

BEFORE THE WATER QUALITY CONTROL COMMISSION  
FOR THE STATE OF NEW MEXICO



**In the Matter of:** )  
 )  
**PROPOSED AMENDMENT** )  
**TO 20.6.6 NMAC (Dairy Rule)** )

**WQCC 12-09 (R) and**  
**WQCC 13-08 (R)**

**NOTICE OF INTENT TO PRESENT TESTIMONY ON REBUTTAL ON BEHALF OF**  
**THE DAIRY INDUSTRY GROUP FOR A CLEAN ENVIRONMENT**

The Dairy Industry Group for a Clean Environment (hereinafter, "DIGCE"), hereby submits this Notice of Intent to Present Testimony on Rebuttal (hereinafter, "DIGCE NOI on Rebuttal") in accordance with the Procedural Order issued on October 3, 2014. Pursuant to Section 302.B of the Procedural Order, DIGCE hereby states:

**1. Person for whom the witness(es) will testify:**

The witnesses will testify for DIGCE and its members.

**2. Identify each technical witness the person intends to present and state the qualifications of that witness including a description of their educational and work background:**

DIGCE presents the following witnesses on rebuttal: 1) Mark Turnbough, Ph.D., is a technical witness who will testify on behalf of the expert panel for DIGCE; 2) Keith Gordon, P.E., is a technical witness who will testify on behalf of the expert panel for DIGCE; and 3) Charles Fiedler, P.E., is a technical witness who will testify on behalf of the expert panel for DIGCE (*see Fiedler-4*). A statement of qualifications, education and work background for Dr. Turnbough and Mr. Gordon, has been previously provided in DIGCE's exhibits.

**3. Attach the full written direct testimony of each technical witness, which shall include an express basis for all expert opinion offered:**

The rebuttal testimony of each technical witness is attached.

**4. Include the text of any recommended modifications to the proposed regulatory change:**

*See Second Amended Petition filed August 2013 and the accompanying Attachment A (rule modification proposals). Pertinent parts are included in the testimony.*

**5. Identify and attach all exhibits to be offered by the person at the hearing:**

Additional exhibits not formerly identified are attached to DIGCE's NOI on Rebuttal as follows:

EXHIBIT #	DESCRIPTION
DIGCE - 5	Rebuttal Testimony of Mark Turnbough, Ph.D.
DIGCE - 6	Rebuttal Testimony of Keith Gordon, P.E.
DIGCE - 7	Rebuttal Testimony of Charles Fiedler, P.E.
TURNBOUGH - 5	Portions of Hearing Transcript re WQCC 09-13(R) from April 16, 2010 Hearing
TURNBOUGH - 6	Portions of Copper Rule (WQCC 12-01 (R)) Order and Statement of Reasons
TURNBOUGH - 7	Portions of Hearing Transcript from WQCC November 16, 2011 Hearing
GORDON - 7	Table: Liner System Alternatives; Cost Estimate Analysis - \$/Acre
FIEDLER - 4	CV of Charles Fiedler, P.E.

**WHEREFORE**, DIGCE respectfully requests that the Water Quality Control Commission accept the following NOI on Rebuttal on behalf of DIGCE. Further, DIGCE reserves the right to supplement this pleading and its attachments as may be necessary or appropriate for good cause.

Respectfully Submitted,

GALLAGHER & KENNEDY, P.A.



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**Certificate of Service:**

I hereby certify that a true and accurate copy of the foregoing pleading was served upon the following parties of record by mail, hand-delivery and/or electronic mail this Friday, November 21, 2014:

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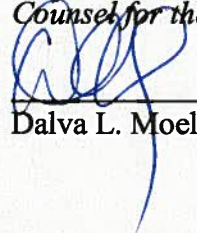
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**BEFORE THE WATER QUALITY CONTROL COMMISSION  
FOR THE STATE OF NEW MEXICO**

**In the Matter of:** )

**PROPOSED AMENDMENT )  
TO 20.6.6 NMAC (Dairy Rule) )**

**WQCC 13-08 (R)**

**WRITTEN REBUTTAL TESTIMONY OF MARK TURNBOUGH**

**1.0 Prior Testimony, Experience and Qualifications**

1.1 Did you previously provide written testimony for this proceeding?

*Yes. My testimony is provided with the "Notice of Intent to Present Technical Testimony on Behalf of the Dairy Group for a Clean Environment" filed by Gallagher & Kennedy, P.A., on October 17, 2014. My testimony is identified as exhibit DIGCE-1 on page 2 of that filing: and includes exhibits Turnbough-1 through Turnbough-4, inclusive.*

1.2 Did that testimony contain a statement of your experience and qualifications?

*Yes. Turnbough-4 is a copy of my Curriculum Vitae illustrating my experience and qualifications specifically applicable to the proposed Dairy Rule amendments.*

1.3 Do you have anything to change or add to that statement for purposes of this written testimony?

*Yes. This rebuttal testimony provides further detail in support of my original Direct Testimony.*

1.4 Is this written rebuttal testimony based upon your experience and qualifications as presented in your direct written testimony?

*Yes.*

**2.0 Review of Written Direct Testimony**

2.1 Did you review the Written Testimony of William Olson filed with the Coalition's Notice of Intent?

*Yes.*

### **3.0 Rebuttal of Written Direct Testimony of William C. Olson**

3.1 Have you read William Olson's Direct Testimony in this matter before the WQCC?

*Yes, I have.*

3.2 Do you agree with Mr. Olson's testimony?

*No.*

3.3 Please provide a brief summary of the issues of concern and an assessment of his testimony including the conclusions he reached?

*Mr. Olson relies heavily on testimony provided by Sarah McGrath during the 2010 WQCC dairy hearings to characterize the state of compliance of the dairies in New Mexico in order to lay out his justification for more stringent and prescriptive conditions in the Dairy Rule. Inspection of her testimony and the systematically selective collection of data she reports to support her observations show an extraordinarily biased approach, which creates a negative characterization of the environmental status of the dairies. In essence, she selects (without qualification) only one well per facility, and only the well with the highest concentration of contaminants for each facility. Mr. Olson is more than sophisticated enough to recognize the statistical deficiencies of her methodology, however, he not only accepts her findings without qualification, he periodically amplifies them by unequivocally referring to statistically biased results as fact.*

*Conclusions derived by Mr. Olson from the statistically indefensible presentation by Ms. McGrath were the basis for promulgating the overly prescriptive unnecessarily stringent provisions contained within the current Dairy Rule. Consequently, dairies seeking permit renewal are faced with substantial increases in monitoring well requirements which are unlikely to have a measureable effect on the improvement of environmental protection while imposing an unjustifiable increase in the cost of compliance. In contrast, the proposed DIGCE amendments (which are based on accepted scientific and technical principles) will provide flexible site-specific requirements that reflect the hydrogeological reality of each facility.*

3.4 Please provide a few examples of the nature and extent of the statistical bias you referenced in the previous answer?

*The cornerstone of Mr. Olson's argument consists of the following statements: "72% of the dairy facilities in New Mexico have had nitrate-nitrogen contamination of ground water during the history of the facility. In 2009, at that time, 57.1% of the dairy facilities had nitrate-nitrogen contamination of ground water in excess of Commission standards. The data shows (sic) that 71.9% of the dairy facilities with contamination in excess of standards were caused by dairy wastewater impoundments." (See WCO Direct Testimony, page 7, WQCC 13-08(R)).*

*All of this comes from Ms. McGrath's data submitted in previous testimony before the Water Quality Control Commission, which is derived from a statistically manipulated sample, misusing*

*scientific methodology, employing no data quality objectives and then stating that the results constitute a statistically significant conclusion. What she does not belabor is the fact that the results she reports for all four tables that form the basis of her testimony come from only a single well at each facility. Moreover, each of the wells she selected represents the highest contaminant concentration for each respective facility. Also, there is no reporting of historical trend line data for the wells actually selected and no follow-up sampling to confirm the results. Essentially, Ms. McGrath generates a purposive sample that exaggerates a negative condition at each dairy by reporting the highest maximum value and by concealing the results from the other monitoring wells at each facility. Furthermore, nothing within Ms. McGrath's testimony identifies any method at all for determining the linkage between the existence of an impoundment or other operational feature and the results she reports for each respective well selected for use in the data set.*

*During cross-examination in the aforementioned proceeding, Ms. McGrath admitted that she did not prepare in advance a plan or methodology for data evaluation, nor did she prepare or do independent data quality evaluations, she merely assumed the sampling methods were valid with respect to the information contained in her statistical representation. (See **Turnbough-5**). Based on my review of her work, I think she actually did have a plan, and I have just described it. Moreover, I think Mr. Olson used this grossly skewed data presentation as the basis for justifying the draconian increases in the prescriptive restrictions now imposed on the dairy industry. His alleged reliance on this "extensive technical and scientific testimony" is not only improper, but reveals his underlying agenda.*

3.5 Are there further examples of statistical bias you found during your evaluation of Mr. Olson's testimony?

*Yes, Mr. Olson uses data from Mr. Faris presented during the 2010 WQCC dairy hearings, but again significantly overreaches and misrepresents what they illustrate. Mr. Olson, citing Mr. Faris states, "NMED has required abatement plans for abatement of water pollution pursuant to Commission rules for at least 50 dairies. The estimated volume of ground water contamination at an individual dairy has been shown to range from 740 acre feet to 4,154 acre feet. The total volume of estimated ground water contamination from just 4 of the dairies under abatement plans would provide sufficient water to supply 8,300 households per year. Estimates of the extent of ground water contamination from 2 dairies shows that ground water contamination plumes caused by dairy operations can and do extend beyond a mile in length." (See WCO Direct Testimony, page 7, WQCC 13-08(R). There are important contextual data omitted in this representation of the facts. For instance, the four dairies in question obviously do not statistically represent the industry as a whole; in reality most dairies do not even come close to having the nature and extent of contamination reported for these particular facilities. Moreover, these examples don't even represent the norm for dairies currently under abatement plans; they represent the extreme upper tier of active abatement participants. Mr. Olson selectively reports extreme cases from the available data to reach outlandish and indefensible conclusions. For example, utilizing worst case scenarios, Mr. Olson makes a remarkable inductive leap by stating that "each dairy facility can be 100's of acres in size and extrapolating this over all 181 dairy facilities that need permit renewals..." (the vast majority of which do not have constituent levels approaching the Faris representative samples) he concludes that, "... permitting these facilities*



*will result in extensive water pollution and harm to the state through loss of water resources” (See WCO Direct Testimony, page 26, WQCC 13-08(R). There is simply no rational nexus between the worst case scenario data he is utilizing to represent normal dairy activity and accurate data that reflects the way the large majority of dairies that are in compliance or close to compliance with WQCC standards operate. For example, in Ms. McGrath’s tables that identify (using the highest single well method), concentrations of nitrate-nitrogen for facilities “in compliance and out” (above 10 mg/L) there are nearly 70 facility results reported that are within 5 mg/L of achieving compliance with the standard. A more balanced representation of data from all the wells would, in this instance, by definition show an even narrower band width of noncompliance, perhaps approaching substantial compliance for those facilities. Ms. McGrath shows one facility being out of compliance at a level of 10.1 mg/L. Extrapolations by definition follow observable and incremental trend lines in which one data point builds on another. Mr. Olson’s extrapolation from the relatively few extreme cases to a generalization about the environmental condition of the dairy industry epitomizes the worst kinds of ecological fallacies that start with bad data based on deliberately selected extreme values and further amplify the bias with highly selective interpretation.*

3.6 Do you have any other observations regarding Mr. Olson’s testimony?

*I think it is ironic that individuals who have significant experience in evaluating rigorous statistically analysis of ground water samples in order to assure that those samples are representative of the water formation from which they are collected would purposely employ a onetime snapshot of well characterization utilizing the maximum possible values, instead of a more realistic and representative facility-wide assessment based on results from all of the wells. They had the data available for that kind of analysis and chose to manipulate the result. There is consequently no sense of proportionality in the assessment of the level of contamination identified.*

*Unfortunately, much of what Olson characterizes as “extensive scientific information” that led to major increases in the requirements set forth in the Dairy Rule are not statistically valid or scientifically justified, and consequently cannot be shown to be more protective of ground water resources. To date, the only quantifiable changes regarding dairy operations that can be attributed to the Dairy Rule are the dramatically increased costs of compliance.*

3.7 Do you have any response to Mr. Olson’s testimony regarding the “point of compliance” issue, the Tyrone decision, and the characterization of the history and nature of ground water regulation under the Water Quality Act?

*Yes. I understand that the Commission has considered these issues in other proceedings, particularly the Commission’s consideration and adoption of the Copper Mine Rule, 20.6.7 NMAC. Mr. Olson’s testimony contains considerable legal interpretation and argument, which I will leave to the attorneys to address in legal argument, as I do not intend to draw any legal conclusions. However, I have reviewed portions of the Commission’s Statement of Reasons and Order adopting the Copper Mine Rule, which are provided along with this testimony as **Turnbough-6** (pages 1-11, 18-22, and 198-214). That document indicates to me that the Commission has previously considered and largely rejected Mr. Olson’s interpretation of the*

*Water Quality Act and his contentions that the Commission's adoption of DIGCE's proposed amendments would violate the Water Quality Act by establishing a "point of compliance" regulatory framework.*

#### **4.0 Conclusion**

4.1 As a result of your review of the written direct testimony of Mr. Olson, are there any changes you would like to make regarding your testimony or recommendations in your written direct testimony?

*If a more objective treatment of the existing data would have been placed in the record in 2011 it would likely have mitigated some of the obviously extreme measures that were put into place.*

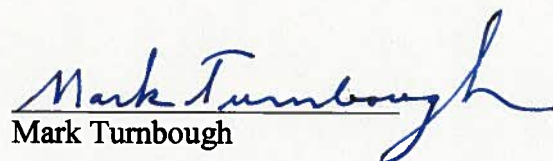
*Just a few final comments regarding Mr. Olson's general approach to advocate for the retention of what are in my opinion unjustifiably stringent requirements in the Dairy Rule; in his testimony Mr. Olson states, "all parties reached an agreement on proposed amendments to the Dairy Rule on July 7, 2011 which were embodied in a settlement of ALL of DIGCE's issues with the regulations..." Mr. Olson surely knows that none of the parties were satisfied with the final settlement and anticipated revisiting the rule in the future, as evidenced by the comments of Mr. Olson and Ms. Martin when they stated:*

*"Yes, there are still some disagreements within certain portions of how the rule works and that will probably need to be worked out in the future...So we fully stand by what we have reached at this point in this agreement, fully recognizing that there are problems that might need to be addressed in the future, which were part of the discussions we had during our settlement talks." (See **Turnbough-7** at 74).*

*"Even though there is plenty of room for improvement, we won't know how to really improve it until the permit process is started up again and the rule is actually put into the permit, and that's going to take the staff at NMED and the dairymen to identify any items in the rule that really need to be changed" (See **Turnbough-7** at 75).*

*Mr. Olson and Ms. Martin clearly contemplated a time when the Dairy Rule would need to be revisited. The backlog of draft permits, the numerous variance requests and the potential cost associated with draft permits that have been processed represent irrefutable evidence that it's time to revisit the basis for many of the prescriptive requirements that currently burden those permits.*

Respectfully submitted,

  
Mark Turnbough



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1 STATE OF NEW MEXICO  
 2 WATER QUALITY CONTROL COMMISSION  
 3  
 4 WQCC 09-13(R)  
 5  
 6 IN THE MATTER OF  
 7 PROPOSED AMENDMENTS TO  
 8 20.6.2 NMAC - DAIRY RULES  
 9  
 10  
 11  
 12  
 13  
 14 TRANSCRIPT OF PROCEEDINGS  
 15  
 16 BE IT REMEMBERED that on the 16th day of  
 17 April, 2010, the above-entitled matter came on for  
 18 hearing before the New Mexico Water Quality Control  
 19 Commission, taken at the State Capitol Building, Room  
 20 307, Santa Fe, New Mexico, at the hour of 8:08 a.m.  
 21  
 22  
 23 VOLUME 4  
 24  
 25

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 6 JERRY NIVENS  
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 9 Direct Examination by Mr. Frederick 717  
 10 Examination by the Commission 726  
 11 WILLIAM OLSON, SARAH MC GRATH, BART FARIS,  
 12 GEORGE SCHUMAN, WILLIAM PEARSON, CHARLES  
 13 THOMAS and ROBERT GEORGE  
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 16 Further Examination by the Commission 892  
 17 Redirect Examination by Mr. Noble 912  
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 19 Further Recross by Mr. Moellenberg 913  
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 21 Direct Testimony 954  
 22  
 23 E X H I B I T S  
 24 ADMITTED  
 25

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1 MR. FREDERICK: I -- well, since there's no  
 2 cross-examination --  
 3 MR. GLASS: Before -- I'm sorry. I almost  
 4 misstepped again.  
 5 Does the Commission have questions --  
 6 MR. FREDERICK: Ah.  
 7 MR. GLASS: -- for Dr. Thu?  
 8 EXAMINATION  
 9 BY THE COMMISSION:  
 10 MR. HUTCHINSON: I have a couple.  
 11 MR. GLASS: Commissioner Hutchinson has  
 12 questions, Dr. Thu.  
 13 MR. HUTCHINSON: Good morning.  
 14 Good morning, Dr. Thu.  
 15 MR. THU: Good morning.  
 16 MR. HUTCHINSON: Are you aware that the  
 17 proposed regulation is directed at water quality,  
 18 particularly looking at groundwater?  
 19 MR. THU: I am aware of that. Yes. My  
 20 understanding is that the Commission can take into  
 21 account social and economic factors associated with  
 22 those kinds of rules.  
 23 MR. HUTCHINSON: Okay.  
 24 And so that's -- that's the only reason you  
 25 would be suggesting a one-mile buffer, or setback?

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1 MR. THU: That would be the reason that I  
 2 would suggest it from the standpoint of exposure to  
 3 emissions. That's correct.  
 4 MR. HUTCHINSON: Okay.  
 5 And in the -- in the studies that you were  
 6 referring to, are all CAFOs the same?  
 7 MR. THU: No.  
 8 MR. HUTCHINSON: And so there's a variety of  
 9 different types of CAFOs for, let's say, different  
 10 livestock.  
 11 MR. THU: There are -- there are differences  
 12 between -- between different -- that would be an  
 13 accurate statement. That's correct.  
 14 MR. HUTCHINSON: Would you -- would you say  
 15 that most of the CAFOs studies that you were looking at  
 16 are dairy facilities or some other type of CAFO?  
 17 MR. THU: Most of the studies that I'm  
 18 referring to are based upon swine CAFOs, and the -- but  
 19 what you can do is you can extrapolate from those swine  
 20 studies to the dairy facilities, or any other kind of  
 21 CAFO for that matter.  
 22 As we know, the -- some of the essential  
 23 elements of manure are the same between different  
 24 animals. And so the kind of gases produced by dairy  
 25 facilities, for example, or dairy cattle or dairy manure

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1 is similar with respect to swine, particularly in terms  
 2 of hydrogen sulfide being produced.  
 3 And then in addition, you can extrapolate the  
 4 size differences between swine CAFOs and dairies. We  
 5 know that dairy cattle, of course, evolving livestock  
 6 produce the most manure per animal unit. So you can  
 7 extrapolate five size differences based upon the amount  
 8 of manure produced per animal. And then you can make  
 9 educated inferences based upon the different livestock.  
 10 MR. HUTCHINSON: Okay.  
 11 And so these inferences that you are referring  
 12 to are what you base your statement on that a confined  
 13 animal feeding operation for a dairy is close enough to  
 14 a swine operation that -- that you can -- you can say  
 15 that the same social impacts are going to occur.  
 16 MR. THU: That is correct.  
 17 MR. HUTCHINSON: Okay. Thank you.  
 18 MR. GLASS: Are there other questions from the  
 19 Commission for Dr. Thu?  
 20 I see none.  
 21 Mr. Frederick, do you have redirect?  
 22 MR. FREDERICK: I have no redirect.  
 23 MR. GLASS: All right.  
 24 Well, Dr. Thu, that was short and rather  
 25 painless. So --

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1 MR. THU: All right. Well, best of luck to  
 2 all of you.  
 3 MR. GLASS: Thank you very much for being with  
 4 us today.  
 5 MR. THU: Okay. Thank you.  
 6 MR. GLASS: Bye.  
 7 Okay. That puts us relatively back on  
 8 schedule with Mr. Moellenberg's cross-examination of the  
 9 Department's panel.  
 10 Would you like to proceed?  
 11 MR. MOELLENBERG: We would. Thank you,  
 12 Mr. Hearing Officer.  
 13 And I understand that there's some limitations  
 14 on Ms. McGrath's availability. So we would like to  
 15 begin today with some cross-examination of Ms. McGrath.  
 16 MR. GLASS: Excellent.  
 17 WILLIAM OLSON, SARAH MC GRATH,  
 18 BART FARIS, GEORGE SCHUMAN, WILLIAM PEARSON,  
 19 CHARLES THOMAS and ROBERT GEORGE  
 20 having been previously duly sworn or affirmed, were  
 21 examined and testified further as follows:  
 22 CROSS EXAMINATION (Continued)  
 23 BY MR. MOELLENBERG:  
 24 MR. MOELLENBERG: Good morning, Ms. McGrath.  
 25 MS. MC GRATH: Good morning.

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1 MR. MOELLENBERG: You've provided direct  
 2 testimony in this case, have you not?  
 3 MS. MC GRATH: Yes. That's correct.  
 4 MR. MOELLENBERG: Did you provide any rebuttal  
 5 testimony?  
 6 MS. MC GRATH: No, I did not.  
 7 MR. MOELLENBERG: Do you have your written  
 8 testimony in front of you?  
 9 MS. MC GRATH: Yes, I do.  
 10 MR. MOELLENBERG: And I believe you  
 11 introduced -- or had three exhibits associated with your  
 12 testimony; is that right?  
 13 MS. MC GRATH: That's correct.  
 14 MR. MOELLENBERG: And those are SKM-1, right?  
 15 MS. MC GRATH: Yes, um-hum.  
 16 MR. MOELLENBERG: And SKM-2?  
 17 MS. MC GRATH: Yes.  
 18 MR. MOELLENBERG: And SKM-3, right?  
 19 MS. MC GRATH: Correct.  
 20 MR. MOELLENBERG: Let me start with SKM-3.  
 21 Could you just summarize what's in that  
 22 exhibit?  
 23 MS. MC GRATH: Yes. Just a moment, please.  
 24 So from the exhibit summary associated with  
 25 SKM-3, the exhibit contains groundwater and wastewater

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1 quality data associated with dairy facilities that are  
 2 actively discharging wastewater and those that have  
 3 discharged wastewater in the past but are currently  
 4 inactive. So it's the 168 dairies, 144 currently  
 5 active, 24 inactive.  
 6 The exhibit contains lab analysis sheets for  
 7 groundwater and wastewater quality submitted by the  
 8 dairy facilities. Each document is identified by the  
 9 discharge permit number and contains the four most  
 10 recent sampling events for groundwater and wastewater,  
 11 the highest and lowest concentration of total Kjeldahl  
 12 nitrogen in wastewater during the current permit term  
 13 and the single highest concentration of nitrate-nitrogen  
 14 in groundwater ever documented at each dairy facility.  
 15 And then there is also a facility map for each  
 16 of the dairies.  
 17 MR. MOELLENBERG: So, Ms. McGrath, if I  
 18 understand you correctly, the documents in Exhibit SKM-3  
 19 would represent just a partial set of groundwater data  
 20 with respect to each of those dairy facilities?  
 21 MS. MC GRATH: Yes. That's correct.  
 22 MR. MOELLENBERG: Does SKM-3 include any water  
 23 level data?  
 24 MS. MC GRATH: I don't know that it does. It  
 25 may, but that's not something on the whole that I

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1 believe is included.  
 2 MR. MOELLENBERG: Is -- does SKM represent the  
 3 full data set that you reviewed and relied on for  
 4 purposes of your written testimony in this case?  
 5 MS. MC GRATH: Yes. As far as the data is  
 6 concerned, yes.  
 7 MR. MOELLENBERG: So there's no other data  
 8 that you're relying on as a basis for your testimony  
 9 other than what is in SKM-3?  
 10 MS. MC GRATH: As far as an exhibit is  
 11 concerned, no.  
 12 MR. MOELLENBERG: Were there things that are  
 13 not exhibits that you relied on for your written  
 14 testimony?  
 15 MS. MC GRATH: Yes. In part, in the  
 16 discussion about liners, which is very short, yes, there  
 17 was some review conducted of the files, but there was no  
 18 exhibit that was included as far as that's concerned.  
 19 MR. MOELLENBERG: So the -- so if I understand  
 20 what you said correctly, you reviewed file information  
 21 regarding liner types at various dairy facilities?  
 22 MS. MC GRATH: Yes. We took a look at the  
 23 liner history for impoundments, and we did not provide  
 24 an exhibit for that.  
 25 MR. MOELLENBERG: Did you compile any history

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1 of liner types for each facility that you did not  
 2 provide as an exhibit?  
 3 MS. MC GRATH: Yes. Technical staff took  
 4 notes on the files and provided that to me so that I  
 5 could review. I also did review some files, but we did  
 6 not present that as an exhibit, and mainly because  
 7 there's extensive documentation in the files. Many of  
 8 these dairies have been around for quite some time.  
 9 So as is summarized in my testimony on page 4  
 10 of 6, in many cases, the liner history was not well  
 11 documented. We -- there was information in the  
 12 application as far as what liner type the facility said  
 13 was there, and then, of course, the Department may or  
 14 may not have -- have required something different in the  
 15 actual discharge permit.  
 16 But as I mentioned, the liner history is not  
 17 well documented, and it appears that for  
 18 nonsynthetically lined lagoons there are situations in  
 19 which one liner has replaced another liner in the same  
 20 impoundment, the data was not clear, so therefore was  
 21 not an exhibit that was created.  
 22 MR. MOELLENBERG: Ms. McGrath, have you ever  
 23 prepared a table or summary of liner types or liner  
 24 histories for these dairy facilities?  
 25 MS. MC GRATH: As far as an internal document,

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1 that's what we were trying to prepare upon this review,  
 2 and it was not really possible in tabular form, because,  
 3 like I mentioned, the liner history was -- it was not  
 4 clear, and it seemed that it would be misrepresenting,  
 5 or the Department would have to be making certain  
 6 assumptions that we did not want to make.

7 MR. MOELLENBERG: But you drew some  
 8 conclusions about liner histories in your direct  
 9 testimony; is that right?

10 MS. MC GRATH: Yes, primarily synthetic versus  
 11 nonsynthetic. Nonsynthetic would include manure-lined,  
 12 in situ, compacted earth and clay. So that, yes, trying  
 13 to draw a difference between synthetic and nonsynthetic.

14 MR. MOELLENBERG: Okay. I'll come back to  
 15 that in a little bit.

16 Other than what you've told us so far about  
 17 the data that's in SKM-3 and the file review regarding  
 18 liner history, is there any other data that you've  
 19 relied on for your direct testimony in this case?

20 MS. MC GRATH: No.

21 MR. MOELLENBERG: So, Ms. McGrath, you  
 22 describe, I think, in -- someplace in your testimony --  
 23 you describe your review as a data evaluation? Is that  
 24 right, or would you describe it some other way?

25 MS. MC GRATH: No. That's correct.

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1 MR. MOELLENBERG: Did you prepare in advance  
 2 of your data evaluation a plan or methodology about how  
 3 you would go about this data evaluation?

4 MS. MC GRATH: Could you be more specific?

5 MR. MOELLENBERG: Well, how did you decide  
 6 what method you would use to evaluate the data that is  
 7 in SKM-3?

8 MS. MC GRATH: So the tables that are provided  
 9 in SKM Exhibit 1 and 2 were intended to summarize that  
 10 data -- that data so that then we could be comparing the  
 11 upgradient monitoring well concentration to the  
 12 downgradient monitoring well concentration, as far as to  
 13 determine if there was contamination from the facility.

14 As far as compiling the information, the  
 15 methodology, we asked staff to make copies of the most  
 16 recent information, as I described in my exhibit summary  
 17 for SKM-3. So we had a standardized, I guess, request  
 18 from staff, but they were copied from the files, for  
 19 what was contained in the files as of December, 2009.

20 Did that answer your question?

21 MR. MOELLENBERG: Well, let me explore that a  
 22 little bit further.

23 Did you prepare any written plan that set out  
 24 the method you would use for your data evaluation before  
 25 you started this project?

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1 MS. MC GRATH: No, nothing written.

2 MR. MOELLENBERG: So is your previous answer,  
 3 then -- is that a full description of the methodology  
 4 that you used for your data evaluation?

5 MS. MC GRATH: Yes, in as far as -- as  
 6 describing what we asked staff to -- to make copies out  
 7 of the files.

8 As far as the evaluation, are you talking  
 9 about the percentages that are in my testimony?

10 MR. MOELLENBERG: I'm just talking about the  
 11 methodology you used to evaluate the data in SKM-3 --

12 MS. MC GRATH: Okay.

13 MR. MOELLENBERG: -- which is, obviously, a  
 14 voluminous set of data.

15 MS. MC GRATH: Yes. The answer is yes.

16 MR. MOELLENBERG: So you've completely  
 17 described your methodology here in your testimony this  
 18 morning?

19 MS. MC GRATH: I believe so.

20 MR. MOELLENBERG: Did you have any discussions  
 21 within the Department about the methodology or approach  
 22 you would use for your data evaluation?

23 MS. MC GRATH: Well, we discussed the approach  
 24 with the technical staff; my program manager, George  
 25 Schuman; and Bureau Chief, Bill Olson.

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1 MR. MOELLENBERG: Did they agree with your  
 2 methodology and approach to this data evaluation?

3 MS. MC GRATH: Yes. There's -- there is  
 4 voluminous information contained in the monitoring files  
 5 for dairy facilities. They're required to report  
 6 quarterly, especially for groundwater monitoring. And  
 7 so while we do not have that information electronically,  
 8 it's all paper, we wanted to provide the Commission with  
 9 something that was -- that we thought would be useful  
 10 information, current information, you know, as well as a  
 11 slice of -- of historical.

12 MR. MOELLENBERG: Ms. McGrath, did you consult  
 13 with anyone outside the Department regarding the  
 14 methodology you would use for your data evaluation?

15 MS. MC GRATH: No.

16 MR. MOELLENBERG: Did you consult any  
 17 published papers or published methods or anything of  
 18 that sort in determining how you would go about your  
 19 data evaluation?

20 MS. MC GRATH: No.

21 MR. MOELLENBERG: Ms. McGrath, as part of your  
 22 data evaluation, did you do any evaluation of the  
 23 quality of the data that's contained in SKM-3?

24 MS. MC GRATH: No. However, I would like to  
 25 clarify that in our current permits -- and I believe

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1 there is an exhibit of this -- it's WO-2, Exhibit  
 2 W-20 -- WO-2, Ground Water Discharge Permit Renewal and  
 3 Modification. It's a template that we use.  
 4 The requirement for -- for groundwater  
 5 monitoring, basically standard methods for water  
 6 analysis, is on page 11, and it's number 32. So there  
 7 is a discharge permit requirement to -- to have the  
 8 analysis done in accordance with standard methods.  
 9 MR. MOELLENBERG: So that applies to the  
 10 analysis of the lab data.  
 11 MS. MC GRATH: Correct.  
 12 MR. MOELLENBERG: Does the permit template  
 13 that you referred -- well, first of all, the permit  
 14 template that you referred to, that's -- when was that  
 15 developed?  
 16 MS. MC GRATH: This is a longstanding template  
 17 that is developed over time and revisions are made to it  
 18 over time. But this is a standard condition that's been  
 19 in discharge permits for as long as I have been with the  
 20 bureau.  
 21 So it may not have looked exactly as this is  
 22 formatted, but the requirement to have water --  
 23 wastewater analyzed in accordance with standard methods  
 24 is a standard requirement.  
 25 MR. MOELLENBERG: Is that the only quality

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1 control measure that is required under dairy discharge  
 2 permits?  
 3 MS. MC GRATH: Would -- could you clarify?  
 4 I'm not sure I understand the question.  
 5 MR. MOELLENBERG: Well, Ms. McGrath, is there  
 6 any requirement regarding the quality of sampling  
 7 methods or sampling activities?  
 8 MS. MC GRATH: There is guidance in how, for  
 9 example, groundwater monitoring should occur, and I  
 10 think that probably someone else in the panel could  
 11 speak to that more than me. But as far as the method of  
 12 something to be collected, purging of the well, other  
 13 requirements would also be contained in -- in the  
 14 discharge permits for dairies.  
 15 But as far as groundwater, it's just the  
 16 requirement that needs to be complied with.  
 17 MR. MOELLENBERG: But in essence, you did no  
 18 independent data quality evaluation with respect to the  
 19 information contained in SKM-3?  
 20 MS. MC GRATH: I believe I understand your  
 21 question.  
 22 The answer would be no.  
 23 MR. MOELLENBERG: Did anyone on your staff do  
 24 a data quality evaluation of the information in SKM-3?  
 25 MS. MC GRATH: So you're asking me if we

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1 ensured that the samples were basically analyzed in  
 2 accordance with the discharge permit?  
 3 MR. MOELLENBERG: Well, I -- you previously  
 4 answered that you had not done an evaluation of the  
 5 quality of that data.  
 6 I'm simply asking you if anyone else on your  
 7 staff had done such an analysis.  
 8 MS. MC GRATH: So no. I'd like to clarify  
 9 that. No. We looked at the data, we entered the data  
 10 into table form. We did not, to my knowledge, actually  
 11 do a compliance check, so to speak, to make sure that  
 12 what was being reported to us -- I guess we were making  
 13 an assumption there that the water sampling -- the lab  
 14 analysis is contained.  
 15 So that is something that if -- if there's  
 16 interest in that, it can be looked at.  
 17 But as far as compliance, that we did not take  
 18 a look at. No.  
 19 MR. MOELLENBERG: So you're assuming that the  
 20 sampling methods were valid.  
 21 MS. MC GRATH: That is correct.  
 22 MR. MOELLENBERG: Without any independent  
 23 review?  
 24 MS. MC GRATH: To my knowledge, right. That  
 25 would be a violation of the discharge permit. So I'm

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1 not familiar with the specifics of each of the discharge  
 2 permits, but I'm -- I'm not aware that they were out of  
 3 compliance with their sampling method.  
 4 MR. MOELLENBERG: But you did no review of  
 5 that, you said you did no compliance review.  
 6 MS. MC GRATH: There was no compliance review.  
 7 MR. MOELLENBERG: You mentioned some  
 8 activities connected with taking the data and putting it  
 9 in tabular form.  
 10 MS. MC GRATH: Um-hum.  
 11 MR. MOELLENBERG: Are you telling me that  
 12 there was some kind of quality control check on the  
 13 transfer --  
 14 MS. MC GRATH: Um-hum.  
 15 MR. MOELLENBERG: -- of the data from SKM-3  
 16 into the spreadsheets that are in SKM-1 and 2?  
 17 MS. MC GRATH: Yes. That's correct.  
 18 MR. MOELLENBERG: So you checked that nobody  
 19 made a clerical error in the -- in the numbers?  
 20 MS. MC GRATH: Yes. We did our best.  
 21 MR. MOELLENBERG: Do discharge permits require  
 22 groundwater levels to be measured at the time of  
 23 sampling of the monitoring well?  
 24 MS. MC GRATH: Yes.  
 25 MR. MOELLENBERG: And that data is reported to



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1 the Department under the terms of the discharge permits?  
 2 MS. MC GRATH: Yes. It should be.  
 3 MR. MOELLENBERG: But that data was not  
 4 included in your exhibits?  
 5 MS. MC GRATH: No.  
 6 MR. MOELLENBERG: Did you do any analysis of  
 7 groundwater level data for purposes of preparing your  
 8 testimony?  
 9 MS. MC GRATH: No.  
 10 MR. MOELLENBERG: So I just -- I just want to  
 11 make sure I'm complete, then, on the data that you  
 12 considered for your data evaluation.  
 13 There's nothing in the record indicating that  
 14 you or any member of the Department in preparing the  
 15 materials for your written testimony looked at data  
 16 regarding any other potential sources of groundwater  
 17 contamination in the vicinity of these dairies?  
 18 MS. MC GRATH: You mean besides the upgradient  
 19 monitoring well?  
 20 MR. MOELLENBERG: The upgradient monitoring  
 21 well, then, would be -- you're saying that would be  
 22 information related to other potential sources?  
 23 MS. MC GRATH: Yes. That's more the testimony  
 24 of George Schuman, but for -- for the purposes of the  
 25 scope of my testimony, we were looking at comparing the

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1 downgradient monitoring well concentration to the  
 2 upgradient monitoring well concentration.  
 3 And so basically the -- the upgradient well  
 4 would become the standard for the facility, and -- and  
 5 that's what we compared to the downgradient. So if the  
 6 downgradient was higher than the upgradient and over the  
 7 standard of 10 milligrams per liter of nitrate-nitrogen,  
 8 then it was considered contaminated for the purposes of  
 9 my testimony.  
 10 MR. MOELLENBERG: So other than the upgradient  
 11 well data, you didn't consider any other data regarding  
 12 other potential sources of contamination; is that right?  
 13 MS. MC GRATH: Yes. That's right.  
 14 Are you -- are you asking about other  
 15 potential contamination sources at the dairy itself?  
 16 MR. MOELLENBERG: I was thinking largely of  
 17 any contaminant sources around the dairy, but I'm just  
 18 trying to hone in on what you did and didn't consider.  
 19 MS. MC GRATH: So yes. The upgradient well is  
 20 what we considered as compared to the downgradient well  
 21 for -- for quality.  
 22 MR. MOELLENBERG: So basically your whole  
 23 evaluation, if I understand it correctly, and correct me  
 24 if I'm wrong, is to look at one data point being an  
 25 upgradient well, one data point being a downgradient

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1 well, compare those two levels, and that's how you drew  
 2 your conclusions.  
 3 MS. MC GRATH: Yes. That's correct.  
 4 MR. MOELLENBERG: And there was nothing else  
 5 that you considered in your evaluation.  
 6 MS. MC GRATH: No.  
 7 MR. MOELLENBERG: Do -- are there upgradient  
 8 wells at all of the dairy facilities that you evaluated?  
 9 MS. MC GRATH: There are upgradient wells at  
 10 most facilities. I believe there are some older  
 11 facilities that -- I should say older discharge permits  
 12 that have been expired or that were issued sometime ago  
 13 that an upgradient well may not have been required.  
 14 During my time as agricultural team leader, we do  
 15 require upgradient wells at all of the dairies.  
 16 So in -- in the tables, I believe, if -- for  
 17 the upgradient -- the upgradient monitoring well  
 18 concentration, if a well was not required by the  
 19 Department, then it would be N/A. If a monitoring well  
 20 was required, and the well either was not sampled or  
 21 they were not able to collect a sample, for whatever  
 22 reason, the data was not provided to us, then it is  
 23 marked as such.  
 24 But on the whole, upgradient monitoring wells  
 25 are required at dairy facilities, and certainly upon

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1 renewal under the current rule would be required to  
 2 install upgradient wells.  
 3 MR. MOELLENBERG: Now, Ms. McGrath, how does  
 4 one go about determining whether a well is upgradient or  
 5 downgradient?  
 6 MS. MC GRATH: That's outside the scope of my  
 7 testimony. I would defer that to the testimony of  
 8 George Schuman.  
 9 If you'd like to take that, George.  
 10 MR. SCHUMAN: So, Mr. Moellenberg, may I  
 11 answer that?  
 12 MR. MOELLENBERG: Fine.  
 13 MR. SCHUMAN: My direct testimony addresses  
 14 this point specifically. It's addressed in the  
 15 testimony regarding subsection L, Section 3223. That  
 16 can be found in the NOI Attachment 8.  
 17 And specifically how groundwater flow is  
 18 determined is that the elevation of the water level in a  
 19 well is calculated. It's calculated by first knowing  
 20 the top of casing elevation of the monitoring well, then  
 21 by measuring the depth to the water in the well, and  
 22 with that data, one can calculate then the elevation of  
 23 the water surface. That information is then used to  
 24 determine the -- and draw groundwater elevation contours  
 25 on a map.

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1 And as I noted in one of my exhibits regarding  
 2 this, the groundwater flows from areas of high potential  
 3 energy to -- or hedge areas of low potential energy in  
 4 its direction is perpendicular to the lines of equal  
 5 water to the water evaluation.  
 6 That's Exhibit 3223-7.  
 7 MR. MOELLENBERG: Mr. Schuman, did you have  
 8 any part in assisting Ms. McGrath in preparing her  
 9 testimony?  
 10 MR. SCHUMAN: Yes, I did.  
 11 MR. MOELLENBERG: And what did you do?  
 12 MR. SCHUMAN: My part included working with  
 13 staff to take data from her SKM-3 and enter it into  
 14 tabular form.  
 15 MR. MOELLENBERG: In those activities, did you  
 16 do any assessment of water levels with respect to the  
 17 data that you provided?  
 18 MR. SCHUMAN: No.  
 19 MR. MOELLENBERG: So back to Ms. McGrath, if I  
 20 understand correctly, neither you nor your staff did any  
 21 evaluation of water level data at the time of -- or as  
 22 part of your preparation of this testimony?  
 23 MS. MC GRATH: That's correct.  
 24 MR. MOELLENBERG: So how did you reach  
 25 conclusions regarding which wells were upgradient and

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1 which wells were downgradient of dairy facilities?  
 2 MS. MC GRATH: Monitoring wells are required  
 3 to be installed in accordance with the discharge permit,  
 4 which requires that the downgradient sources as listed  
 5 in the discharge permit be monitored, as well as  
 6 upgradient monitoring well to be installed.  
 7 In addition, the -- the permit -- the  
 8 discharge permits for dairies also require them to  
 9 determine groundwater flow direction and, therefore,  
 10 ensuring that the monitoring wells are located properly  
 11 in accordance with the permit. So that is the  
 12 permittees' responsibility.  
 13 Questions about the survey and specifics about  
 14 that, you know, George Schuman can also go into that in  
 15 more detail in his direct testimony.  
 16 MR. MOELLENBERG: But absent any direct  
 17 evaluation of any data relating to upgradient or  
 18 downgradient or groundwater conditions or flow, for  
 19 purposes of your analysis, you simply assumed that --  
 20 that for the data you looked at particular wells were  
 21 designated as upgradient or downgradient; is that right?  
 22 MS. MC GRATH: That's correct. And again, I'd  
 23 like to stress that the monitoring wells are required to  
 24 be installed in accordance with the permit. This is  
 25 data that is provided to us by the dairy facilities.

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1 They typically give us a map that shows the upgradient  
 2 well, the location of the downgradient wells, and then  
 3 the copies of the lab analysis also assist with that.  
 4 MR. MOELLENBERG: The copies of the lab  
 5 analysis assist with that.  
 6 How do they assist? By showing you which well  
 7 was being sampled?  
 8 MS. MC GRATH: Let me clarify that. The copy  
 9 of the -- or the layout of the dairy facility then in  
 10 using that with the analysis from the lab -- the lab  
 11 analysis shows which well was sampled and the  
 12 concentration, and that correlates to the map and also  
 13 as required by the discharge permit.  
 14 MR. MOELLENBERG: Ms. McGrath, are you  
 15 familiar with the concept of groundwater gradients?  
 16 MS. MC GRATH: Yes.  
 17 MR. MOELLENBERG: Do -- are you familiar  
 18 with -- or have you evaluated groundwater gradients at  
 19 the dairy facilities represented in Exhibit SKM-3?  
 20 MS. MC GRATH: No. We did not evaluate the  
 21 surveys -- the surveys as required by the discharge  
 22 permit. We did not evaluate those when looking at this  
 23 data.  
 24 MR. MOELLENBERG: Generally speaking,  
 25 Ms. McGrath, are groundwater gradients always constant

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1 over time?  
 2 MS. MC GRATH: That's really outside the scope  
 3 of my testimony. I would give that question to George  
 4 Schuman. I believe he's addressed that in his direct.  
 5 MR. MOELLENBERG: Mr. Schuman, can you respond  
 6 to that question?  
 7 MR. SCHUMAN: Repeat it again, please.  
 8 MR. MOELLENBERG: In your experience, are  
 9 groundwater gradients at dairy facilities constant over  
 10 time?  
 11 MR. SCHUMAN: They need not be constant over  
 12 time.  
 13 MR. MOELLENBERG: They need not be constant  
 14 over time.  
 15 MR. SCHUMAN: They may or may not be.  
 16 MR. MOELLENBERG: So they're not always  
 17 constant.  
 18 MR. SCHUMAN: Not necessarily, no.  
 19 MR. MOELLENBERG: Does the direction of flow  
 20 at dairy facilities sometimes change?  
 21 MR. SCHUMAN: It could.  
 22 MR. MOELLENBERG: Ms. McGrath, was your direct  
 23 testimony intended to draw any conclusions regarding  
 24 sources of groundwater contamination at dairy  
 25 facilities?

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1 MS. MC GRATH: Yes.

2 MR. MOELLENBERG: And were those conclusions

3 based on the information we've spoken about so far?

4 MS. MC GRATH: Yes.

5 MR. MOELLENBERG: So those conclusions don't

6 consider any other potential groundwater contamination

7 sources in the vicinity of the dairy facilities.

8 MR. MENDEZ: I'm going to object to that

9 question. It's already been asked as to what other

10 sources were considered.

11 MR. GLASS: Asked and answered.

12 MR. MOELLENBERG: Ms. McGrath, referring to

13 page 1 of your written testimony, NOI Attachment 2 -- do

14 you have that in front of you?

15 MS. MC GRATH: Yes, I do.

16 MR. MOELLENBERG: Toward the bottom, you begin

17 talking about some of your responsibilities at the

18 Environment Department.

19 Could you describe your responsibilities

20 regarding reviews of discharge permits?

21 MS. MC GRATH: Yes. Technical staff in our

22 program are the primary lead on discharge permits. So

23 for renewals, they are the one that's mainly in charge

24 of renewing the application.

25 And then we -- we sit down, typically myself,

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1 oftentimes the program manager, George Schuman, and

2 discuss the specifics of the facility, looking at the

3 different components that are required in our current

4 template, and seeing if there are additional --

5 additional measures that need to be included to the

6 permit that are not covered under the current permit,

7 also looking at compliance, as well.

8 MR. MOELLENBERG: Now, do you review every

9 discharge permit for dairy facilities?

10 MS. MC GRATH: Yes, unless I'm on vacation.

11 MR. MOELLENBERG: And if you're on vacation,

12 who would do the review?

13 MS. MC GRATH: The supervisor would do the

14 review initially, and then, of course, our program

15 manager, George Schuman.

16 MR. MOELLENBERG: And who is the supervisor?

17 MS. MC GRATH: We have -- our structure, we

18 have technical staff that write discharge permits, as

19 well as supervisors that write discharge permits.

20 Technical staff would route their work through their

21 supervisor, then to the appropriate team leader, and

22 then, of course, everything in the program goes through

23 our program manager.

24 MR. MOELLENBERG: How long have you had this

25 responsibility, for reviewing all dairy discharge

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1 permits for technical and regulatory completeness?

2 MS. MC GRATH: For the last five years, I

3 believe -- let me check my resume.

4 Yes, since January, 2005. 2005.

5 MR. MOELLENBERG: So you have -- of the

6 discharge permits issued by the Department since

7 January, 2005, approximately, how many of those, by

8 percentage, would you say you have reviewed?

9 MS. MC GRATH: Most. I don't --

10 MR. MOELLENBERG: More than 50 percent?

11 MS. MC GRATH: Yes, more than 50 percent.

12 MR. MOELLENBERG: And of that percentage,

13 then, would the ones -- the ones you had not reviewed,

14 then, would have been reviewed by the supervisor?

15 MS. MC GRATH: The supervisor and our program

16 manager, George Schuman.

17 MR. MOELLENBERG: And who was the supervisor

18 you're referring to?

19 MS. MC GRATH: We have three supervisors, Bill

20 Pearson, Kim Kirby and Kathy Deal.

21 MR. MOELLENBERG: And you don't recommend

22 issues of -- issuing a discharge permit unless you feel

23 it's technically and regulatorily complete; is that

24 correct?

25 MR. FREDERICK: I'm going to object. This

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1 seems to be beyond the scope of her direct examination.

2 And I guess I'm going to object in general. This isn't

3 a DWI case. We're not trying to take away anybody's

4 liberty.

5 We've established that she relied on data in

6 the -- in the files and didn't do an independent

7 evaluation. That's fine. That could all be inferred

8 from her testimony.

9 And I'm worried that we're never going to get

10 done. That's my complaint.

11 MR. NOBLE: I would also object as this is

12 outside the scope of the direct testimony.

13 MR. GLASS: Okay.

14 Sustained.

15 MR. MOELLENBERG: So, Mr. Hearing Officer, if

16 I'm understanding right, I can't ask questions about

17 specific things that in her -- that are in her direct

18 testimony?

19 MR. GLASS: One moment, please.

20 (Discussion off the record.)

21 MR. GLASS: Again, Mr. Moellenberg, you

22 certainly are able to ask about her -- her direct

23 testimony, but in this case, I believe that the

24 arguments presented by the coalition and the Department

25 regarding that particular line of questioning held some

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1 merit.

2 So you may return to your questioning, we'll

3 see how many objections you draw.

4 MR. MOELLENBERG: Ms. McGrath, do your job

5 duties include field inspections?

6 MS. MC GRATH: Yes, they do.

7 MR. MOELLENBERG: How many field inspections

8 have you conducted, say, in the last 12 months?

9 MS. MC GRATH: During the rule development?

10 MR. MOELLENBERG: During the last 12 months.

11 MS. MC GRATH: During the last 12 months, I

12 believe I've been solely working on the rule

13 development. So I don't believe I've done any in the

14 last 12 months.

15 MR. MOELLENBERG: Ms. McGrath, your job duties

16 also include enforcement actions; is that right?

17 MS. MC GRATH: Yes.

18 MR. MOELLENBERG: And what type of enforcement

19 actions are you speaking of?

20 MS. MC GRATH: Notices of noncompliance,

21 notice of violation and compliance orders.

22 MR. MOELLENBERG: And how many enforcement

23 actions have you been involved in in the last 12 months?

24 MS. MC GRATH: Unfortunately, no, there have

25 been none.

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1 MR. MOELLENBERG: Ms. McGrath, your direct

2 testimony says -- identifies a purpose of monitoring

3 wells to assess compliance with the groundwater quality

4 standards.

5 Is that the only purpose of monitoring wells?

6 MS. MC GRATH: For the purpose of my

7 testimony.

8 MR. MOELLENBERG: Is there some other purpose

9 of monitoring wells outside your testimony?

10 MR. NOBLE: That's outside the scope of her

11 testimony. Perhaps another witness on the panel could

12 answer that.

13 MR. MOELLENBERG: Well, let me withdraw that

14 and -- I think we'll stand right there on that issue.

15 MR. NOBLE: So you don't want to hear from the

16 other panel member?

17 MR. MOELLENBERG: No, I don't, not right now

18 anyway.

19 Ms. McGrath, are you familiar with scientific

20 methods that can be used to distinguish between

21 different sources of groundwater contamination?

22 MS. MC GRATH: Would you give me an example of

23 what you're talking --

24 MR. MOELLENBERG: Are you familiar with

25 isotopic analysis that can be used to differentiate

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1 between different sources of groundwater contamination?

2 MR. FREDERICK: I guess I'd object on the --

3 "different sources" is vague. If he could maybe mention

4 a specific source, a dairy as opposed to a gasoline

5 station, for example.

6 MR. GLASS: No, no. I'll overrule that. I

7 think his question is accurate.

8 MS. MC GRATH: I have some general knowledge.

9 MR. MOELLENBERG: Have you ever done such an

10 analysis?

11 MS. MC GRATH: No.

12 MR. MOELLENBERG: Are you familiar with tracer

13 studies that can be used to assess whether contamination

14 is coming from a particular source?

15 MS. MC GRATH: Again, in general -- in a

16 general sense only.

17 MR. MOELLENBERG: So you've never done a

18 tracer study?

19 MS. MC GRATH: No.

20 MR. MOELLENBERG: Now, Ms. McGrath, at the

21 bottom of page 4 of your written testimony, there's a

22 statement, "Of new facilities that began discharging

23 from 2002 forward where the initial liner was synthetic,

24 it is not common to see nitrate-nitrogen contamination

25 in groundwater in wells intended to monitor those

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1 impoundments."

2 Do you see that statement?

3 MS. MC GRATH: Yes, I do.

4 MR. MOELLENBERG: And what kind of synthetic

5 liners were used at those facilities? Were there a

6 variety or just one type?

7 MS. MC GRATH: I don't know the answer to that

8 specifically. Typically we require a minimum of 40-mil

9 HDPE. Some facilities have installed 60-mil HDPE. But

10 for those facilities since 2002, they would have been

11 required to install with our synthetic liner guidance,

12 that would have been a part of their discharge permits.

13 So again, I believe that's a minimum of 40-mil

14 on reinforced HDPE.

15 MR. MOELLENBERG: And were all of those liner

16 systems that you're referring to in the statement I just

17 read single synthetic liners?

18 MS. MC GRATH: Yes, they were.

19 MR. MOELLENBERG: Are you aware of any new

20 facilities developed since 2002 that used clay liner

21 systems?

22 MS. MC GRATH: Yes. I believe there are two

23 facilities.

24 And I'd like to expand on that just to mention

25 that since 2002 primarily the Department has required

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1 synthetic liners. I believe there were discharge  
 2 permits issued probably 2000 -- 2002, maybe even 2003  
 3 where clay was authorized. But I believe it was rare.  
 4 Since 2002, it's primarily been synthetic as a  
 5 requirement for initial liner in wastewater  
 6 impoundments.

7 MR. MOELLENBERG: Now, Ms. McGrath, on page 3  
 8 of your testimony, you describe some limitations on the  
 9 groundwater monitoring wells required by groundwater  
 10 discharge permits, do you not?

11 MS. MC GRATH: Are you referring to paragraph  
 12 two on page 3?

13 MR. MOELLENBERG: Yes, I am.

14 MS. MC GRATH: Yes.

15 MR. MOELLENBERG: And what are those  
 16 limitations?

17 MS. MC GRATH: That the monitoring wells  
 18 required by discharge permits -- again, they are  
 19 required to assess compliance with the groundwater  
 20 quality standards. The wells, as far as discharge  
 21 permits are concerned, are not intended to define the  
 22 vertical and horizontal extent of groundwater  
 23 contamination from a facility, nor the magnitude.  
 24 And then I reference the testimony of Bart  
 25 Faris for examples of dairy facilities that are

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1 currently in abatement in making that assessment.

2 MR. MOELLENBERG: So the monitoring wells  
 3 that -- and the monitoring well data that you referred  
 4 to for purposes of your data evaluation aren't capable  
 5 of providing information on the magnitude of groundwater  
 6 contamination?

7 MS. MC GRATH: That's correct.

8 MR. MOELLENBERG: So any conclusions you drew  
 9 in your direct testimony regarding the magnitude of  
 10 groundwater contamination at dairy facilities would not  
 11 be supported by the data that you've used in your data  
 12 evaluation?

13 MS. MC GRATH: Are you asking if my data is  
 14 testifying as to magnitude -- do you --

15 MR. FREDERICK: Yeah. I guess I'm going to  
 16 object as to clarity, whether he's talking about the  
 17 magnitude of a plume, of an entire plume, or the  
 18 concentration in a particular well.

19 MR. GLASS: Would you clarify that,  
 20 Mr. Moellenberg?

21 MS. MC GRATH: Thank you.

22 MR. MOELLENBERG: Well, Ms. McGrath, you use  
 23 the term "magnitude" in your direct testimony.  
 24 What did you mean?

25 MS. MC GRATH: Magnitude meant -- as in

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1 relation to abatement, it's the vertical/horizontal  
 2 extent, the volume of water. So that's what magnitude  
 3 means. I was not referring to the concentration.

4 MR. MOELLENBERG: So you draw some conclusions  
 5 in your testimony about concentrations.

6 MS. MC GRATH: Yes. The concentration, again,  
 7 with the downgradient well as compared to the upgradient  
 8 well. That's correct.

9 MR. MOELLENBERG: Mr. Hearing Officer, I've  
 10 got too many papers, and I'm looking for another set of  
 11 notes that I'm not seeming to find right now.

12 MR. GLASS: We're all shuffling lots of paper.

13 MR. MOELLENBERG: Mr. Hearing Officer, I think  
 14 I'm going to move to a different topic right now, but  
 15 I'm going to come back to Ms. McGrath. There's an  
 16 exhibit that's being copied right now that I'd like to  
 17 use in a bit.

18 MR. GLASS: That's fine.

19 Ms. McGrath will be here all day, right?

20 MS. MC GRATH: Yes, I will.

21 MR. GLASS: Okay.

22 I think while Mr. Moellenberg is looking for  
 23 his next set of documents, we'll take a 10-minute break.

24 MR. SLOANE: Thanks.

25 (Proceedings in recess from 9:28 a.m. to

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1 9:42 a.m.)

2 MR. GLASS: Let's come back from the break,  
 3 please.

4 Okay. Let's recommence with Mr. Moellenberg's  
 5 cross-examination of the Department.

6 MR. MOELLENBERG: Thank you, Mr. Hearing  
 7 Officer.

8 Yesterday, Mr. Olson, we were speaking about  
 9 Section 20.6.2.3205, the general application  
 10 requirements for all dairy facilities.

11 Do you recall that?

12 MR. OLSON: Yes, I do.

13 MR. MOELLENBERG: Mr. Olson, do you recall a  
 14 proposal from DIGCE that would require, upon request of  
 15 an applicant, that the Department participate in a  
 16 preapplication meeting at the dairy facility with  
 17 respect to a permit application?

18 MR. OLSON: Yes. I believe that was in the  
 19 DIGCE's proposed language in their direct testimony.

20 MR. MOELLENBERG: And you objected to that  
 21 requirement; is that right?

22 MR. OLSON: Yes, we did.

23 MR. MOELLENBERG: Wouldn't such a  
 24 preapplication meeting make the Department more well  
 25 informed about the circumstances of the dairy for



**STATE OF NEW MEXICO  
WATER QUALITY CONTROL COMMISSION**



**IN THE MATTER OF PROPOSED AMENDMENTS  
TO 20.6.2 NMAC, THE COPPER MINE RULE**

**WQCC 12-01 (R)**

**New Mexico Environment Department,  
Petitioner.**

**ORDER AND STATEMENT OF REASONS**

THIS MATTER came before the Water Quality Control Commission (hereinafter, "Commission") pursuant to the Petition to Adopt 20.6.7 and 20.6.8 NMAC and Request for Hearing (hereinafter, "Petition") filed by the New Mexico Environment Department (hereinafter, "NMED" or "Department") on October 30, 2012. On February 18, 2013, NMED filed a Notice of Amended Petition (hereinafter, "Amended Petition") that amended the Petition in two ways: (1) it withdrew proposed 20.6.8 NMAC in its entirety, and (2) it revised certain portions of proposed 20.6.7 NMAC. As a result of NMED's withdrawal of proposed 20.6.8 NMAC, the Commission took no evidence on that portion of the Petition and does not adopt it.

NMED attached proposed rule provisions to both the Petition and Amended Petition. The Commission held a hearing on this matter over the course of eleven days between April 9, 2013, and April 30, 2013. The Commission allowed all interested persons a reasonable opportunity to submit data, views, and arguments and to examine witnesses. Thus, the record containing pleadings, written testimony, exhibits, the hearing transcript, public comments, and hearing officer orders has been submitted to the Commission for review in compiling this Statement of Reasons.

During a public meeting on September 10, 2013, the Commission heard final oral argument from the parties and after deliberation, adopted the Department's Proposed Statement of Reasons, and adopted the Department's Proposed Final Rule as set out in Attachment 2 to the Proposed Statement of Reasons with one minor change. Based upon the evidence and argument in the record, the following Statement of Reasons sets forth how the Commission considered and weighed the evidence presented and considered legal arguments in this matter with respect to adoption of the Copper Mine Rule.

### BACKGROUND

1. The Commission is required by the Water Quality Act (hereinafter, "WQA") to "...adopt, promulgate and publish regulations to prevent or abate water pollution in the state or in any specific geographic area, aquifer or watershed of the state or in any part thereof, or for any class of waters..." See Section 74-6-4(E) NMSA 1978.
2. The Commission's mandate to prevent or abate water pollution was given legal force in 1977 when the Commission adopted the Ground Water Discharge Regulations, now contained in sections 20.6.2.1 through 20.6.2.3114 NMAC. See Freeport-McMoRan's Consolidated Response to the Joint Motion to Dismiss Petition for Rulemaking filed January 11, 2013 ("Freeport's Consolidated Response") at 11 (Pleading 19).
3. The Commission has adopted amendments to the Ground Water Discharge Permit Regulations from time to time since 1977, including changes intended to conform to amendments in the WQA. The Commission supplemented its regulatory framework in 1996 when it adopted the Abatement Regulations, now contained in sections 20.6.2.4101 through 20.6.2.4114 NMAC. See *id.*



4. Under the WQA as it existed before 2009, the Ground Water Discharge Permit Regulations did not contain specific requirements to control discharges; instead, these regulations required a permit applicant to propose measures to control its discharges in a permit application. *See id.* at 12. The Ground Water Discharge Regulations during this time did not contain specific requirements to control discharges because the Commission was statutorily prohibited from promulgating regulations specifying the methods to prevent or abate water pollution. *See id.* Once the applicant submitted a permit application proposing how to control its discharges to ground water, NMED had the option of imposing permit conditions specifying pollution control measures. *See id.* at 14.

5. At the conclusion of the permitting process during this time frame, NMED could approve an applicant's proposal to control its discharges, with or without permit conditions specifying pollution control measures, if NMED determined that "neither a hazard to public health nor undue risk to property will result" and if the proposal met one of three separate conditions: (1) if the ground water that has total dissolved solids concentration of 10,000 mg/l or less will not be affected by the discharge; (2) if "the person proposing to discharge demonstrates that approval of the proposed discharge plan, modification or renewal will not result in either concentrations in excess of the standards of 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use"; or (3) if certain specific performance standards are met, as applicable. *See id.* at 13; *see also* 20.6.2.3109.C NMAC.

**Senate Bill 206 from the 2009 Regular Session:**

6. In the 2009 Regular Session, the Legislature considered and passed Senate Bill 206, which amended the WQA in a manner that substantially changed the permit process

described above, *See* Transcript Volume (hereinafter, "TRV") 1 at 44, Line (hereinafter, "L") 24-25.

7. In particular, the WQA was amended to require the Commission to adopt rules specifying the methods to prevent water pollution and to monitor water quality. *See* Section 74-6-4(K) NMSA 1978.

8. In addition, the Department was tasked with developing industry specific rules for the dairy and copper industries. *See* TRV 2 at 241, L 5-19. The WQA now requires that the Commission promulgate dairy and copper mine industry rules that specify the methods for preventing water pollution and monitoring ground water quality. *See* NMED, Notice of Intent to Present Technical Testimony ("NMED NOI"), Exhibit 4 at 5-6 (Pleading 49).

#### DEVELOPMENT OF THE RULE

9. The WQA requires that the Department develop proposed rules for the dairy and copper industries for consideration by the Commission and identifies certain requirements for rule development. The Commission is required to establish a schedule for rule development and consideration. Section 74-6-4(K) NMSA 1978.

10. The Commission issued and later revised a schedule for rule development and consideration. *See* Order Approving Schedule for Development of Copper Regulation dated January 12, 2012 (Pleading 1); Order Approving Revised Schedule for Development of Copper Regulation, filed September, 24, 2012 (Pleading 3).

#### Formation of the CRAC and Technical Committee:

11. The WQA requires NMED to establish an advisory committee to assist in the development of a proposed rule for the copper industry. *See* Section 74-6-5(K) NMSA 1978.

20.6.7 and 20.6.8 NMAC and Request for Hearing (hereinafter, "Petition") filed October 30, 2012 (Pleading 4) at 1-3 with Attachments 1 and 2.

28. Freeport-McMoRan Tyrone Inc., Freeport-McMoRan Chino Mines Company, and Freeport-McMoRan Cobre Mining Company (collectively hereinafter, "Freeport") submitted a written response to the Petition, supported NMED's request to set a hearing on January 8, 2013 to hear the Petitioned Rule, and argued that it was inappropriate and premature to entertain dispositive motions on the Copper Mine Rule prior to the hearing. See Written Response to Petition for Rulemaking at 1-3, filed November 9, 2012 (Pleading 6).

29. The Gila Resources Information Project, Amigos Bravos, and Turner Ranch Properties, Inc. submitted a response to the Petition and argued that the Commission should reject the Petition because the Petitioned Rule violates the WQA. See Response to Petition for Rulemaking at 1-2, filed November 9, 2012 (Pleading 8).

30. The Commission voted to accept the Petition at its November 2012 monthly meeting. The Commission voted to assign a hearing officer and schedule the matter for hearing for multiple days in April of 2013. See Meeting Minutes, New Mexico Water Quality Control Commission Regular Meeting, November 13, 2012.

**Pre-Hearing Motions and Briefs:**

31. The Attorney General of New Mexico (hereinafter, "Attorney General" or "AG") moved to admit into the record proper portions of the record from proceedings held before the Commission dealing with *In the Matter of Appeal of Supplemental Discharge Permit for Closure (DP 1341) for Phelps Dodge Tyrone, Inc.*, WQCC Nos. 03-12(A) and 03-13(A) (hereinafter, "Tyrone Permit Appeal"). See Attorney General's Motion to Admit Record from the Tyrone

Permit Appeal into the Record Proper (hereinafter, "AG's Motion to Admit Record of Tyrone") at 1, filed November 2, 2012 (Pleading 5).

32. After various parties fully briefed the Attorney General's Motion to Admit the Record of Tyrone, the Hearing Officer denied the motion with the exception of one document, the Commission's Decision and Order dated February 4, 2009. In particular, the Hearing Officer determined that inclusion of the entire record from the administrative adjudication into this rulemaking, without any winnowing and without presentation by witnesses, would result in confusion and unnecessary expenditure of Commission time and resources. *See Order on Attorney General's Motion to Admit Record from Tyrone Permit Appeal into Record Proper at 1-2, filed February 6, 2013 (Pleading 40).*

33. The Attorney General submitted a motion to remand the Petitioned Rule to NMED on the ground that the rule as proposed would violate the WQA. *See Attorney General's Motion to Remand the Proposed Copper Mine Rule to NMED at 1, filed December 14, 2012 (Pleading 16).* Gila Resources Information Project, Turner Ranch Properties, Inc., and Amigos Bravos filed a joint motion to dismiss the Petition. *See Joint Motion to Dismiss Petition for Rulemaking at 1, filed on December 13, 2012 (Pleading 13).* Responses were filed by Freeport-McMoRan (Pleading 19), the New Mexico Mining Association (Pleading 22), and NMED (Pleading 23). Replies were filed by the Attorney General (Pleadings 30 and 31) and jointly by GRIP, Turner Ranches, and Amigos Bravos (Pleadings 33 and 34). After hearing oral argument on the motions, the Commission voted to deny the motions on the first day of the hearing. *See TRV Volume 1 at 49-51.*

34. Amigos Bravos filed a motion to postpone the hearing on the Copper Mine Rule because the Commission decided to hear dispositive motions on NMED's Copper Mine Rule at

the beginning of the hearing scheduled for April 9, 2013. *See Amigos Bravos' Motion to Postpone the Hearing at 1*, filed January 11, 2013 (Pleading 26). The Hearing Officer denied this motion. *See Order on Amigos Bravos' Motion to Postpone the Hearing at 1*, filed February 12, 2013 (Pleadings 44).

35. Amigos Bravos filed a second motion to postpone the hearing because NMED filed its Amended Petition for Adoption of the Copper Rule four days prior to when the notices of intent to present technical testimony were due. *See Amigos Bravos' Second Motion to Postpone the Hearing at 1*, filed February 19, 2013 (Pleading 46). After a telephonic hearing, the Hearing Officer denied the motion and made adjustments to the pre-hearing deadlines to address the issues raised by NMED's filing of the Amended Petition. *See Order on Amigos Bravos' Second Motion to Postpone the Hearing at 1-2*, filed February 21, 2013 (Pleading 47).

36. NMED submitted a legal brief at the Commission's request to clarify the parameters of the Commission's rulemaking authority and to address the assertion that the Commission lacks the necessary authority to consider the amendment proposed in the Petition. *See New Mexico Environment Department's Brief on Commission's Authority to Consider Petition at 1*, filed December 14, 2012 (Pleading 15). Other parties responded to the pleading (Pleadings 21 and 25), and NMED replied. *See NMED's Brief on Commission's Authority to Consider Petition* filed January 25, 2013 (Pleading 32).

37. Freeport submitted a brief on the scope of the Commission's authority to conduct a rulemaking and to adopt rules under the WQA. *See Freeport's Brief on the Commission's Authority to Conduct a Copper Industry-Specific Rulemaking at 1*, filed December 14, 2012 (Pleading 17). Other parties responded to the pleading. *See Attorney General's Response to Freeport's Brief on the Commission's Authority* filed January 11, 2013 (Pleadings 20) and

Citizen's Joint Response to Freeport's Brief on the Commission's Authority to Conduct Rulemaking and NMED's Brief on Commission's Authority to Consider Petition filed January 11, 2013 (Pleading 25). Freeport replied to responses. *See* Freeport's Consolidated Reply to the "Citizens" and the Attorney General's Responses to the Briefs on the Commission's Authority filed January 25, 2013 (Pleading 35).

**Notices of Intent to Present Technical Testimony:**

38. The Hearing Officer established a Procedural Order to guide the conduct of the hearing. A Notice of Intent to Present Technical Testimony (hereinafter, "NOI") was due on February 22, 2013, for any party wishing to present technical testimony. *See* Procedural Order, filed November 21, 2012 (Pleading 10). (hereinafter, "Procedural Order").

39. In response to further reviews by NMED staff and NMED's expert witness, NMED edited the Petitioned Rule and filed a Notice of Amended Petition (hereinafter, "Amended Petition") on February 18, 2013 with underline-strikethrough version of the Petitioned Rule (hereinafter, "Amended Rule") showing all changes. *See* Amended Petition at 1-2 with Attachments 1 and 2 (Pleading 45); *see also* NMED Skibitski Direct at 11.

40. The Amended Rule did not include substantive changes, rather the edits were to further clarify and make consistent the rule proposals as understood by NMED staff and NMED's expert witness. *See id.* at 11.

41. The Hearing Officer made adjustments to the pre-hearing deadlines to address the issues raised by NMED's filing of the Amended Petition. In particular, in the March 15 filings dealing with rebuttal matters, the Hearing Officer provided that the parties could revise or supplement the technical testimony and exhibits submitted on February 22, 2013, in order to address changes to the Petitioned Rule as now set forth in the Amended Rule. *See* Order on

10-18; TRV 3 at 507, L. 17-20; TRV 3 at 576-577, L. 23-1; TRV 3 at 577, L. 5-7; TRV 3 at 588, L. 16-22; TRV 3 at 590, L. 9-17; TRV 5 at 1036, L. 19-24.

81. Ms. Lande, on behalf of Freeport, described the geologic nature of copper deposits, why copper mines impact ground water, and why some impacts to water quality are unavoidable. *See* Freeport Lande Direct at 6-10.

82. Mr. Blandford, on behalf of Freeport, discussed historical and present copper mining, including mines operated under existing discharge permits, and impacted ground water in the vicinity of copper mines. Existing copper mines have been required to abate ground water contamination under the Commission's abatement rules. *See* Blandford Rebuttal at p. 6, AG Travers Direct at p. 7-8.

**Overview of NMED's Approach to Protection of Ground Water under the Copper Mine Rule:**

83. The purpose of the Copper Mine Rule is to control and contain discharges of water contaminants specific to copper mine facilities and their operations to prevent water pollution so as to protect all ground water of the state of New Mexico for present and potential future use as domestic and agricultural water supply and surface water recharge. *See* Written Expert Testimony of Adrian Brown, P.E. in Support of the New Mexico Environment Department Proposed Copper Mine Rule, filed February 22, 2013 (Pleading 49) at 3 (hereinafter "NMED Brown Direct"); (TR. Vol. 3, P. 551, L. 7-14).

84. The purpose of the Copper Mine Rule as it relates to water quality standards is to control and contain discharges of water contaminants specific to copper mine facilities and their operations to prevent water pollution so that ground water meets the quality standards of

20.6.2.3103 NMAC at locations of present and potential future use. *See* NMED Brown Direct at 3.

85. The Department's proposed rule was technically reviewed to determine if the Rule was protective of New Mexico's ground water during and after copper mining activities and found to be protective. *See* NMED Brown Direct at 3; TRV 3 at 555, L. 10-16).

86. Discharge control at New Mexico copper mine facilities under the Rule is regulated separately for each mining unit within the facility, such as each mine, each waste rock pile, each tailings pile, and each leach pad. *See* NMED Brown Direct, at 4. The framework of the Copper Mine Rule is a unit by unit approach that evaluates the parameters of the effectiveness of ground water protection as it relates to its operation. *See* TRV 3 at 661, L. 17-19; TRV 3 at 682, L. 8-17; TRV 4 at 803-804, L. 17-4; TRV 4 at 816, L. 9-14; TRV 4 at 824, L. 5-11).

87. During mine operation, discharge control at each unit is achieved through containment: (1) by locating the materials in the unit in impermeable tanks, pipes, and ponds; (2) by locating a liner system beneath some units to substantially prevent discharge of the liquids in the unit to the underlying soil or bedrock; or (3) by collecting any discharge to ground water as close as practicable to the unit such that it does not impact present and potential future ground water use external to the mine unit. *See* NMED Brown Direct at 4; TRV 1 at 15, L. 22-25; TRV 3 at 552-553, L. 6-25. The primary method for protecting ground water during mine operation is through discharge control at each unit by the containment of ground water in excess of applicable standards. *See* TRV 3 at 557, L. 3-7).

88. During mine operation under the Copper Mine Rule, the method required for protection varies, depends on the materials contained within the unit of the mine and the threat



which those contents present of exceeding standards in ground water. Those units containing highly concentrated process waters and intended for long-term storage of impacted stormwater are double-lined; the units intended for short-term storage of impacted stormwater are single-lined; and the units containing waste rock and tailings may be unlined but would have active ground water capture systems. *See* NMED Brown Direct at 4.

89. In all cases, the mine water management system controls discharges of water contaminants from the copper mine units, prevents water pollution, and protects the ground water of the State of New Mexico for present use (during the mining period) as domestic and agricultural water supply and surface water recharge. *See* NMED Brown Direct at 4.

90. The effectiveness of the discharge control at each unit is determined by monitoring wells located on the perimeter of the unit: upgradient, side gradient, and downgradient. In the event that a monitor well identifies concentrations rising toward exceedance of the standards or an actual exceedance of the standards occurs, a contingency process is triggered. The contingency process generally comprises emergency repair of any breach or failure, corrective action, and, if appropriate, abatement of impact. *See* NMED Brown Direct at 4.

91. After operation, the mine closes. Under the Copper Mine Rule, the operational features are dismantled, piping systems are removed or abandoned in place, and impoundments are emptied and, where the foundation materials are contaminated, reclaimed with a store-and-release soil cover. The large scale materials storage units—leach stockpiles, waste rock stockpiles, and tailings impoundments—are all reclaimed the same way: any water on the piles is removed and water within the units allowed to drain, the sides are re-graded to environmentally sustainable slopes, and the top and sides of each pile are enclosed in a three-foot

thick store-and-release soil cover. The entire site is then re-vegetated. See NMED Brown Direct at 4.

92. The store-and-release soil cover system largely prevents infiltration of precipitation through the ground surface, by intercepting and storing precipitation that infiltrates, and slowly releasing it to the atmosphere via evaporation and plant transpiration. In this way, after mine closure, there is very little seepage through the soil cover to the underlying ore, waste rock, and tailings materials, and there is correspondingly little seepage through the rock and tailings materials into the underlying ground water system. This limits the transport of any contaminants that may be contained within, ore released from, or materials in the units. The amounts of contaminants being released from beneath the units are sufficiently small that the impact on the underlying ground water is also small, and is expected to prevent water pollution. As a result, the store-and-release soil cover protects the ground water of the State of New Mexico for potential future use as domestic and agricultural water supply and surface water recharge. See NMED Brown Direct at 4-5.

93. The basic regulatory tool for protecting and monitoring ground water quality at copper mine facilities is a valid and enforceable discharge permit. See TRV 3 at 557, L. 3-7.

94. The Department's proposal creates a straightforward permitting process with improved regulatory certainty that results in discharge permits that are consistent between facilities and more readily enforceable. See TRV 3 at 558, L. 6-12.

95. The Petitioned Rule proposed efficient measures and clear provisions to prevent and contain ground water contamination. See TRV 3 at 560-561, L. 19-5.

96. The Department also proposed comprehensive monitoring and detection methods in its proposed Copper Mine Rule. See TRV 3 at 557, L. 12-20.

97. Adoption of the Copper Mine Rule will benefit the Department by preventing the Department and applicant from having to go through a reiterative process whereby versions of a permit are submitted and rejected until the applicant submits a permit that meets the expectations of the Department. *See* TRV 3 at 560-561, L. 19-5.

98. The Department will benefit from the Copper Mine Rule from not having to seek concurrence on a case by case basis from the courts or the Commission to require what it needs to prove ground water will be protected. *See* TRV 3 at 560-561, L. 19-5).

99. Permittees will benefit from the Copper Mine Rule by having more certainty that a permit application that meets the requirements of the rule will be approved. *See* NMED Skibitski Direct at 11.

100. The specific provisions in the Copper Mine Rule are generally consistent with the conditions and requirements of discharge permits issued to copper mines by the Department up to the present, supplemented by new requirements for copper mine units to be built in the future, such as double-lined process water impoundments, which in the past have used various liner designs, and liner requirements for new leach stockpiles, which largely have been constructed without liners under existing discharge permits. There also are additional more specific requirements in the Copper Mine Rule compared to requirements imposed in existing discharge permits. *See* NMED Skibitski Direct at 8-12.

ANALYSIS OF TESTIMONY AND REASONS  
FOR ADOPTION OF SPECIFIC RULE PROPOSALS

101. The New Mexico Water Quality Control Commission Regulations for Ground and Surface Water Protection are located at 20.6.2 NMAC. *See* NMED Skibitski Direct at 3.

102. The proposed Copper Mine Rule will be located at 20.6.7 NMAC.

1298. NMED did not make changes to 20.6.7.38 in the Amended Rule. *See* Amended Petition, Attachment 2 at 43-44.

1299. The Commission finds that 20.6.7.38 is undisputed because Freeport, the Attorney General, GRIP, TRP, Amigos Bravos, and Mr. Olson did not provide alternative rule language.

1300. NMED made no changes to 20.6.7.38 in the Proposed Final Rule.

1301. Based on the weight of the evidence, the Commission hereby adopts 20.6.7.38 as proposed by NMED in the Proposed Final Rule.

**20.6.7.39 – Continuing Effect of Prior Actions During Transition:**

1302. NMED proposed 20.6.7.39 in the Petitioned Rule which sets forth the continuing effect of prior actions during transition. *See* Petition, Attachment 1 at 40.

1303. NMED did not make changes to 20.6.7.39 in the Amended Rule. *See* Amended Petition, Attachment 2 at 43-44.

1304. The Commission finds that 20.6.7.39 is undisputed because Freeport, the Attorney General, GRIP, TRP, Amigos Bravos, and Mr. Olson did not provide alternative rule language.

1305. NMED made no changes to 20.6.7.39 in the Proposed Final Rule.

1306. Based on the weight of the evidence, the Commission hereby adopts 20.6.7.39 as proposed by NMED in the Proposed Final Rule.

**ADDITIONAL ISSUES**

***The Commission's 2009 Decision and Order in the Tyrone Litigation***

1307. In the Hearing Officer's Order on "Attorney General's Motion to Admit Record from Tyrone Permit Appeal into Record Proper," which ruled on arguments in the Attorney General's motion, the Hearing Officer stated: "To the extent that the Petition in this rulemaking presented and invitation or opportunity for the Commission to reach different conclusions about

“places of withdrawal of water for present or reasonably foreseeable future use” than it did in 2009, the Commission will have to confront that decision and articulate a basis for any significant change in course.” Order on Attorney General’s Motion to Admit Tyrone Record, filed February 6, 2013, (Pleading 40).

1308. The “Tyrone Permit Appeal” referenced in the above-referenced Order was an appeal of a discharge permit, DP-1341, in which NMED prescribed permit conditions for closure of the Tyrone Mine. The appeal was made pursuant to the NMSA 1978, sections 74-6-1 to 74-6-17 and 20.6.2 NMAC and the Commission’s rule for adjudication of permit disputes.

1309. Tyrone initially challenged NMED’s draft closure permit during a 10-day evidentiary hearing in May of 2002 before NMED, and NMED issued the closure permit for Tyrone. See Attorney General’s Motion to Remand the Proposed Copper Mine Rule to NMED (hereinafter, “AG Motion to Remand”) at 9, filed December 14, 2012 (Pleading 16).

1310. Tyrone then challenged NMED’s closure permit by filing an appeal petition with the Commission on July 3, 2003, and the Commission held a 10-day hearing on the matter in October and November of 2003 with the Commission eventually issuing a decision. See *id.*

¶1311. Tyrone then appealed the Commission’s decision to the New Mexico Court of Appeals, and in 2006, the Court issued a decision and remanded the matter to the Commission for further consideration on particular issues. See *id.*; see also *Phelps Dodge Tyrone, Inc. v. N.M. Water Quality Control Comm’n*, 2006-NMCA-115, ¶ 35, 140 N.M. 464, 143 P.3d 502 (hereinafter, “Tyrone Decision”).

1312. The 2006 decision of the Court of Appeals expressly recognized the difficulties of applying the phrase “places of withdrawal of water for present or reasonably future use” in the context of a large copper mining operation such as the Tyrone Mine, and its remand granted the

Commission substantial latitude in determining how that phrase should be interpreted for purposes of identifying the locations at which ground water quality compliance is to be determined.

1313. In 2007, the Commission held a 24-day hearing dealing with the Tyrone Decision on remand, and the Commission issued its decision on February 9, 2007 (hereinafter the "Tyrone Remand Order"). *See* AG Motion to Remand at 9-10.

1314. The Tyrone Remand Order made certain findings and conclusions relating, among other things, to factors to be considered by NMED in identifying "places of withdrawal," and ordered the parties to the adjudication to perform certain actions by certain dates in applying the factors to the Tyrone Mine site as a means of identifying the locations where compliance with groundwater standards would be measured under Tyrone's discharge permit for closure, DP-1341.

1315. Following the Tyrone Remand Order, Tyrone initiated a further appeal to the Court of Appeals on March 9, 2009, and during the pendency of that appeal, three of the four parties to the adjudication, including NMED and Tyrone, sought the Commission's permission to depart from the Tyrone Remand Order so that certain regulatory solutions could be pursued to avoid further protracted litigation over "places of withdrawal."

1316. The Commission granted the parties relief from the directives of the Tyrone Remand Order to allow for implementation of a settlement through various regulatory actions and processes. One of the regulatory processes this Commission's relief allowed to go forward was this Copper Mine Rule proceeding, which is a proceeding that was also contemplated by directives of the New Mexico Legislature under its 2009 amendments to the WQA.

1317. The administrative and judicial proceedings starting with challenge of the draft closure permit in 2002 through the Commission's decision dealing with the Tyrone Decision on remand shall be collectively referred to as the "Tyrone Permit Adjudications."

1318. In June of 2009, the WQA was amended to require, among other things, that the Commission adopt these Copper Mine Rules. The statutory amendments occurred subsequent to the Tyrone Permit Adjudications. *See* Freeport Consolidated Response at 11-12.

1319. The Commission finds that the Tyrone Permit Adjudications occurred prior to the amendments to the WQA in 2009 and decisions were made based on the Commission's existing regulations and the WQA as it existed before 2009.

1320. The 2009 amendments to the WQA, which were enacted after the Tyrone Remand Order, implemented a new regulatory paradigm by requiring this Commission to enact by rule previously unauthorized specifications of the appropriate discharge control technologies for the copper mining industry as a whole. *Freeport Consolidated Response at 15.*

1321. The Commission finds that the new regulatory paradigm implemented through the 2009 Amendments to the WQA and these Copper Mine Rules render the Tyrone Permit Adjudications and any precedents, policies, and decisions interpreting such adjudications either obsolete or distinguishable. *See* Freeport Consolidated Response at 15.

1322. The Commission finds that prior to the 2009 amendments to the WQA, NMED had to determine and resolve the "place of withdrawal" concept before it could decide on appropriate discharge control technologies through permit conditions for the closure permit for the Tyrone Mine. *See* Freeport Consolidated Response at 15.

1323. The Commission finds that subsequent to the 2009 amendments to the WQA, the Commission (as opposed to the Department) is now required to specify appropriate discharge

control technologies for the industry as a whole in the first instance by rule (as opposed to the previous system of NMED identifying appropriate discharge controls through permit conditions), although the rules may include variable requirements reflecting differences in site conditions. See Freeport Consolidated Response at 15.

1324. The Commission finds that the circumstances which have transpired since the Tyrone Remand Order, including but not limited to the Commission's prior grant of relief from the directives of that Order, the Legislature's 2009 amendments to the WQA, the opportunities for public input and stakeholder negotiations that ensued, the development of draft regulations forming the basis of this rulemaking proceeding, and the extensive testimony presented in these Copper Mine Rule proceedings, justify the Commission's departure from certain aspects of the Tyrone Remand Order.

1325. The Commission finds that, at least within the copper mining industry, the factors based approach of the Tyrone Remand Order for identifying "places of withdrawal" where compliance is determined under the WQA requires certain adjustments to allow for consistency with industry practices, with past *de facto* NMED practices (albeit not policies) in permitting copper mining units in New Mexico, and with the continued ability of existing and future copper mining to conduct their operations in a manner which is protective of ground water resources, as addressed in the evidence presented in this proceeding.

1326. The Commission finds that the necessary adjustments to the Tyrone Remand Order represented by the Copper Mine Rules that the Commission adopts in this proceeding fully comport with letter and spirit of the 2006 decision of the New Mexico Court of Appeals, and are well within the substantial latitude afforded by that Court in determining how the "place of



withdrawal" phrase should be interpreted and applied, particularly recognizing the 2009 amendments subsequently enacted by the New Mexico Legislature.

1327. One of the adjustments to the Tyrone Remand Order the Commission finds it appropriate to make is to allow for the various containment and treatment methodologies specified in these Copper Mine Rules as reasonable and prudent means of ensuring a copper mine's protection of groundwater resources. To the extent that application of the Tyrone Remand Order and its factors would not accommodate employment of these specified methods of discharge control technologies, this Commission expressly intends to supersede effectiveness of the Order.

1328. Another adjustment to the Tyrone Remand Order the Commission finds it appropriate to make is to allow for the specification of the places where compliance with ground water standards is to be determined in relation to particular mine-related units addressed by these Copper Mining Rules. To the extent that application of the Tyrone Remand Order and its factors would not allow for determining compliance at the specified locations, or might otherwise lead to characterizing the mine unit areas interior to those places as including "places of withdrawal," this Commission expressly intends to supersede the effectiveness of the Order.

1329. Another adjustment to the Tyrone Remand Order the Commission finds it appropriate to make is to allow for the employment of containment, pump-back, pump and treat or dewatering wells associated with mining or mine closure without having those wells and the associated water withdrawals be deemed present or future uses water for purposes of the phrase "place of withdrawal of water for present or reasonably foreseeable future use" as that language or language like it is used in the WQA and this Commission's regulations. To the extent that the Tyrone Remand Order and its factors would result in such wells being deemed as "places of

withdrawal” where compliance with groundwater standards must be met, this Commission expressly intends to supersede the effectiveness of the Order.

1330. The Commission’s bases for superseding the Tyrone Remand Order in these respects, and in any other respects that are incompatible with the Copper Mine Rules adopted herein, are as explained above, and are further supported by the Commission’s belief that these Copper Mine Rules strike an appropriate policy balance of protecting the State’s groundwater resources and allowing for the continued ability of the copper mining industry to positively support state and local economies.

1331. The Commission concludes as a matter of law that the Tyrone Permit Adjudications arose in the context of administrative adjudications under the existing regulations, while this matter before the Commission arises in the context of a rulemaking, thereby making the proceedings distinguishable. A rulemaking is a quasi-legislative function, not an adjudicatory function, and results in new law that need not follow prior adjudicatory precedents, particularly if the reasons for any departure are explained, as they are in this document.

1332. In adopting these Copper Mine Rules, the Commission is mindful that the measures specified herein to prevent water pollution rely upon containment strategies, as described in the testimony of Mr. Brown, that may allow ground water underlying certain units to exceed the standards of 20.6.2.3103 during mine operations.

1333. Mr. Brown’s testimony supported a conclusion that, during mine operations, these areas are not available as “places of withdrawal” within the meaning of the WQA.

### *Public Comments*

1334. The Commission received many public comments during the hearing and in the hearing session held in Silver City. There were approximately the same number of public commenters who spoke in favor of the Copper Mine Rule as those who spoke in opposition.

1335. The Commission appreciates the number of public comments made and the public interest in this rulemaking and have considered all comments in ruling.

### *State Comparatives*

1336. Evidence was presented in the testimony of Mr. Brown that New Mexico's Proposed Copper Rule is as protective of ground water as the states of Arizona and Nevada, which are similar in terms of hard rock mining in desert environments. See NMED, Brown, Direct Testimony.

1337. The Department's proposed rule was compared with other state regulations in the Southwest region and determined to be comprehensive, robust, and proscriptive in the areas that it needs to specify. (TRV 3, P. 564, L. 17-25).

### ANALYSIS OF RULEMAKING FACTORS

#### *Best Available Scientific Information*

1338. The WQA requires in § 74-6-4(K) that the Commission must consider the "best available scientific information" in developing and proposing the Copper Mine Rule. NMED Skibitski Direct Testimony.

1339. In addition to the statutory criteria the Commission must consider, the WQA requires in § 74-6-4(K) that the Commission must consider the "best available scientific information." NMED Skibitski.

1340. In developing and proposing the Copper Mine Rule, the Department has relied upon the best scientific information available to it as described in the testimony of the Department's technical expert witness. NMED.

1341. The Department heard from various experts regarding the available scientific information regarding copper mines and water quality protection during the Advisory Committee process. NMED Skibitski Direct at 9-11.

1342. The parties to this proceeding had the opportunity to, and did retain, expert witnesses to provide to the Commission the best available scientific information regarding copper mining and protection of water quality. *See, generally*, Notices of Intent filed by NMED, AG, Freeport, GRIP, TRP, AB, and WCO.

1343. As discussed above, the Commission received the scientific information provided during the hearing, sifted through the various testimony and evidence, evaluated the weight of the evidence, and relied upon the best available scientific information presented to it in adopting the Copper Mine Rule. In addition to the information discussed above with respect to specific sections, the Commission relied upon the following evidence.

1344. The WQA does not require "state-of-the-art" method to be applied, rather, the WQA requires that "ground water protection" be met at the place of withdrawal regardless of how that is achieved. *See* Brown Rebuttal; 20.6.7.6 ; TRV 3, at 566, L. 1-13.

1345. Open pits of a sufficient size will penetrate the water table, causing an in-mine lake with evaporative water loss causing inflow, or requiring pumping of water from the pit to maintain dry mining conditions, but either way, containment will be maintained. TRV. 3 at 564-565, L. 22-10).

1346. A liner may not be the best solution for every situation because if the rule were to require a liner then other issues related to the environment in terms of long term discharge management and short term operability come into play. NMED Brown, Direct at 19.

1347. Specific to tailings impoundments, lining reduces or eliminates the drainage of interstitial water from the tailings, thereby increasing the porewater pressure in the tailings which reduces the static stability of the pile and the ability of the pile to withstand earthquake loading without liquefying. TRV 10 at 2372, L. 8-10).

1348. Liner failure has the potential to create widespread impact to the water resources of New Mexico, both surface water and ground water. NMED Brown Rebuttal at 2, TRV 10 at 2554, L. 21-24).

1349. Specific to waste rock stockpiles, testimony was given that lining is potentially problematic, for the following reasons: (1) protection of the lining is difficult during Placement of the waste rock, due to the impact of the large rocks that are dumped; (2) placement of liner is difficult on steeply sloping areas that are often used for waste rock piles; and (3) the use of a liner frequently creates a plane of weakness beneath the pile, particularly where the pile is located on sloping ground or bedrock. This causes reduced stability, which threatens the integrity of the liner due to mass movement of the pile, and by material from a slope failure impacting ground water. NMED Brown Rebuttal at 3.

1350. It is not possible to line an active mine pit, and to do so would be a de-facto banning of the mining of copper in New Mexico, which the WQA clearly does not intend. Brown Rebuttal at 3.

### *Water Resources and Conservation Issues*

1351. The Attorney General and Amigos Bravos presented witnesses who testified regarding water conservation issues and the usage of water by copper mines.

1352. On behalf of the Attorney General, Dr. Bruce Thomson testified regarding the water resources of Grant County, its uses, and its importance to communities in the county. He testified regarding declining water levels and that copper mines in Grant County constitute a large fraction of total withdrawals. *See* AG Direct Testimony of Bruce Thomson, Ph.D. P.E., (hereinafter "Thompson Direct") at 4-7 and 9.

1353. Dr. Thomson, although admittedly not a climatologist, also testified regarding the predicted effect of climate change on New Mexico's water resources. Thomson Direct at 7-9.

1354. Dr. Thomson discussed the factors related to copper mines that can result in water contamination and discussed the different types of pollutants that can be generated. He also presented information on treatment methods and costs. *See* Thomson Direct at 10-11.

1355. Dr. Thomson testified that he is concerned about establishing a "point of compliance regulatory structure" in light of potential ground water contamination from mines, and gave as an example a uranium mine. *See* Thomson Direct at 11-12. He gave a general recommendation that the Commission "adopt standards that will protect our most vital resource to the maximum extent possible," but he did not relate his testimony to specific provision of the Copper Mine Rule or identify any specific changes that he recommended. *See* AG Thomson Direct at 12-13.

1356. Freeport presented rebuttal to Dr. Thomson's testimony through Messrs. Eastep, Shelley, and Blandford. *See* Freeport Eastep Rebuttal at 12-13; Freeport Shelley Rebuttal at 4-8; and Freeport Blandford Rebuttal at 27-32.

1357. Because Dr. Thomson's testimony is not tied to any specific provision of the Copper Mine Rule, it is addressed separately here. The Commission has considered the testimony of Dr. Thomson and the rebuttal testimony. For the reasons discussed elsewhere in this Statement of Reasons, the Commission believes that the Copper Mine Rule is consistent with the recommendation of Dr. Thomson to protect New Mexico's water resources to the maximum extent possible using feasible, practicable and available technologies.

1358. Amigos Bravos presented testimony through Kathleen A. Garland, PhD relating to water technologies. Written Rebuttal Testimony of Kathleen A. Garland, PhD (Pleading 66) (hereinafter "AB Garland Rebuttal").

1359. Dr. Garland testified regarding a project she did in the late 1990s in South America where she observed certain technologies in use at various mines, including liner technologies. The testimony does not provide any specific examples or indicate the nature of the liner designs. See AB Garland 1-2. Dr. Garland's testimony regarding South American operations was rebutted through the testimony of Mr. Brack. TRV 1 at 98 L. 21 to 102 L. 12.

1360. Dr. Garland also identified a project in South America involving treatment of sea water for use at mines and mentioned the need for water conservation. See Garland Rebuttal at 3.

1361. Dr. Garland testified that the Copper Mine Rule does not require certain potential technologies, although she does not address those technologies with respect to particular rule provisions and does not identify specific descriptions of technologies that she recommends for inclusion in the rule or address their feasibility or practicability for copper mines. See AB Garland Rebuttal at 3-4.

1362. In conclusion, Dr. Garland urges the Commission to consider water conservation requirements. *See* AB Garland Rebuttal at 5.

1363. The Commission has considered Dr. Garland's testimony, as it has also reviewed and addressed the parties' proposals and evaluations of the specific technologies for prevention of water pollution as introduced by the parties and their experts. Without more specific information from Dr. Garland, does not have sufficient information to evaluate or to include the additional technologies that she lists into the Copper Mine Rule.

1364. To the extent that Dr. Garland's testimony specifically advocates water conservation requirements, the Commission finds that this topic is not specifically addressed in the WQA, that the WQA does not provide guidance on how water use or conservation would be considered by the Commission, and that is a topic more appropriately addressed to the Legislature and the Office of the State Engineer.

**Other Factors the Commission Must Consider:**

1365. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(1) character and degree of injury to or interference with health, welfare, environment and property."

1366. Testimony was given that copper mines pose a high potential risk of ground water contamination if leachate, process water, and impacted storm water are not stored and handled properly. (TRV 3, P. 236, L. 20-23), (TRV 2, P. 257, L. 10-18), (TRV 3, P. 507, L. 17-20), (TRV. Vol. 3, P. 576-577, L. 23-1), (TRV 3, P. 577, L. 5-7), (TRV 3, P. 588, L. 16-22), TRV 3, P. 590, L. 9-17), (TRV 5, P. 1036, L. 19-24).



1367. The Copper Rule contains specific requirements to contain these three potential sources of contamination. (TRV 4, P. 736, L. 15-23), (TRV 4, P. 741-742, L. 22-5), (TRV 4, P. 746, L. 16-22).

1368. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(2) the public interest, including the social and economic value of the sources of water contaminants."

1369. Copper mines have a social and economic value. They provide jobs and a source of income for almost two thousand New Mexicans. TRV 1 at 91, L. 8-20.

1370. The Copper Mine Rule proposed by the Department is intended to assure that ground water contamination is prevented or minimized to the extent practicable. TRV 1 at 15, L. 17-25.

1371. The existing ground water rules already require remediation of contamination if it should occur. TRV 1 at 23, L. 14-20.

1372. Good prevention practices assure that costs are borne by the company responsible for the contamination, rather than creating the potential that the public or others will bear the cost of remediation. TRV 2 at 421, L. 14-22.

1373. The Department's proposed Copper Mine Rule strikes a fair balance between the interests of the state and public in maintaining uncontaminated ground and surface water, and the economic value of the industrial source of the water contaminants. TRV 2 at 441, L. 14-17).

1374. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(3) technical practicability and economic reasonableness of reducing or eliminating water contaminants from the sources involved and previous experience with equipment and methods available to control the water contaminants involved."

1375. The construction and operation requirements called for in the Department's proposed Copper Mine Rule are technically practical and economically reasonable. TRV 2 at 398, L. 3-18.

1376. Prevention or containment of ground water contamination at copper mines is achievable through available control technologies and proper operating methods. TRV at 567, L. 19-22.

1377. None of the prevention and monitoring practices called for in the Department's proposal are novel or technically impractical. TRV 3 at 569-570, L. 25-25.

1378. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(4) successive uses, including but not limited to domestic, commercial, industrial, pastoral, agricultural, wildlife and recreational uses."

1379. The primary concern of the Department's proposed Copper Mine Rule is to prevent ground water contamination, and to monitor ground water to assure that it remains uncontaminated. TRV 1 at 16, L. 1-22.

1380. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(5) feasibility of a user or a subsequent user treating the water before a subsequent use."

1381. Should ground water become contaminated by a copper mine, it is possible that users or subsequent users of the ground water could treat the water before use, but this is not a preferred alternative to prevention, and the costs likely would be much higher than prevention. TRV 3 at 709, L. 12-16.

1382. In addition, it could shift the costs of the contamination from those who caused the contamination to the public or future generations. TRV 3 at 711-712, L. 23-1.

1383. The Commission's water quality regulations require abatement of contaminated water by the responsible party, rather than requiring treatment of water by subsequent users. TRV 3 at 527, L. 11-18.

1384. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(6) property rights and accustomed uses."

1385. Freeport-McMoRan currently operates three mines in New Mexico. TRV 1 at 81, L. 17-24. Freeport's Chino Mine has been in operation for over one hundred years. TRV 1 at 160, L. 7-11.

1386. In Subsection E of NMSA 1978, § 74-6-4 (2009), the WQA requires the commission to consider: "(7) federal water quality requirements."


1387. The Department's proposed regulations recognize that stormwater is regulated by the Environmental Protection Agency, because New Mexico is one of five states that do not have primacy over surface water discharges. As a result, the Department's proposed regulations address storm water discharges only as they relate to possible contamination of ground water. TRV at 16, L. 1-22, TRV at 751, L. 14-20.

**Language Added by the Commission During Deliberations:**

1388. During deliberations, the Commission voted unanimously to add the phrase "seeps and springs" to the body of paragraph "N" in Section 28 of the Department's Proposed Final Rule. The Commission finds that since the phrase appears in the title of this paragraph, it follows that the term should be included in the body of the paragraph as well, and that the Department's failure to include this phrase in its Proposed Final Rule was most likely an oversight.

**ORDER**

For the reasons stated above, the Commission hereby adopts the Department's Proposed Final Rule with the addition of the phrase "seeps and springs" as described in paragraph 1388, above, and with any non-substantive amendments necessary for filing with the State Records Center, to be effective in accordance with applicable State Records Center procedures.

  
\_\_\_\_\_  
Butch Tongate, Chair,  
N.M. Water Quality Control Commission  
1190 St. Francis Drive  
Santa Fe, New Mexico 87505  
(505) 827-2855

Date: 9-25-13



STATE OF NEW MEXICO  
WATER QUALITY CONTROL COMMISSION  
WQCC 11-04 (R)

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IN THE MATTER OF  
PROPOSED AMENDMENT TO  
20.6.6 NMAC (Dairy Rule)

TRANSCRIPT OF PROCEEDINGS

BE IT REMEMBERED that on the 16th day of  
November, 2011, the above-entitled matter came on for  
hearing before the New Mexico Water Quality Control  
Commission, taken at the State Capitol Building, Room  
317, Santa Fe, New Mexico, at the hour of 9:20 a.m.

## 1 A P P E A R A N C E S

2 For the Water Quality Control Commission

3 MR. MIKE SLOANE  
MR. EDWARD VIGIL  
4 MR. DOUG BLAND  
MR. LARRY DOMINGUEZ  
5 MR. HOYT PATTISON  
MR. D.L. SANDERS  
6 MR. CLARK TAYLOR  
MR. DANIEL SANCHEZ  
7 MS. HEIDI KRAPFL  
MR. JOHN WATERS

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## 1                   A P P E A R A N C E S (Continued)

2    For the Dairy Industry Group for a Clean Environment:

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1 appreciate that you have looked at it in the depth that  
2 you have because it's a lot to look at and to go  
3 through and to understand, but right now, as Alva has  
4 said, we did still individually -- yes, there are still  
5 some disagreements within certain portions of how the  
6 rule works and that will probably need to be worked out  
7 in the future, but we think we have reached an  
8 agreement that meets the parties' needs to move  
9 forward, get some of the permits going, and especially  
10 from what we have looked at at the Department, get rid  
11 of the backlog of the permits, and, also, have the  
12 dairies to have active permits to help them in their  
13 financing.

14           So we fully stand by what we have reached at  
15 this point in this agreement, fully recognizing that  
16 there are problems that might need to be addressed in  
17 the future, which were part of the discussions we had  
18 during our settlement talks, as well.

19           MS. ORTH: Ms. Martin, do you have anything  
20 to add?

21           MS. MARTIN: I would agree that I appreciate  
22 that you read the documents, and you did express many  
23 things that we have talked about over the last several  
24 years. And the situation is we are all in agreement  
25 that this document go forward.

1           Even though there is plenty of room for  
2 improvement, we won't know how to really improve it  
3 until the permit process is started up again and the  
4 rule is actually put into the permit, and that's going  
5 to take the staff at NMED and the dairymen to identify  
6 any items in the rule that really need to be changed,  
7 and at this point, The Coalition members are very  
8 satisfied to go forward.

9           MS. ORTH: I want to thank the panel very  
10 much. Thank you very, very much. We will then end the  
11 technical case and we have some public comment to  
12 accept. Will you please vacate the table?

13           We turn now to public comment. Anyone may  
14 offer public comment. And we are going to start with  
15 Mr. Bradley.

16                           WALTER BRADLEY

17           after having been first duly sworn under oath,  
18 testified as follows:

19                           DIRECT TESTIMONY

20           MR. BRADLEY: Thank you, Mr. Chairman. We  
21 are back to the Chairman.

22           MS. ORTH: Not just yet.

23           MR. BRADLEY: Not yet. Okay. Well, that  
24 clarification, then, for me. Madam Hearing Officer, we  
25 appreciate it, members of the committee, I just want to



**STATE OF NEW MEXICO  
BEFORE THE WATER QUALITY CONTROL COMMISSION**

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**In the Matter of:** )  
**PROPOSED AMENDMENT** )  
**TO 20.6.6 NMAC (Dairy Rule)** )  
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No. WQCC 13-08 (R)

**WRITTEN REBUTTAL TESTIMONY OF I. KEITH GORDON, P.E.**

**1.0 Prior Testimony, Experience and Qualifications**

1.1 Did you previously provide written testimony for this proceeding?

*Yes. My Testimony is provided with the "NOTICE OF INTENT TO PRESENT TECHNICAL TESTIMONY ON BEHALF OF THE DAIRY INDUSTRY GROUP FOR A CLEAN ENVIRONMENT" filed by Gallagher & Kennedy, P.A. on October 17, 2014. My testimony is identified as Exhibit #DIGCE-2 on Page 2 of that filing; and includes Exhibit numbers Gordon 1 through Gordon 6, inclusive.*

1.2 Did that testimony contain a statement of your experience and qualifications?

*Exhibit Gordon-1 is a summary of my current Curriculum Vitae focused on Technical Expertise specifically applicable to the proposed Dairy Rule Amendments; and particularly waste containment engineering.*

1.3 Do you have anything to change or add to that statement for purposes of this written rebuttal testimony?

*No*

1.4 Is this written rebuttal testimony based upon your experience and qualifications as presented in your direct written testimony?

*This Rebuttal Testimony is based on my qualifications and experience as detailed in my October 17, 2014 Direct Testimony (i.e., DIGCE-2); and a detailed review of the Direct Testimony filed by other witnesses.*

## **2.0 Review of Written Direct Testimony**

2.1 Did you review the Written Pre-Filed Direct Testimony of Kathy J. Martin filed with the Coalition's Notice of Intent?

*Yes.*

2.2 Did you review the written direct testimony of William Olson filed with the Coalition's Notice of Intent?

*Yes.*

2.3 Did you review the written direct testimony of Jerry Schoeppner filed with the Environment Department's Notice of Intent?

*Yes.*

## **3.0 Rebuttal of Written Direct Testimony of Kathy Martin**

3.1 Pages 4-6 of Ms. Martin's written testimony contains the Coalition's proposed changes to 20.6.6.17(D)(6) NMAC in the form of alternative rule language. What type of alternative liner system does the Coalition propose?

*On Pages 4 – 6 of her testimony, Ms. Martin proposes to mandate what appears to be an elaborate six-layer liner system that consists of, in descending order:*

- *60 mil HDPE geomembrane primary liner.*
- *Geotextile filter layer.*
- *Drainage layer with fluid collection pipes, slopes, sumps, pumps, totalizing flow meters, etc.*
- *Geotextile protective layer.*
- *Secondary 40 mil HDPE geomembrane liner, sloped at 2% (note 40 mil not recommended as robust enough for these construction applications, UV degradation not a factor, etc.).*
- *Prepared on-site soil subgrade (inferred); note: the foundation layer (i.e., soil subgrade) is one of the most important factors in ensuring protection of any overlying geomembranes, ensuring "direct contact," etc.*

3.2 What are your comments on the Coalition's proposed liner system?

*Not only is the liner design proposed by Ms. Martin excessive and cost-prohibitive for this waste stream, the system conflicts with current technology commonly employed for double liners:*

- *Her design proposal omits the significance of the subgrade preparation, which is the foundation layer for any of the liner systems proposed.*

- *Ms. Martin has formulated an excessively restrictive “prescriptive design” [which appears to be founded upon a “zero discharge” concept].*
- *The multiple-layered liner design proposed by Ms. Martin does not conform to current and prevailing technologies deployed for other double liner configurations used for containment of RCRA Subtitle C Hazardous Wastes, Oil and Gas Wastes, etc.*
- *From a constructability standpoint, Ms. Martin’s proposed design is excessively difficult to specify and install.*

*In my opinion, the Dairy Rule should allow professional engineers (i.e., P.E.’s) with liner design and installation expertise to make appropriate demonstrations of liner performance by applying site-specific conditions. DIGCE’s proposal allows use of a compacted soil liner as a prescriptive design in addition to the single 60 mil HDPE liner specified in the existing rule, which can be equated to a performance criterion for the compacted soil liner.*

- 3.3 On page 7 of Ms. Martin’s written testimony, she asserts that “DIGCE would propose to severely restrict the ability for WQCC and NMED to require plastic liners for any reason.” What is your response to Ms. Martin’s characterization of DIGCE’s proposed amendment to 20.6.6.17(D)(6)NMAC?

*DIGCE does not propose to restrict the NMED from requiring plastic liners when they are deemed by the Design Engineer (i.e., P.E.) to be the most appropriate based on site-specific conditions. In fact, economics will drive dairies without a proximate source of fine-grained soils to deploy the 60 mil HDPE option.*

- 3.4 On page 7 of Ms. Martin’s testimony, she states that “the DIGCE proposal acts to remove the requirement to install a plastic liner and replaces it with a one-sentence requirement to have a compacted soil liner devoid of any specific requirements as to its construction.” What is your response to Ms. Martin’s statement?

*DIGCE’s proposed Amendments specify a “2’ thick compacted soil liner with a maximum demonstrated permeability of  $1 \times 10^{-7}$  cm/sec” [§20.6.6.17(5) NMAC]. This specification provides the baseline design parameters that could be used by a professional engineer to design a liner appropriate for site-specific conditions that equals or exceeds the minimum performance criterion. As Construction Quality Assurance (CQA) is critical in proper liner installation, typical Soil Liner CQA Specifications (i.e., test methods and frequencies) are proposed in DIGCE-2; Gordon testimony, Table 1; Page 8.*

- 3.5. On page 8 of Ms. Martin’s testimony, she states that DIGCE is “proposing to further erode the protective nature of the impoundment liner system requirements.” In the same paragraph, she describes the “soil liner technology” as “antiquated.” What is your response to Ms. Martin’s statements?

*Soil liners have, indeed, been used successfully for decades for waste containment applications; and in fact, soil layers are part of nearly every liner profile (i.e., at a*

minimum, prepared subgrade). The advent of geosynthetics in the 1980's has added important tools to the Design Engineer's toolkit; but not at the expense of eliminating compacted soils. In fact, RCRA Subtitle D uses the same compacted soil liner design as proposed by DIGCE as a core containment layer for municipal solid waste landfills. The Design Engineer typically would specify compacted soil as a liner layer if readily available, and may substitute geosynthetic clay liners as surrogates (or FML's) if suitable materials are not available on-site or nearby. Soil liner technology is alive and well.

- 3.6 On pages 9 – 10 of her testimony, Ms. Martin makes reference to the “Thiel and Giroud (2011)” study; and references “Scenario 4 involving impoundments use to store critical liquids.” What is your response to Ms. Martin's testimony on this topic?

*In her review of this study, Ms. Martin makes the giant leap that dairy wastes represent “critical liquids”, requiring Scenario 4 Designs (i.e., leakage control with full detection and management). The study is quoted as follows: “In the extreme case of chemical and strong wastewater ponds”... and further references “process ponds for mining, leachate ponds for municipal and hazardous landfills, and wastewater treatment plants for a variety of wastewater treatment ponds for a whole host of industries and municipalities”. First, this article is a poor reference for dairy impoundments as referenced above; second, the fluids would not be defined as critical; and third, dairies would not rise to the harshest “Scenario 4” classification as defined within this study. This study is specific to “geomembrane-lined ponds” (i.e., not soil liners), focuses on failures of these installation; and never once mentions dairy applications.*

- 3.7 On pages 10-11 of her testimony, Ms. Martin describes the rationale for the Coalition's proposal to require a leak detection system as part of its liner system proposal. What is your response to Ms. Martin's testimony on this point?

*The leak detection system requirement is excessive, and is applied only to facilities such as Hazardous Waste, and Oil and Gas residue disposal units. Not even Solid Waste Landfills are required to have leak detection. Furthermore, leakage through the primary liner will cause clogging of the leak detection layer with solids, bioclogging, etc. due to the unique organic characteristics of the dairy wastewater.*

- 3.8 On page 12 of her testimony, Ms. Martin refers to the NRCS Conservation Practice Standard 313. How does DIGCE's proposed rule language relate to that Standard?

*The more appropriate USEPA Standards for CAFOs that were specifically established for New Mexico (Page 10) make direct reference to a geotechnical study certified by a Professional Engineer as the basis for liner design. Alternatively, in the absence of a study certified by a professional engineer, the NRCS design is the prescriptive 1.5' thickness of  $1 \times 10^{-7}$  cm/sec soil. The DIGCE Proposal is 33% more conservative than the NRCS standards. As referenced below, Ms. Martin is focusing on “vulnerable” or “sensitive” environmental settings, as opposed to best management practices for standard engineering applications at NM dairies.*

- 3.9 Do you have any comments on Ms. Martin's testimony regarding the 313 Standard? What is your response to Ms. Martin's statement that the NRCS Standards represent minimum best management practices as it relates to New Mexico dairies?

*In referencing page 7 of NRCS, Ms. Martin is apparently applying standards specifically prescribed for environmentally sensitive zones to all dairy locations; i.e., shallow groundwater, rock, domestic water supply, unstable areas. The liner design selected for each site by a qualified Professional Engineer would take into account site-specific conditions such as those listed above.*

- 3.10 On page 13 of her testimony, Ms. Martin discusses drainage layers and filter layers. What are your comments on Ms. Martin's testimony on those points?

*The elaborate set of geosynthetic layers is imaginative, but impractical. In addition to constructability issues, the upper "filter layer" will clog with fines from primary liner leakage, as well as bioclogging; rendering the very expensive underdrain system useless. Furthermore, the permeability specification of  $1 \times 10^{-2}$  cm/sec may require the importation of these very "clean sands" from over 100 miles, at great cost and sacrifice in sustainability.*

- 3.11 On pages 14-15 of her testimony, Ms. Martin discusses the requirement for a perforated pipe system in the drainage layer and a related pump system that would be mandated by the Coalition's proposed requirements. What is your response to this design requirement as proposed by the Coalition?

*Current double liner design technology bears little resemblance to Ms. Martin's proposal. Leak detection systems in double layer configurations often detect fluids from condensation and other sources (which may not be indicative of liner leakage); and the piping network is not conducive to "flushing" of the sand drainage layer.*

- 3.12 Do you have any other responses to Ms. Martin's written direct testimony?

*The exotic 6-layered system proposed by Ms. Martin has no resemblance to double liner systems that are actually being deployed for hazardous waste, oil and gas residue, landfill leachate, etc. Her design proposal is cost-prohibitive, very difficult to construct, and hard to maintain. For example, actuators, not totalizing flow meters, are used to monitor fluids in sumps.*

*The Martin design configuration ignores sustainability objectives by requiring the expensive production and transport of 4 layers of geosynthetics; and possibly 1,600 cubic yards of soil (i.e., 80 truckloads). No geomembranes, geopipes or geofilters are manufactured in New Mexico, and many Dairies do not have proximate access to Ms. Martin's preferred drainage layer soils (i.e.,  $1 \times 10^{-2}$  cm/sec).*



- 3.13 Have you estimated the cost of the liner system proposed by the Coalition? If so, what is the estimated cost on a per-acre basis and on a statewide basis if imposed on all dairies in New Mexico?

*Table Gordon-7 (attached) summarizes the typical costs per acre for installing each of the three liner alternatives under consideration demonstrating an impact of 3 to 4 times the cost versus current and proposed alternatives at little or no improvement to environmental protection. For instance, a single four-acre impoundment would cost in excess of \$1 million to install. There are dairies in NM with over 35 acres of impoundments in-place. The overall cost impact of Ms. Martin's hypothetical design to the New Mexico Dairy Industry would exceed \$100,000,000.*

- 3.14 Aside from cost, and the matters discussed above, are there factors relating to dairy wastewater impoundments that you can identify that are relevant to the Commission's consideration of the Coalition's liner system proposal?

*Geosynthetic configurations, including geomembranes, should be alternatives that can be prescribed by the Design Engineer, dependent on site-specific conditions. Double liners with leak detection systems are currently specified by regulation for far more onerous waste streams (i.e., hazardous wastes); and are not practical for Dairy applications due to the solids content of the waste stream and bioclogging potential. Figures 3 and 4 (Gordon-2) amplify the rationale to establish compacted soils as the "default" design.*

#### **4.0 Response to Written Testimony of Mr. Olson and Mr. Schoeppner**

- 4.1 Do you have any testimony to provide in response to Mr. Olson's direct written testimony?

*No*

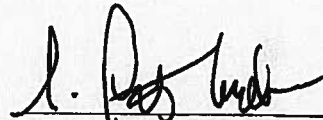
- 4.2 Do you have any testimony to provide in response to Mr. Schoeppner's direct written testimony?

*We empathize with Mr. Schoeppner's expressed frustration with the burden that the "prescriptive" monitoring programs have produced; and the resultant proliferation of variance proceedings. I believe that any consideration of Ms. Martin's proposals for similar "prescriptive designs" would have even greater ramifications.*

**5.0 Conclusion**

- 5.1 As a result of your review of the written direct testimonies of Ms. Martin, Mr. Olson and Ms. Schoeppner, are there any changes you would like to make regarding your testimony or recommendations in your written direct testimony?

*No.*



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I. Keith Gordon, P.E.



**Table: Gordon - 7**  
**Dairy Rule (145.01.01)**  
**Liner System Alternatives**  
**Cost Estimate Analysis - \$/Acre<sup>1</sup>**

<b>Layer</b>	<b>Current Requirements: Single Geomembrane</b>	<b>DIGCE Proposal: Soil Liner Alternative</b>	<b>Martin Design: Double Liner/Leak Detection</b>
1. Prepared Subgrade	\$10,000.00	\$10,000.00	\$10,000.00
2. 40 mil HDPE	\$0.00	\$0.00	\$40,000.00
3. 17 oz Geotextile	\$0.00	\$0.00	\$32,000.00
4. Drainage Layer	\$0.00	\$0.00	\$80,000.00 <sup>2</sup>
5. 60 mil HDPE	\$50,000.00	\$0.00	\$50,000.00
6. 24" Compacted Clay	\$0.00	\$25,000.00 <sup>2</sup>	\$0.00
7. Engineering	\$25,000.00	\$25,000.00	\$50,000.00
<b>TOTALS</b>	<b>\$85,000.00</b>	<b>\$60,000.00</b>	<b>\$262,000.00</b>

**Notes:**

1. Installed Costs
2. Subject to Site-Specific Conditions/Material Transportation Costs



**BEFORE THE WATER QUALITY CONTROL COMMISSION  
FOR THE STATE OF NEW MEXICO**

**In the Matter of:** )

**PROPOSED AMENDMENT** )  
**TO 20.6.6 NMAC (Dairy Rule)** )

**WQCC 13-08 (R)**

**WRITTEN REBUTTAL TESTIMONY OF CHARLES FIEDLER**

**1.0 Prior Testimony, Experience and Qualifications**

1.1 Did you previously provide written testimony for this proceeding?

*Yes. My Direct Testimony is provided with the "Notice of Intent to Present Technical Testimony on Behalf of the Dairy Group for a Clean Environment" filed by Gallagher & Kennedy, P.A. on October 17, 2014. My Direct Testimony is identified as Exhibit DIGCE-3 on page 2 of that filing; and includes exhibit numbers Fiedler-1 through Fiedler-3, inclusive.*

1.2 Did that testimony contain a statement of your experience and qualifications?

*My Direct Testimony referred to a statement of my experience and qualifications that was inadvertently omitted from the October 17 filing, but I understand that a motion has been filed to supplement the October 17 filing. See Fiedler-4.*

1.3 Do you have anything to change or add to that statement for purposes of this written rebuttal testimony?

*No, but a copy of my curriculum vitae is included with this Rebuttal Testimony as Fiedler-4.*

1.4 Is this written rebuttal testimony based upon your experience and qualifications as presented in your direct written testimony?

*This Rebuttal Testimony is based on my qualifications and experience as detailed in my October 17, 2014, Direct Testimony (DIGCE-3); and a detailed review of the Direct Testimony filed by other witnesses.*

**2.0 Review of Written Direct Testimony**

2.1 Did you review the Written Pre-Filed Direct Testimony of Kathy J. Martin filed with the Coalition's Notice of Intent?

*Yes.*

2.2 Did you review the Written Testimony of William Olson filed with the Coalition's Notice of Intent?

Yes.

2.3 Did you review the written direct testimony of Jerry Schoeppner filed with the Environment Department's Notice of Intent?

Yes.

### **3.0 Rebuttal of Written Direct Testimony of William C. Olson**

3.1 On pages 5 and 10-11 of Mr. Olson's testimony, he states that according to DIGCE's proposed rule, compliance with water quality standards would only be measured at one or two monitoring wells located downgradient from the overall dairy facility. What is your response to Mr. Olson's statement?

*Mr. Olson inaccurately characterizes the effect of the DIGCE proposed revisions to §20.6.6.23 NMAC (on pages 10-11 of his testimony) by stating that the effect of the proposed revisions would result in "one or two monitoring wells downgradient from the overall dairy facility." This is clearly not the case. DIGCE is proposing revisions that would simplify the current Dairy Rule by eliminating redundant requirements and relying on a hydrogeologic characterization of the dairy facility to identify the most appropriate location(s) for monitoring wells. DIGCE's proposed amendments to §20.6.6.23(A) NMAC state that "A permittee shall monitor ground water quality at the dairy facility with at least one hydrologically upgradient and two hydrologically downgradient wells." (underline emphasis added) This requires that the facility will have AT LEAST TWO downgradient monitoring wells appropriately located based on the hydrogeological characterization. DIGCE understands that this characterization may identify that more than two downgradient monitoring wells are required to monitor the facility optimally and accepts this fact.*

3.2 On page 10 of Mr. Olson's testimony, he asserts that DIGCE's amendments to 20.6.6.23 NMAC proposes to eliminate ground water monitoring of sources of water pollution at dairies by deleting certain rule language. What is your response to Mr. Olson's testimony?

*On page 10 of his testimony, Mr. Olson asserts that the DIGCE proposed amendments would eliminate ground water monitoring of sources of water pollution at dairies. To the contrary, by simplifying and clarifying the Dairy Rule with the elimination of redundant language, DIGCE would more appropriately rely on a hydrogeological characterization of the dairy facility to locate monitoring wells in the most suitable locations. This would allow for the detection of an exceedance or a trend towards exceedance of the ground water standards with monitoring wells appropriately located to intercept a potential discharge of contamination from "sources of pollution" within the dairy facility. DIGCE's proposed amendments provide more flexibility to allow the use of a single downgradient monitoring well to monitor more than one impoundment or field compared to the prescriptive requirements of the current rule. Under DIGCE's proposal, the determination of the number and locations of monitoring wells required to appropriately monitor all impoundments and fields at a dairy facility would be left to a professional judgment*

based upon the site-specific hydrogeologic evaluation subject to NMED's review. If DIGCE's proposed amendments are adopted, in effect, the methods and process to establish an appropriate ground water monitoring requirement would be more similar to the general discharge permit rule, but with much more specific guidance to permit applicants and NMED and the more specific technical requirements for monitoring well construction.

3.3 On page 11 of Mr. Olson's testimony, he contends that it is not possible for one or two facility monitoring wells to determine if pollution prevention measures implemented by a dairy are effective in ensuring that water quality standards are met. What is your response to Mr. Olson's testimony?

*In accordance with the existing Rule (§20.6.6.23(A)(1) and (8) NMAC), DIGCE has accepted the requirement to have at least one upgradient and two downgradient monitoring wells for a total of at least three monitoring wells at every dairy facility. On page 11 of his testimony, Mr. Olson appears to be arguing against the minimum well requirement of the existing Dairy Rule (that he helped author) as being inadequate, rather than DIGCE's proposed revisions which reduced confusion by simplifying the Dairy Rule and clarifying (in proposed §20.6.6.23(A)(1)NMAC) the requirement for a minimum of three monitoring wells (at least one upgradient and at least two downgradient). Once again, DIGCE would rely on a hydrogeological characterization of the dairy facility to appropriately locate the optimal number of ground water monitoring wells, acknowledging that this characterization may identify more than the currently required three monitoring wells to monitor a given dairy facility. There is no wording (explicit or inferred) in DIGCE's proposed revisions that limits the number of downgradient monitoring wells to two. I also would refer the Commission to Turnbough-3, and particularly the column "pre-existing wells," which I understand to identify the number of monitoring wells approved to monitor dairy facilities under discharge permits issued by NMED under the "general" discharge permit regulations, particularly §20.6.2.3107 NMAC. That column shows a range of the number of required monitoring wells from 0 to 12 per discharge permit. Because NMED issued discharge permits under the "general" discharge permit regulations requiring that number of wells, I believe it is reasonable to assume that NMED concluded that those wells were adequate to monitor ground water at those dairies under the Water Quality Act and the Commission's regulations.*

3.4 On page 11 of Mr. Olson's testimony, he asserts that under DIGCE's proposal, the monitoring well would need to be placed at the property boundary of the facility, and the result would be to allow pollution to occur from a source of pollution up to the facility property boundary. What is your response to Mr. Olson's testimony?

*Unlike the existing Dairy Rule that establishes a prescriptive location to monitor ground water within 75 feet downgradient of an impoundment or within 50 feet downgradient of a field, the DIGCE proposed amendments would rely on the expertise of a qualified professional (a Professional Engineer or hydrogeologist) to characterize the hydrogeology properly at the dairy facility to determine the appropriate locations for ground water monitoring wells within the property boundary of a dairy facility. Nothing in DIGCE's proposed rule amendments specify that monitoring wells will be located at the property boundary. Indeed, DIGCE's proposal retains the language of 20.6.6.23(A)(1)NMAC that describes the goal of ground water monitoring, which is not consistent with Mr. Olson's contention that DIGCE's proposal would always allow*



contamination up to the property boundary. Rather than relying on a prescriptive rule that requires all monitoring wells to be located within a prescribed distance from the edge of a potential contamination source, DIGCE proposed a Dairy Rule that would rely on the hydrogeological characterization of the ground water present at the dairy facility to define the appropriate location that would intercept the potential contamination consistent with the goals of ground water monitoring specified in 20.6.6.23(A)(1) NMAC. That location may be further away or closer to an individual impoundment or field than the prescribed distances specified in the current rule, depending upon the site-specific conditions.

3.5 Do you understand that under DIGCE's proposed amendments, the Environment Department would be required to approve monitoring well locations only at a dairy facility property boundary?

*There is no requirement in the DIGCE proposed amendments requiring that ground water monitoring wells must be located at the dairy facility property boundary. DIGCE revised 20.6.6.23(A)(1)NMAC to reference "at the Dairy Facility" to provide the Permittee with the flexibility to identify the appropriate location for a ground water monitoring well based on a hydrogeological characterization.*

3.6 Do the existing Dairy Rule monitoring requirements, 20.6.6.23 NMAC, identify specific locations for ground water monitoring wells outside and away from impoundments that are to be used to determine compliance with ground water quality standards?

*Yes. The current Dairy Rule (§20.6.6.23(A)(2),(3),(4)(a) and (4)(b) NMAC) prescribes a defined distance from the edge of a potential contamination source within which ground water monitoring wells must be installed. A variance is currently required to locate a ground water monitoring well in a location other than this hypothetical "point of compliance." Rather than relying on a qualified professional to develop a hydrogeological characterization that defines the optimal location for ground water monitoring, the current Dairy Rule, in essence, prescribes a "point of compliance," following the principles that Mr. Olson describes in his testimony and as discussed in my next answer. Ground water monitoring wells must be located within this "point of compliance" even if this requires an installation that will result in less than optimal ground water monitoring results or to position the well in an inappropriate location (e.g in a lagoon berm, a stormwater ditch, etc.) potentially exposing the monitoring well to damage or flooding.*

3.7 On page 25 of his testimony, Mr. Olson makes certain assertions of what would happen under "DIGCE's point of compliance concept." To your knowledge, does DIGCE's proposed amendments to the Dairy Rule include a specific proposal for a "point of compliance concept"?

*As I understand the generally accepted definition for "Point of Compliance," this is a point (typically described as a distance) downgradient from a potential contamination source within which ground water monitoring is required to confirm water quality in compliance with applicable standards. Under that definition, the existing rule that prescribes specific points for installation of ground water monitoring wells could be characterized as adopting a "point of compliance" approach. In other words, as I understand Mr. Olson's testimony and characterization of a "point of compliance" approach, the existing Dairy Rule would specify a "point of compliance" at a*

*defined distance from the edge of an impoundment or field. (20.6.6.23(A)(2),(3),(4)(a) and (4)(b) NMAC). The difference between the existing rule and DIGCE's proposal is that setting an arbitrary distance from a potential source at which a monitoring well must be placed, without consideration of site-specific conditions, will not necessarily identify the optimal location for a ground water monitoring well to meet the objectives of the rule. The existing rule also prescribes an excessive number of monitoring wells for many dairies, resulting in numerous variance applications contending that the prescriptive requirements pose unreasonable burdens on the operations and proposing alternative ground water monitoring systems, presumably based upon site-specific considerations. The DIGCE proposed amendments rely on a qualified professional to conduct a hydrogeological characterization to identify the appropriate locations for ground water monitoring wells that will detect an exceedance or a trend toward an exceedance of the ground water standards.*

#### **4.0 Response to Written Testimony of Ms. Martin and Mr. Schoeppner**

4.1 Do you have any testimony to provide in response to Ms. Martin's direct written testimony?

No.

4.2 Do you have any testimony to provide in response to Mr. Schoeppner's direct written testimony?

*I empathize with Mr. Schoeppner's expressed frustration with the burden that the "prescriptive" monitoring programs have produced; and the resultant proliferation of variance proceedings. I believe that any consideration of Mr. Olson's proposals for maintaining the "prescriptive monitoring with well installations within a defined point of compliance" will compound the proliferation of variance proceedings as Permittees seek any viable relief available.*

#### **5.0 Conclusion**

5.1 As a result of your review of the written direct testimonies of Ms. Martin, Mr. Olson and Ms. Schoeppner, are there any changes you would like to make regarding your testimony or recommendations in your written direct testimony?

No.



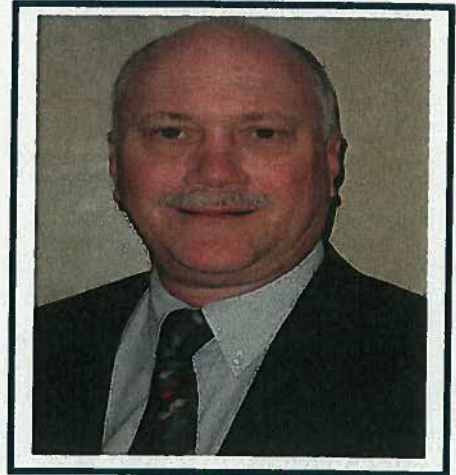
Charles W. Fiedler, P.E



## **CHARLES W. FIEDLER, PE, LEED AP**

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Charles W. Fiedler is a consulting expert in the field of environmental engineering with over thirty-five years of experience with ground water monitoring specifically related to waste management facilities; and the engineering associated with the location, design, installation and sampling of ground water monitor well. These experiences have been acquired during his employment with public and private sector entities across the southwestern United States. They have involved every aspect of environmental consulting, including management, engineering and environmental compliance. Charles is currently a Senior Project Director with Gordon Environmental, Inc. of Bernalillo, NM. In this position, he works closely with a staff of engineers and technicians solving waste management problems for governmental and private clients primarily in New Mexico. These efforts include dairy lagoons, exploration and production waste ponds, organic composting, landfill and transfer station design, and the development and operation of these facilities.



Prior to his recent efforts in New Mexico, Charles has been the Vice President of Operations for a biodiesel production facility, Director of Engineering for the City of Denton, Texas (population 100,000), Manager of the solid waste engineering practice for HDR Engineering from their Dallas, TX office; Regional Manager of Projects for Waste Management, Chief Engineer for design and regulatory compliance at Energy Advancement and a Water Hygiene Engineer with the Texas Department of Health.

Charles grew up in Houston, Texas, before pursuing a Bachelor and Master of Science Degree in Civil Engineering from Texas A&M University. He is a Registered Professional Engineer in Texas and New Mexico; and a member of the National Society of Professional Engineers and the New Mexico Society of Professional Engineers.

**FIEDLER-4**