COALITION EXHIBIT 1

STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION

In the Matter of:	)	**No. WQCC 12-09 (R)**
PROPOSED AMENDMENT	)	
TO 20.6.6 NMAC (Dairy Rule)	)	
	)	**November 19, 2012**

AMIGOS BRAVOS, CABALLO CONCERNED CITIZENS

AND RIO GRANDE CHAPTER OT THE SIERRA CLUB

("THE COALITION")

TECHNICAL TESTIMONY BY

KATHY MARTIN, P.E.

My name is Kathy J. Martin and I am a professional engineer licensed in Oklahoma in the field of Civil Engineering. My education includes a Bachelor's degree in Petroleum Engineering and a Master's degree in Civil Engineering with 50 hours beyond the master's program in areas of civil and chemical engineering.

My career started at the Oklahoma Water Resources Board where I performed the duties of a permit writer for non-hazardous industrial wastewater and drafted regulations for the design, construction, operation, maintenance, and closure of waste lagoons and land application used by various industries in Oklahoma.

I also served as the third Project Officer of the Tar Creek Superfund Site and oversaw the development and implementation of regional groundwater study of the Roubidoux Aquifer with respect to impacts from intrusion of acid mine drainage from the lead and zinc mines of the Tn-State Mining District.

In 1993, I worked for the Oklahoma Department of Environmental Quality in the Customer Assistance Program and focused on the implementation of the Clean Air Act Amendments of 1990 Small Business Assistance Program, as well as participating in the creation and implementation of the multi-media permitting and compliance assistance program.

For the past fifteen years, my consulting work has focused on environmental issues related to large scale animal feeding operations, including the technical and regulatory review of nearly 200 CAFO permit applications in 21 States with respect to the engineering design of the waste management systems and the associated nutrient management plans. During that time, I also participated in rule-making regarding

livestock production and associated waste management in Oklahoma, Kansas, Nebraska, Colorado, Indiana, Illinois, and New Mexico. In 1998, I was awarded a contract which resulted in the creation of a 50 page, stand-alone CAFO regulation for Seward County, Kansas.

I have been accepted as an expert witness in numerous administrative hearings and a list of those proceedings is attached to my vita which is attached to my testimony as **Coalition Exhibit 'A'**. The majority of the hearings were part of state NPDES permitting process for Confined Animal Feeding Operations ("CAFOs"), as well as groundwater discharge permits and in some cases, air and odor aspects of the permits. I have also testified in District Court in Nebraska and Chancery Court in Kentucky regarding the impacts of CAFOs on the environment.

For the past three years, I participated in all stages of the creation of the current New Mexico dairy regulations, including serving as an expert witness before this Commission in both the initial proceedings and the proceedings to approve the negotiated revisions. I was also actively involved throughout the negotiation process to arrive at revisions to the regulations to which DIGCE, NMED and the Coaltiion agreed, were approved by the Commission, and became effective less than one year ago.

Even though I live in Norman, Oklahoma, I do have emotional ties to New Mexico, as my sister and her family live in Albuquerque and several of her oldest children attend college in Albuquerque and Santa Fe. It is an honor to participate in the rule-making process of New Mexico and I greatly appreciate the opportunity to testify on issues important to the public health and environment of New Mexico.

My written testimony addresses the proposed changes to the Rule with respect to: (1) backflow prevention devices, (2) field calibration of flow meters, and (3) issues related to the Nutrient Management Plan ("NMP") requirements both for certification of the plan preparer and the contents of the plan.

1. Backflow Prevention Devices

The Dairy Rule requires the use of an air gap or reduced pressure principal device to prevent backflow of liquid dairy waste into a fresh water well. DIGCE would like to have a third category of devices to include the option to use a chemigation valve, mainly because some number of dairies already have them onsite and the cost of installing one of the two approved devices is an additional expense for dairy operators. I have provided background information for my testimony on this subject which is attached to my testimony as **Coalition Exhibit B.** That exhibit includes references to information on how to construct an air gap, the costs of various backflow prevention devices, reduced pressure principle assemblies, and chemigation valves.

The engineering aspect of an "air gap" is simple – an air gap is the most efficient, reliable method to prevent backflow from a manure lagoon into a fresh water well. An air gap means there is literally air between the water supply pipe and the surface of the manure lagoon and unless the manure can jump into the air, it will never be siphoned back into the water well.

The dairy operator can easily create an air gap by suspending the fresh water pipe above the manure lagoon to allow fresh water to drop into the lagoon for mixing prior to pumping out the lagoon contents to the fields. A second method of creating an

air gap is to build a mixing basin where lagoon contents and fresh water are piped separately, allowed to mix, and then a third pipe is used to pump the combined water to the field.

However, if the dairy operator allows the fresh water pipe to fall into the lagoon or to lay on the side of the lagoon and flow fresh water under the surface of the manure lagoon – then backflow due to siphoning (e.g., improper sequence of turning off the fresh water pump) can and will suck the manure wastewater back to the fresh water well. An example of this type of problem of which I have personal knowlege and experience occurred at the Circle Four Dairy where it took months to bleach out the aquifer to reduce the pathogen content after a siphoning incident.

DIGCE proposes to use chemigation valves instead of air gaps and reduced pressure principal devices. I have attached to my testimony, as **Coalition Exhibit C**, a reproduction of a Univerisity of North Dakota webpage showing how chemigation systems are supposed to operate and providing cut-away views of the valves. As you will see, when you examine **Coaltiion Exhibit C,** a chemigation valve has only one safety valve. Chemigation valves are designed to work with in-line injection of concentrated pesticides and fertilizers that are bled in at small flow rates in order to mix in-line prior to application to the field. They are not designed to prevent backflow against high pressure manure wastewater lines.

Reduced pressure principal devices have two spring-loaded safety valves. I have attached to my testimony as **Coalition Exhibit D**, one chapter from an EPA manual, includes very helpful descriptions, many diagrams and a picture of one of these

devices**.** Because they have two spring-loaded safety valves they are twice as effective as a chemigation valve. In addition, they also have stronger spring action to block and divert high pressure flows.

It is my professional opinion that chemigation valves are highly inappropriate for use with manure wastewater systems and that dairy facilities should be required to install an air gap system if at all possible and if not possible, due to space limitations or proximity to fresh water well, then they should be required to use a reduced pressure principal device. There should be no quarrel about this requirement because the protection of the fresh water aquifer is paramount. To argue that a simple relief valve is better than an air gap or a double spring-activated safety valve system is just not good science – it is a proposal in direct conflict with good science. You cannot protect the ground water by allowing dairy operators to use the wrong tool for the job just because they have one on hand and building or obtainig the right tool may be an additional expense.

2. Field Calibration Of Flow Meters

I have provided some background information on field calibration of flow meters which is attached to my testimony as **Colaition Exhibit E.** This exhibit includes references to information about types of flow and flow meters, the importance of knowing the flow rate and total volume of wastewater discharged, and differences between field calibration and field verification for various flow meters typically used by dairies. In order to have a comprehensive discussion of the systems involved, I have also attached to my testimony as **Coalition Exhibit F** information on Flow Meters for

Measuring Dairy Liquid Manure Applications and, as **Coalition Exhibit G**, information on Flow Meters Tested on Dairy Lagoon Water. Beyond the research on flow meters I did to prepare this testimony, I also reviewed testimony and exhibits used in the original dairy rule hearing, including Exhibit 3220-4 Flow Measurement, prepared by Robert George for New Mexico Environment Department Ground Water Quality Bureau ["NMED-GWQB"]; Exhibit 3220-5 Limitations of Non-standard Flow Measurements, prepared by Robert George for NMED-GWQB; and the Written Testimony by William C. Olsen and Robert George in NMED NOI Attachment 8. This testimony is part of the public record of the proceeding before this Commission that resulted in the enactment of the original dairy regulations in 2010 in which I served as one of the expert witnesses for the Coaltiion.

Types Of Flow Meters

To understand the need for accurately calibrate flow meters, the first point to consider is the different types of flow meters currently used by the dairy industry to monitor waste flows throughout the facility and at point of land application. It is conceivable that a dairy would employ several different types of flow meters at different places in the facility depending on ability to capture the flow and transport it in either an open channel or in a piping system.

Flow meter types fall into two categories: open channel or pipe flow. Open channel devices include Parshall flumes and weirs. Pipe flow devices include pressure differential devices (orifice plates and venturi meters), flow-intrusive devices (turbine), and non-intrusive devices (magnetic and Doppler). Most flow meters contain a primary

device that interacts with the liquid (paddle wheel, turbine, orifice plate) or pipe (electromagnetic, Doppler) and a secondary device that translate that interaction to a flow velocity and flow rate (electronics).

Types Of Flow

The second point to consider is the variability of flow rate at each point where a flow meter will be used and whether or not the flow meter chosen to be used is appropriate for the flow conditions. Different points in the facility waste management system have significantly different frequencies and types of flow, such as comparing the regular generation of washdown from the milking parlor with the irregular generation of contaminated stormwater runoff from the open feedlots.

The continuity of flow limits the type of flow meter that can be used **(Coalition Exhibit 'F').** For example, many in-line flow meters require full pipe flow and a minimum flow velocity in order to maintain flow measurement accuracy. On the other hand, an open channel device, such as a Parshall flume or weir does not even require a pipe, much less full pipe flow. Some flow meters require liquids free of large particulates and trash for proper operation (turbine, orifice), while others require a minimum conductivity (magnetic flow meters). Most flow calculations assume a homogenous flow, meaning the characteristics of the liquid (viscosity, compressibility, single-phase flow) remains the same throughout the metering period.

If the dairy uses a turbine or other flow-intrusive flow meter device to measure wastewater flow that contains large particulates (e.g., hay, trash, spent feed, manure) without appropriate screening devices before the flow meter, then the degradation of the

mechanical properties of the flow meter will surely occur and cause a reduction of flow measurement accuracy. When dairies rely upon incoming fresh water at the groundwater supply well as the basis for the total flow at the facility, then turbine or other intrusive flow meters would be appropriate.

Flow Meter Environment

The third point to consider is whether the ambient environment in which the meter is installed can negatively impact the long-term accuracy of the flow metering system. Flow meter secondary devices are electronic in nature and should be protected from the elements and should be located where measurements and maintenance are possible. Some flow meters are transportable, meaning they are inserted into the flow stream only during the reading and then removed and stored in the shop. As stated earlier, the placement of the flow meter in the piping system is critical so that the flow is manipulated correctly (e.g., full pipe flow, laminar versus turbulent flow regime, scouring, minimization of scum buildup).

Flow Meter Accuracy

The final point to consider is how flow is recorded for each flow meter at the dairy. Open channel flow meters, such as Parshall flumes and weirs can be read visually by a person standing at the meter during the flow event or the height of the liquid in the meter can be detected using secondary detection devices. In-line pipe flow meters generally have a secondary device that translates a pressure drop or interaction with magnetic field as a change in voltage and then uses software to convert to a flow velocity, flow rate, and total flow which are stored electronically.

To be clear, a flow meter is superior to other methods of determining flow rate, such as “flow rate over time” or “pond drop method” **(Coalition Exhibit 'F').** DIGCE claims they are not challenging the use of flow meters, but if the topic should come up, I recommend reviewing the discussion of accuracy problems associated with those two methods as provided in this exhibit.

The current wording of the Dairy Rule requires field calibration of flow meters. DIGCE proposes to remove the requirement for field calibration without any remedy for how industry plans to prove that the flow meters are performing as intended. The argument is made that flow meter manufacturers “do not specify any means for field calibration of the flow meters, and it has been difficult to identify practicable, safe and reliable methods of field calibration”.

The DIGCE Petition does not identify the types of flow meters used by the dairy industry nor their manufacturer(s). The public and the Commission are left to their own imagination as to which flow meters and flow meter field calibration are being referred to in the Petition.

The DIGCE Petition posits that flow meters are calibrated when they are brand new and that when the flow meter is broken, it is readily noticeable – so no field calibration is required. I suggest that somewhere between brand new and broken is where we need to find a balance.

Regardless of whether we know the specific type of flow meter(s) in use, the problem at hand seems to be terminology – field calibration versus field verification. Emerson process experts provide a simple definition:

> Calibration is performed at the factory. It establishes the relationship between flow and signal produced by the sensor. Validation confirms flow performance by comparing a primary flow standard to the sensor. Verification establishes confidence in performance by analysis of the secondary variables associated with flow. Many times these terms are used interchangeably. Also, frequently calibration or validation is done when only verification is needed.

http://www.emersonprocessxperts.com/2009/10/flow_meter_veri/

When a flow meter is brand new and has been calibrated with bench tests – one could argue that it does not need to be calibrated again when installed in the field. However, the flow meter must be field verified to prove that the flow meter under field conditions reacts appropriately between the primary and secondary devices.

It is my professional opinion that the Dairy Rule should require regularly scheduled "field verification" to insure that the device is operating within an agreed upon margin of error. When that margin of error is exceeded, field calibration is warranted. Section 20.6.6.24 E Flow Meter Field Calibration language should be kept in the Dairy Rule and adjusted to allow for regularly scheduled field verification (quarterly or biannually depending on rigors of the flow environment and sensitivity of the flow meter device). Additional language should be created that establishes the margin of error that would trigger either a "field calibration" or the actual removal of the flow meter for manufacturer repair and re-calibration.

3. Issues related to Nutrient Management Plans –

3a. Dual Requirement for Certification of a Nutrient Management Plan

The current wording of the Dairy Rule requires both a Comprehensive Nutrient Management Plan (CNMP) and that the person who develops it has specific

certifications from the American Society of Agronomy (ASA) and the Natural Resource Conservation Service ("NRCS") New Mexico office. These certifications are required for anyone who develops a CNMP with the intention of satisfying state and federal regulations. The NRCS determines what must be in a CNMP and the level of competence (demonstrated by certification) necessary to prepare such a document. NRCS referes to such a person as a Technical Service Provider or TSP.

The DIGCE proposed language creates a new concept that I will refer to as the "nutrient management plan to protect groundwater" that would not require the developer to be certified by the NRCS, only by the ASA. DIGCE claims that the additional expense of obtaining NRCS certification "imposes an undue cost on the permittee" and that "there is limited capacity and availability of these professionals".

Background information for my testimony on this subject is found in an attachment to my testimony, **Coalition Exhibit 'H',** which includes information about the ASA certification requirements for Certified Professional Agronomists ("CPAg") and Certified Crop Advisors ("CCA"); MOUs between NRCS and ASA regarding the consideration of both CPAg and CCA as NRCS certified Technical Service Providers; and the NRCS proficiency requirements for Technical Service Providers (TSPs).

Reading the American Society of Agronomy (ASA) requirements for certification of a Certified Professional Agronomist (CPAg) and Certified Crop Advisor (CCA), makes it clear that the main difference between the two is the requirement of an advanced degree for the CPAg.

Regardless of the higher education requirements, both types of individuals may

be certified as Technical Service Providers (TSPs) pursuant to the Memorandum of Understanding ["MOU"] between NRCS and ASA which is attached to my testimony as **Coalition Exhibit 'I'.** The MOU for Certified Professional Crop Scientists (CPCSc) states in Section II:

> This MOU is to officially recognize that a person who has met the standards set by ASA/CPCSc and is certified as a CPCSc also meets the NRCS standards for providing conservation assistance in the areas of nutrient management, pest management, and residue management.
>
> This memorandum will benefit ASA/CPCSc by providing CPCSc certified individuals the opportunity to become certified by NRCS. NRCS will place the certified Technical Service Provider on the approved list to provide technical service to USDA [United States Department of Agriculture] conservation program participants, thereby expanding their scope of services to existing and future clients.

Similar language is found in the MOU for Certified Professional Agronomists (CPAg) which is attached to my testimony at **Coalition Exhibit 'J'.** In Section II of the MOU it states:

> This MOU recognizes that an individual who has met ASA/CCA or ASA/CPAg standards also meets the following performance proficiencies established and agreed to by both parties for providing conservation assistance in the following areas, provided they have met all other NRCS certification requirements associated with these practices.

Plainly, there are procedures in place to help CPAg and CCA persons also qualify as NRCS Technical Service Providers--specifically with respect to preparing comprehensive nutrient management plans (CNMPs).

Should the MOUs expire, individuals not already certified can apply directly to the NRCS for certification as a TSP as outlined in the USDA-NRCS Nutrient Management Plan Areas and Performance Objectives for CCAs and CPAgs, a copy of which is

attached to my testimony as **Coalition Exhibit 'K'.** It is important to note that persons who are certified while the MOUs were effective can maintain certification even after expiration.

The requirements for USDA-NRCS certification include a multiple page check-list series of “areas of proficiency” and submittal of a complete nutrient management plan prepared for an existing grower. If the NMP meets the NRCS standards of review, then the applicant can be certified as a TSP. If the NMP does not meet the standards, it must be corrected and resubmitted and a second NMP must be developed for another existing grower and also submitted to the NRCS for review. If the second NMP does not meet the standards, the applicant is required to take additional training and show proof of proficiency before reapplying for TSP certification. Otherwise, TSP certification is assumed.

DIGCE’s proposal to remove the USDA-NRCS aspect of the certification process does not address how that might have a negative impact on dairy operators in New Mexico with respect to continued USDA funding for NMP development and other conservation program activities. Both MOUs contain language on the first page, under a section entitled "Background", which explains how the TSP designation fits in with USDA-NRCS funding and availability of technical assistance for conservation program participants as follows:

> NRCS is responsible for providing technical assistance to landowners[.] In addition to technical assistance available from NRCS, USDA conservation program participants have the option of obtaining conservation technical assistance from individuals accepted as Technical Service Providers (TSP) by NRCS.

> Section 1243 of the Food Security Act of 1985, as amended by the Farm Security and Rural Investment Act of 2002, Public Law 107-171, May 13, 2002 (referred to as the 2002 Farm Bill) and the Food, Conservation, and Energy Act of 2008 require the Secretary to provide technical assistance under Title XII of the Food Security Act of 1985 to a program participant "directly, or …through a payment…for an approved third party, if available."
>
> In September, 1993 the U.S. EPA Region VI issued the General Permit NMG010000 for concentrated animal feeding operations in New Mexico (which expires on September 2, 2014). The General Permit for New Mexico includes information about who may develop and/or modify NMPs. See **Coalition Exhibit 'L',** attached to my **testimony,** and online at http://www.epa.gov/region6/water/npdes/cafo/2009-10-16/8_10_minor_mod3_signed_final_permit_nmg010000.pdf

Part III of the General Permit, Item 8 – Certified Specialists to Develop NMPs, states:

> Owners and operators of CAFO facilities located in the State of New Mexico (except Indian Country) shall use a "Certified Conservation Planner-CNMP" and a "Certified Specialist(s)-CNMP" to develop and/or modify the NMP required by this permit. The NMP must also include applicable documents(s) to verify that the person who developed and/or modified the NMP had met the qualifications of a certified planner/specialist.
>
> A certified NMP planner is a person who has a demonstrated capacity to develop Comprehensive Nutrient Management Plans (CNMPs) in accordance with applicable USDA-NRCS and State standards, which when an NPDES Permit is required, also meets the NMP requirement, the EPA CAFO effluent guidelines and NPDES permit requirements. The certified NMP planner must be certified by New Mexico USDA-NRCS or a USDA-NRCS sanctioned organization as a "Certified Specialist-CNMP," or an alternate, equivalent certification program developed by NMED. The certified NMP specialist must be certified by New Mexico USDA-NRCS or a USDA-NRCS sanctioned organization as a "Certified Specialist-CNMP" or an alternate, equivalent certification program developed by NMED.

Id. at 8. According to the Compiled CAFO Final Rule available on the EPA website and

dated July 30, 2012, facilities that are eligible to apply for coverage under the General Permit include large and medium CAFOs. Dairies that have a 1000 or more head are considered a large CAFO and dairies with 300 to 999 head are considered a medium CAFO. In New Mexico, most--if not all--dairies would qualify for coverage under the General Permit for CAFOs. The EPA final regulations for confined animal feeding operastions are available online at:

http://www.epa.gov/npdes/regulations/cafo_final_rule2008_comp.pdf

DIGCE proposes that NMED not require the USDA-NRCS certification for those individuals who want to develop a nutrient management plan in New Mexico. However, any dairy in New Mexico that is required to develop a NMP under the EPA Region VI General Permit would still need to have a USDA-NRCS certified person prepare it. Therefore, it is unclear how DIGCE's proposed changes would reduce costs to any New Mexico dairy required to prepare an NMP under USEPA Region VI issued permits. In addition, any dairy operator who intends to participate in the Environmental Quality Incentives Program ("EQIP") must use a Technical Service Provider in order to qualify for funding. The Conservation Program Application for EQIP states:

> The Participant agrees not to start any financially assisted practice or activity or engage the reimbursable services of a certified Technical Service Provider before a Contract is executed by Commodity Credit Corporation (CCC). The Participant may request, in writing, a waiver of this requirement for financially assisted practices by the NRCS State Conservationist.

This application is available on line at:

http://www.nm.nrcs.usda.gov/programs/eqip/2012/Blank_EQIP_CCC1200.pdf

In my professional judgment, DIGCE's proposed changes to certification

requirements create more problems than they solve--and only serve to reduce the competency requirements for NMP preparers. A major purpose of the Dairy Rule is to control how dairy waste is managed when land applied on crop land in order to protect New Mexico's water quality. Reducing the competency requirements of the people who New Mexico dairy operators rely upon to create NMPs is neither based upon good science nor protective of groundwater quality.

3b. Removing the CNMP template and New Mexico Standard 590 requirement.

The DIGCE Petition includes a significant strike out of the paragraph in the current dairy regulations stating:

> The NMP shall be developed through utilization of the U.S. department of agriculture natural resources conservation service (USDA-NRCS) national comprehensive nutrient management plan develo9pment templates as adopted by the New Mexico office of the USDA-NRCS and in accordance with the USDA-NRCS conservation practice standard for New Mexico, nutrient management – code 590.

Recently, the New Mexico contracted with the NRCS to update Standard 590 conservation practice for nutrient management. The final version of the standard is dated September 2012 which is available online at:

http://efotg.sc.egov.usda.gov/references/public/NM/590-stnd2012.pdf

and attached to my testimony as **Coalition Exhibit** 'M'**.** In DIGCE's petition to amend the current dairy rule, it claims that the “NRCS is considering changes to its existing guidance”. Since the changes had already taken place near the time the Petition was submitted to the Water Quality Control Commission, it is unclear if DIGCE is claiming that additional changes will be made or if it is referring to the Standard 590 as published in September 2012.

DIGCE proposes to remove the requirement to use the CNMP template, but allow those facilities that have a CNMP to provide only those sections that relate to groundwater as a satisfactory submittal under state regulation. The DIGCE petition language does not elaborate on how a dairy operator can take the computer generated work product and decide which pages to submit or not submit to NMED. Several of the sentences in the proposed language are taken verbatim from the Standard 590 or refer indirectly to entire sections of Standard 590.

For example, page 10 of 11 of the DIGCE Petition for 20.6.6.21 includes the following sentence:

> The NMP shall specify the maximum application rates for wastewater applied through irrigation so as not to exceed the soil intake/infiltration rate.

A word search of the existing Dairy Rule results in five instances where the word "infiltration" is used and they relate to either infiltration of leachate from silage or stormwater. This sentence can be found verbatim, however, in Appendix D of the USEPA Region VI General Permit **(Coalition Exhibit 'L').** Appendix D is the NRCS Standard 590 (as written in 2009) states:

> Nutrient Application Rates – the application rate (in/hr) for material applied through irrigation shall not exceed the soil intake/infiltration rate. The total application of water shall not exceed the water holding capacity of the soil root zone. See the Irrigation Guide in the NM Field Office Technical Guide (FOTG, Sec I) for local soil water holding capacities and soil intake rates. Application rates must be adjusted to match the soil intake rate.

Id. at 4. The current language in the Dairy Rule does not include a publication date on the "NRCS conservation practice standard for New Mexico, nutrient management – code 590."

In my professional judgment, the two questions which need to be asked are: (1) how does the existing rule affect dairies that are operating under the General Permit which incorporates the pre-September 2012 Standard 590, and (2) whether the Dairy Rule makes any assumption as to which version of Standard 590 must be used in order to satisfy NMED.

The pre-2012 version of Standard 590 states as one of its purposes, "to minimize agricultural non-point source pollution of surface and ground water resources." In fact, both versions of Standard 590 interlace protections of surface water and ground water to such an extent that it would be virtually impossible for an individual dairy owner to know, with certainty, which part of the CNMP developed using 590 would be considered "only protecting groundwater".

For example, under General Criteria, the standard states "Areas contained within established minimum application setbacks (e.g. sinkholes, wells, gullies, ditches, surface inlets or rapidly permeable soil areas) shall not receive direct application of nutrients." Clearly sinkholes, wells, and rapidly permeable soil areas have some direct impact on groundwater, whereas gullies, ditches, and surface inlets have direct impact on surface water.

In addition, the NMP portion of the CNMP is created using a software program that utilizes inputs from the operator to generate a multiple page printout. Let us assume, for argument's sake, that the printout is 20 pages long – how will the dairy operator determine which pages should be submitted to NMED to satisfy the proposed language of "just for groundwater" and how will NMED develop consistency of submittal

from all dairy operators?

Another example related to removing the requirement for Standard 590 is illustrated with the proposed language “The NMP shall address how nitrogen application rates will be adjusted based upon the results of soil tests required by section 20.6.6.25, subsections K and L, consistent with applicable Natural Resource Conservation Service guidance for normal, high and excessive soil nitrogen levels.” What DIGCE does not say is that the NRCS guidance referred to is, in fact, Standard 590 (see page 4 of Appendix D of the General Permit).

Although DIGCE captures one or two important aspects of the Standard 590 that arguably focus on protecting ground water, it fails to capture all of the components that protect ground water. For example, on page 5 of Appendix D of the General Permit, it states “No application can be made closer than 100-feet to any down gradient surface open tile line intake structure, sink holes, well heads, or other conduits to surface or ground water.”

A good portion of Standard 590 concerns the phosphorus content of the land applied liquids. The DIGCE proposal does not explain how a CNMP developed using the Standard 590 and other criteria required by the EPA General Permit could be dismantled to only provide NMED with those parts of the CNMP that deal only with nitrogen based land application rates.

The procedures for developing a CNMP are thoroughly established in law and technical guidance. See, NRCS has Comprehensive Nutrient Management Planning Technical Guidance for New Mexico:

http://www.nm.nrcs.usda.gov/technical/handbooks/npph/npph-amend11-cnmp-tg.pdf effective December 2006

There are no procedures proposed by DIGCE to help New Mexico dairies understand how to dismantle their computer generated CNMPs to produce a lesser document that would satisfy the proposed language.

It is my professional opinion that removing the requirement for a CNMP developed using Standard 590 and replacing it with a hodge podge of sentences that do not capture all of the groundwater protections in Standard 590 is poorly conceived and executed. It is also my professional opinion that removal of the use of established procedures and standards in nutrient planning is not based upon good science and does not protect groundwater. The DIGCE proposed language is a failed attempt to streamline the NMP process and, in actuality, creates extra work for NMED staff and for every dairy operator who must prepare a CNMP to satisfy federal requirements of the EPA Region VI general permit or an individual CAFO NPDES permit.

This concludes my written, pre-filed direct testimony on the issues raised by DIGCE's petition to amend the dairy regulations.