstrate to the Board and Bureau that the pipe material meets or exceeds the relevant criteria specified in the well drilling regulations. It was also noted that some of the referenced standards in the regulations are out of date and need to be revised when the new regulations are drafted.

**Motion** – A motion was made to grant conditional approval for PEXa piping if REHAU's side by side comparison demonstrates that the product meets or exceeds the standards for HDPE as per N.J.A.C. 7:9D-2.5(a)4. G. Poppe made the motion, F. Sickels seconded and all were in favor.

**12. Shaw Environmental Inc.-**

S. Reya updated the Board on the electrode decommissioning method proposed by Eric Hoffmann at Shaw Environmental at the last meeting. He showed the Board members a copy of the proposal entitled "electrode Abandonment Bench Scale Test Methodology Grout Injection Test." S Board members agreed that the methodology that was described was consistent with the discussions at the meeting. S. Reya noted that Mr. Hoffmann recently indicated to him that he plans to conduct the bench test shortly and report the results to the Board at the September meeting.

**13. Cement/Grout Additives-**

Dennis Duty, Baroid representative, raised the issue of plasticizers and other cement additives. He questioned whether each brand and chemical components of superplasticizer or other cement additives (such as retardars/water control agents) need to approved. Additionally, he felt that additives are not truly the grout material and make up a very small percentage of the overall mixture. He stated that although the cementitious thermally enhanced grout (Mix 111) was approved by NJDEP and it contains a superplasticizer additive, there are many additives available on the market and having the Department review each one before it can be used is onerous. Finally, he posed the question about what criteria are used to determine if one additive meets/exceeds standards.

**14. Board Member Appointments- Steve Doughty-**

S. Doughty addressed the Board and provided some information about his background and history with the Department. He noted that the Commissioner's Office has not yet signed off on the Administrative Order that would officially appoint him to the Board in place of Fred Sickels. It is anticipated that it will be signed within the next few weeks. S. Doughty stated that he is looking forward to working with the Board on issues in the future.

**15. A Motion to Adjourn** was made at 3:08 was made by K. Muessig, seconded by R. Dalton and approved unanimously