

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

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<b>In the Matter of:</b>	)	
<b>PROPOSED AMENDMENT</b>	)	<b>No. WQCC 12-09 (R)</b>
<b>TO 20.6.6 NMAC (Dairy Rule)</b>	)	
	)	
	)	

**DIRECT TESTIMONY OF LONEY ASHCRAFT**

My name is Loney Ashcraft. My residence address is 6423 Iroquios, Dexter, New Mexico. I hold a B.S. degree in Agricultural Economics/Agriculture Business from New Mexico State University from which I graduated in 1969.

I currently own and operate a business known as Ashcraft Consulting that is located at the same address as my residence. Through that business I provide dairy consulting services, which I have done for nine years. Before starting Ashcraft Consulting I was employed for 36 years with the U.S. Department of Agriculture Soil Conservation Service, now known as the Natural Resource Conservation Service (NRCS), with 30 years as District Conservationist.

I hold the following certifications relating to my work as a dairy consultant: New Mexico Comprehensive Nutrient Management Plan (“CNMP”) and MMP Certification, completed on April 5, 2012. I also have completed the following courses of training provided by the NRCS: Water Quality (November 1, 1998); Agricultural Waste Systems II (April 27, 2001); Nutrient/Pest Management in Conservation Planning (April 24, 2002); Nutrient and Pest Management Online (December 3, 2001); and CNMP Planning (September 21, 2001).

In my positions as a dairy consultant and with the NRCS, I have worked with dairy operations for over 35 years in planning and designing wastewater storage systems and manure management. During this time I also have designed and constructed several types of irrigation

systems, including center pivot, side roll and linear sprinkler systems, gravity or surface flow systems, and drip systems. Several of these systems are used for land application of dairy wastewater. I have prepared numerous farm and ranch resource conservation plans, ranch plans for ranches of sizes up to approximately 60,000 acres, and farm plans for various size farms up to approximately 3,500 acres. I am experienced with both range management and cropland management. I have prepared numerous applications for dairy discharge permits.

I have been asked by the Dairy Industry Group for a Clean Environment (DIGCE) to provide this testimony in support of DIGCE's proposed amendments to the Water Quality Control Commission's dairy rules regarding nutrient management plan requirements, backflow prevention requirements, and requirements for calibration of flow meters. I have reviewed, am in support of and recommend that the Commission adopt the amendments to the dairy rules as contained in the Petition to Amend 20.6.6 NMAC (Dairy Rule) as filed with the Commission. A copy of the proposed amendments is attached to my testimony as Ashcraft Exhibit 1. I note one typographical error to be corrected in the proposed amendments to section subsection I of section 20.6.6.21 NMAC. In the third line from the bottom of that section, delete the capital T in the word "the."

**TESTIMONY ON PROPOSED AMENDMENTS TO NUTRIENT MANAGEMENT PLAN REQUIREMENTS, SUBSECTION I OF SECTION 20.6.6.21 NMAC**

As discussed above, I am certified to prepare Comprehensive Nutrient Management Plans by the New Mexico Office of the Natural Resource Conservation Service. I have prepared numerous CNMPs submitted to the NRCS. I also have experience preparing applications for discharge permits for dairies that conduct land application of wastewater.

The amendments attached as Exhibit Ashcraft-1 are intended to accomplish the following: (1) clarify that a nutrient management plan (NMP) under the dairy rules is not required to contain all of the information specified in a comprehensive nutrient management plan as specified by the NRCS, while ensuring that a dairy rule NMP will contain the information relating to ground water protection; and (2) require that a NMP under the dairy rules be certified by a person with any one of three types of credentials—NRCS certification as a nutrient management planner, a certified professional agronomist (CCA<sub>g</sub>) or a certified crop advisor (CCA).

The nutrient management plan requirements under the dairy rule are contained in subsection I of section 20.6.6.21 NMAC. Specific information requirements relating to the NMP requirement are specified in subsections A through L of section 20.6.6.25 NMAC.

The first change to subsection I of 20.6.6.21 NMAC is the addition of the words “required to be monitored under section 20.6.6.25.C.” This wording is added for clarification and consistency with other parts of the dairy rule that identify specific constituents to be addressed, rather than wording that allows for open-ended agency discretion. Subsection C of section 20.6.6.25 NMAC specifies the constituents to be monitored in dairy wastewater to be land-applied, particularly nitrate as nitrogen, total Kjeldahl nitrogen, chloride, total sulfur and total dissolved solids. Nutrient management plans under the dairy rules in particular focus on nitrogen.

The next set of language changes in Exhibit Ashcraft-1, shown by underlined new language to be added and existing language to be deleted as shown by strikeout, replaces specific references to NRCS national comprehensive nutrient management plan templates and related NRCS code with new language that focuses on the NMP requirements relating to ground water

protection. The source of the new language is NRCS Code 590 for Nutrient Management, a copy of which, current as of September 2012, is attached as Exhibit Ashcraft-2.

As background, I should explain the purpose of a comprehensive nutrient management plan. The U.S. Department of Agriculture, through the NRCS, supplies funding for certain agricultural practices. In order to qualify for that funding, various NRCS requirements must be met which, in some instances, includes submission of a CNMP to NRCS. A dairy operator or farmer who chooses not to seek this funding is not required to prepare a CNMP. A CNMP addresses a number of matters, as shown in Exhibit Ashcraft-2. Some of these are related to ground water protection, but several elements of a CNMP are not related to ground water protection. My understanding is that the dairy rules are intended to require an NMP containing only those elements relating to ground water protection, and that required elements of a CNMP that are not related to ground water protection are not necessary elements of a dairy rule NMP.

The current dairy rule states that a dairy rule NMP “shall be developed through utilization of the U.S. department of agriculture natural resource conservation service (USDA-NRCS) national comprehensive nutrient management plan development templates as adopted by the New Mexico office of the USDA-NRCA and in accordance with the USDA-NRCS *conservation practice standard for New Mexico, nutrient management – code 590.*” This language could be interpreted as requiring preparation and submission of the full set of development templates in accordance with all of NRCS standard 590, including elements not related to ground water protection. My understanding is that the amendment proposed by DIGCE is intended to clarify that the only required elements of a dairy rule NMP are those elements relating to ground water protection, and that the elements not relating to ground water protection are not required to be included with and submitted to NMED.

NRCS prepares standards and related documents tailored specifically to New Mexico. NRCS also modifies its standards and requirements from time to time. For example, the current standard was modified and issued only this past September. Removing specific references to NRCS documents helps to clarify that the dairy rule is not tied to the version of the NRCS code that was in place at the time the dairy rules were adopted. In addition to standards, NRCS has issued a Specification 590, which provides additional details to implement the standard (attached as Exhibit Ashcraft-3) and a Jobsheet, which is a series of spreadsheets that a nutrient management planner can use to develop a nutrient management plan. A copy of the summary page of the current Jobsheet is attached as Exhibit Ashcraft-4, and the full can be found at the following link: [jobsheethttp://efotg.nrcs.usda.gov/references/public/NM/590-js2012.xlsm](http://efotg.nrcs.usda.gov/references/public/NM/590-js2012.xlsm). Under DIGCE's proposed amendment, the Jobsheet can be used to develop a part of the nutrient management plan, but alternative spreadsheets could be developed and used as long as they comply with the more specific requirements of the proposed amendments to the dairy rule.

As discussed above, the specific language proposed to be included in subsection I, including the modified second sentence, the new third through sixth sentences, and the modified seventh sentence, is taken in part from language in Exhibit Ashcraft-2 and is related to the specific land application monitoring requirements in section 20.6.6.25 NMAC. For example, on page 3 of Exhibit Aschcraft-2, the standard refers to development of nutrient application rates based on realistic yield goals and other factors. The proposed language considers the data to be collected under section 20.6.6.25 NMAC, including the volumes of wastewater and stormwater applied, manure nitrogen content and manure application rates, nitrogen in irrigation water, fertilizer applications, crop yield documentation and nitrogen in harvested crops. The dairy rules

require annual preparation and updates of an NMP, so the nitrogen budget is to be developed on an annual basis.

The new language also is tied to the soil tests required under subsections K and L of section 20.6.6.25 NMAC and the NRCS guidance for application of nitrogen based upon normal, high and excessive nitrogen soils. That NRCS guidance also is shown on the third page of Exhibit Ashcraft-2. The proposed new language states that maximum application rates for wastewater applied through irrigation is not to exceed the soil intake/infiltration rate, consistent with language also shown on page 3 of Exhibit Ashcraft-2. The modified sentence before the stricken language requires that nitrogen application should be consistent with the NMP, with departures from the NMP due to growing conditions or other factors to be addressed in the NMP update for the following year. Weather and other conditions can change during the year and affect crop selection, require replacement of crops damaged by hail or pests, or allow for increased nutrient application in exceptionally favorable growing conditions to optimize crop production. When these conditions change, some flexibility is needed to adjust actual practices compared with those planned in an NMP submitted on May 1. The required soil testing between the growing season and preparation of the following years' NMP allows changes made during the growing year to be reflected in the updated NMP. The language "and implemented pursuant to the dairy rule" is proposed to be stricken in favor of the more specific references to the monitoring requirements of section 20.6.6.25 and the other more specific requirements in the new language.

As discussed above, DIGCE's proposed amendments replace language requiring a dairy rule NMP to be developed, signed and dated annually by one or more persons who holds an NRCS certification as a nutrient management planner and also is credentialed as a certified crop

advisor (CCA) or a certified professional agronomist (CPAg). As noted above, I have my NRCS certification as a nutrient management planner.

Attached as Exhibit Ashcraft-5 is a copy of New Mexico NRCS office guidance and requirements regarding its certification of nutrient management planners and the required training. This document is a portion of a publication found at:

<http://www.nm.nrcs.usda.gov/technical/handbooks/npph/npph-amend11-cnmp-tg.pdf>. Note that the general requirements, as shown on page 13 of Exhibit Ashcraft-5, include “knowledge of criteria associated with the various elements on a CNMP as contained in the ‘Comprehensive Nutrient Management Policy and Guidance Document, New Mexico,’” and to “meet applicable local, state and federal regulations that impact the elements of the CNMP.” The knowledge and training requirements for certification by the NRCS obviously are very specific to the requirements of both the NRCS CNMP standard and other laws, including the dairy rule.

The requirements for certification or a CPAg or a CCA were provided in the original dairy rule hearing, particularly NMED’s Exhibit 3221-11. The CPAg and CCA requirements, both established by the American Society of Agronomy, include specific post-secondary education requirements, continuing education, and certain additional experience. A person with such certifications should, in my opinion, have sufficient knowledge to develop and certify a NMP as required under the dairy rule. They would not, however, necessarily have the specific New Mexico training required of a person certified by NRCS to prepare nutrient management plans, including the requisite water quality training.

In my experience, there are few individuals who consult for New Mexico dairies and who prepare their nutrient management plans who hold both an NRCS certification and credentials as a CPAg or a CCA. This means that a New Mexico dairy may have to change consultants to one

of the few individuals who hold both credentials, understanding there is limited available capacity, or the dairy would have to hire two consultants, one holding each of the required credentials. Because the rule requires that the plan be developed by persons who hold two credentials, the hiring of a second consultant would require substantial work by that consultant at substantial additional cost. In my opinion, the limited capacity of persons with two credentials to prepare NMPS, and the substantial additional cost to hire two consultants, is not justified, particularly since an individual holding any one of the three credentials should have sufficient training to develop and sign a NMP that complies with the dairy rule.

The proposed rule amendment contains new language, for clarification and convenience, that would allow a dairy permittee to submit an NMP contained within a broader plan, such as a CNMP or a nutrient management plan prepared for an EPA permit, as long as it meets all of the requirements for a dairy rule NMP. In such, the amended rule would require the Environment Department to consider only those parts of the plan that relate to the dairy rule NMP requirement. This provision avoids the need to prepare entirely separate plans to meet the requirements of various state and federal agencies.

Finally, the last sentence is modified to clarify the due date for an initial NMP following renewal of a dairy discharge permit, particularly for permits issued based on application submitted before the dairy rules were adopted. Because crop planning typically takes place in the spring, and most crop planting decisions are made around May, and soil tests are not available until the spring, the initial NMP would be submitted by the next May 1 after the permit is issued.

For these reasons I support DIGCE's proposed amendments to the dairy rule requirements for nutrient management plans as shown in Exhibit Ashcraft-1.

**TESTIMONY IN SUPPORT OF AMENDMENTS TO FLOW METER CALIBRATION REQUIREMENTS, SUBSECTIONS J, M AND O OF SECTION 20.6.6.20 NMAC AND SUBSECTION E OF SECTION 20.6.6.24 NMAC.**

I also have been asked by DIGCE to testify regarding the proposed amendments to the dairy rules relating to calibration of flow meters. During the original dairy rule hearings, DIGCE objected to the requirements to install and use flow meters at particular locations. DIGCE's proposed amendments do not change when and where a flow meter is required to be installed and used, but addresses only the field calibration requirements.

I have advised numerous dairies regarding the installation of flow meters to measure water use, wastewater discharge volumes and wastewater sent to land application areas. In my experience, flow meters used in dairy operations are not designed for field calibration or for adjustment in the field. Instead, they are calibrated by the manufacturer prior to sale and, if they are not working properly after installation, they must be returned to the manufacturer for repair and/or calibration. In my experience with many flow meters over several years, I have never conducted or witnessed field calibration of a flow meter.

I have reviewed the document entitled Flow Meter Calibration prepared by Mr. Robert George and introduced as Department Exhibit 3224-5 in the previous dairy rule hearing. A copy is attached as Exhibit Ashcraft-6. This exhibit indicates that the Department's purpose in requiring field calibration is not so much to determine whether a meter is meeting its specified level of accuracy but to determine gross inaccuracies in measuring flow volume. In my experience checking flow meter readings, there are many sources of information other than field calibration or testing to check whether a meter is functioning properly or providing reliable measurements. In most instances, failure of a flow meter is easily detectable because it no longer provides flow readings or gives readings that vary considerably from prior readings. In that

event, the typical response is to contact a factory representative to inspect and replace the meter or send it back to the factory for repair.

If a flow meter is functioning, inaccurate flow readings can be identified by comparison with previous flow data to compare for consistency. Wastewater flow meter readings also can be compared to measured water usage volumes. Also, published data is available to estimate the anticipated wastewater volumes associated with the number of cows being milked and the type of wastewater management practices utilized. In my experience, inaccurate flow meter readings are readily detectible using this type of information.

The Department's paper (Exhibit Ashcraft-6) recognizes the difficulty to accomplish field calibration of flow meters. It identifies three possible examples of flow meter calibration. However, in my experience, none of these "calibration" methods have been implemented, and the paper gives no literature citations or actual examples that such calibrations have been performed. All of these methods would require installation of additional equipment, such as sumps with known volumes or separate measuring devices. This would add substantial expense and would interfere with dairy operations by interrupting wastewater discharges while the "calibration" measurements are undertaken. One example is the installation of a weir or flume for comparison. If installation of a weir or flume is feasible, then a dairy would most likely use that as the primary measuring device, as that is allowed by the dairy rule.

DIGCE's proposed rule amendments would replace the field calibration requirement for flow meters with requirements to maintain documentation of manufacturer documentation regarding calibration and maintenance requirements as shown in the underlined new language and stricken old language in subsections J, M and O of section 20.6.6.20 NMAC. DIGCE's change also would eliminate subsection E of section 20.6.6.24 NMAC. Elimination of that

subsection would require renumbering of the rule and a check for necessary changes to any cross-references to that subsection and the following subsections.

DIGCE also proposes to change the language regarding the allowed timeframe to repair or replace a malfunctioning flow meter. Rather than the 30-day repair time specified in the existing rule language, DIGCE proposes to require initiation of repair or replacement within seven days of discovery. This ensures that repairs are started promptly, but does not expose the dairy operator from liability due to delays by a vendor or manufacturer.

For these reasons, I support DIGCE's proposed amendments to the dairy rule flow meter field calibration requirements as shown in Exhibit Ashcraft-1.

**TESTIMONY ON PROPOSED AMENDMENTS TO BACKFLOW PREVENTION REQUIREMENTS, SUBSECTIONS M AND N OF SECTION 20.6.6.21 NMAC**

My final topic of testimony is to support DIGCE's proposed amendment to the requirements for backflow prevention. Subsection M of section 20.6.6.21 NMAC currently allows the use of two types of backflow prevention devices, a "total disconnect" or "air gap" or a "reduced pressure principal [sic] backflow prevention assembly (RP)." My testimony describes why a total disconnect or air gap approach is not appropriate for land application of water using a pressurized sprinkler system. My testimony, and the separate testimony of Mr. Lonnie Burke, describes why RP devices are not suitable for use in dairy wastewater and agricultural irrigation systems. My testimony will describe the alternative identified in DIGCE's proposed rule amendment, which is an "air/vacuum relief valve and a low pressure drain valve located immediately upstream of a check valve." This device is commonly referred to as a chemigation valve.

During my tenure with the NRCS, I designed dozens of irrigation systems each year. I have designed irrigation systems for dairy land application of wastewater for over 20 years involving dozens of dairies and using several different types of irrigation systems, including surface/gravity flow, and side roll, center pivot and linear sprinkler systems. Backflow prevention is necessary for all of these systems.

Surface irrigation systems typically have air gaps, often in more than one place. In my experience, however, air gaps are not feasible for use with pressurized sprinkler systems. Many pressurized sprinkler systems utilizes the pressure supplied by the well or wells that supply the irrigation water. Creation of an air gap, however, eliminates this pressure. If an air gap is used, a separate booster pump would have to be installed downstream of the air gap to repressurize the sprinkler system. This would impose additional capital costs for booster pumps and additional equipment, such as tanks or sumps. I would estimate the typical costs for the basic necessary equipment, booster pumps and a sump or standpipe, at \$10,000 to \$15,000, plus the additional power costs to run the booster pump and associated additional maintenance costs. These costs could be much higher for more complex systems that use multiple wells.

Use of a booster pump also creates serious operational problems. Irrigation wells often pump at variable rates over the course of a day. There is no system of which I am aware to synchronize the pumping rate of a booster pump with the irrigation well or wells. If a booster pump is set at a flow rate that is exceeded by pumping rate of the irrigation well or wells (and in some instances, the pumps supplying the dairy wastewater), then the system is likely to overflow. If the booster pump is set at a rate higher than actual rate of the irrigation wells, then the booster pump may pump air and fail. This situation could be remedied by the addition of larger tanks and sumps to store water ahead of the booster pump, but this would only add to the

cost, resulting in a function system with capital costs that could be much greater than the \$10,000 to \$15,000 estimated above, along with increased operating and maintenance costs.

For these reasons, in my opinion, air gaps are not feasible for many irrigation systems used for land application of dairy wastewater. The only alternative to an air gap under the dairy rule is an RP device. I have never designed an agricultural irrigation system with an RP device for backflow prevention because these devices are not reliable in an agricultural irrigation setting. This topic is discussed in more detail in Mr. Burke's testimony.

In my experience and opinion, chemigation valves provide a proven and effective alternative for backflow prevention. I have designed numerous irrigation systems, particularly systems for land application of dairy wastes, using chemigation valves for backflow prevention. I have never experienced a failure of a chemigation valve and I am not aware of any evidence of chemigation valves that failed as an effective backflow prevention device. In my opinion, chemigation valves, which were specifically designed to operate in an agricultural irrigation setting, are the best means of backflow prevention under the dairy rule.

A chemigation valve, as described in the dairy rule, consists of several components: one or more check valves, a low pressure drain valve, and an air/vacuum relief valve. Such a system is described in various documents and other rules. An example is the Colorado Department of Agriculture rules under the Colorado Chemigation Act, the relevant sections of which are attached as Exhibit Ashcraft-7. Section 6 of these rules describe the requirements and purposes of the check valve (6.02), the vacuum relief valve (6.06), and the low-pressure drain (6.08). Exhibit Ashcraft-8 shows a typical chemigation valve. If I can obtain a cutaway of a chemigation valve, I will be able to better show how it operates at the hearing.

Chemigation valves function well in an agricultural irrigation setting and remain functional when irrigation water contains sand or gravel. When used on irrigation systems that apply dairy wastewater, the wastewater itself does not come into contact with the chemigation valve. Typically there are hundreds of feet of pipeline that carry fresh water between the well and chemigation valve and the location where dairy wastewater is introduced into the system. When a well is shut off, the chemigation valve stops the flow of fresh water down the well. Fresh water then remains in the pipeline between the chemigation valve and the location where dairy wastewater is introduced, providing an added safety buffer.

The proposed changes to subsection N of section 20.6.6.21 NMAC as shown in Exhibit Ashcraft-1 replace the annual RP device inspection and testing requirements with a monthly inspection requirement for chemigation valves. A monthly visual inspection for any physical damage or leaks can be conducted by the farm operator. If a visual inspection detects damage or a problem, the operator can contact a repairman to further inspect and repair or replace the device.

For these reasons, I support DIGCE's proposed amendments to the dairy rule backflow prevention requirements as shown in Exhibit Ashcraft-1.

Respectfully Submitted,

  
Loney Ashcraft