

# Written Comments Regarding Smith Valley Dairy Permit Application

Prepared by Kathy J. Martin, PE (OK#18254)

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The following written comments were prepared by Kathy J. Martin, PE (OK #18254) at the request of the citizen group, Save Our Smith Valley, in regards to the permit application for a Nevada state groundwater discharge permit as submitted by Smith Valley Dairy. Ms. Martin has a BS in Petroleum Engineering (1983) and a Master's in Civil Engineering (1989) from the University of Oklahoma. She is a licensed professional engineer in the State of Oklahoma (#18254) and New Mexico (#21522). Ms. Martin has performed third-party engineering reviews of CAFO permit applications for over 17 years, including over 200 facilities proposed for permits in 21 states.<sup>1</sup>

## Basic Chronology of Permitting Events:

### 2013

May 2013 – initial contact between NDEP and applicant.<sup>2</sup>

June 2013 – borings and test pit site investigation by Lumos and Associates<sup>3</sup>

July 2013 – Preliminary geotechnical investigation by Lumos and Associates.<sup>4</sup>

September 2013 – Initial Permit Application submitted.<sup>5</sup>

### 2014

January 2014 – NDEP engineer Kaminski requires double-liner or justification for single liner for all dairy ponds.<sup>6</sup>

January 2014 – NDEP initial comments on Sept 2013 permit application submittal.<sup>7</sup>

March 2014 – AgPro/Applicant response to Jan 22, 2014 NDEP initial comments<sup>8</sup>

March 2014 – NDEP reviewing NRCS liner standards.<sup>9</sup>

March 2014 – AgPro/Applicant informs NDEP that excavation activities are occurring and were observed by NDEP on March 17, 2014.<sup>10</sup>

March 2014 – NDEP reiterates that construction cannot occur without a permit.<sup>11</sup>

April 2014 – AgPro organizes a meeting at NDEP offices.<sup>12</sup>

April 2014 – AgPro is working on the nutrient management plan.<sup>13</sup>

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<sup>1</sup> Kathy J. Martin, PE vita attached as Exhibit 1

<sup>2</sup> NDEP record "Big File, Tab 3 - Correspondence" email dated May 6, 2013

<sup>3</sup> NDEP record "Big File, Loose Combined Binder Report" report dated July 2013

<sup>4</sup> NDEP record "Big File, Loose Combined Binder Report" report dated July 2013

<sup>5</sup> NDEP record "Big File, Tab 6"

<sup>6</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated January 22, 2014

<sup>7</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated January 22, 2014

<sup>8</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated March 10, 2014

<sup>9</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated March 10, 2014

<sup>10</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated March 18, 2014

<sup>11</sup> NDEP record "Big File, Tab 3 – Correspondence" emails dated March 10 and 19, 2014

<sup>12</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated April 1, 2014

<sup>13</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated April 10, 2014

May 2014 – AgPro and NDEP discuss newly issued and public noticed Ponderosa Dairy permit, which is considered to be a template permit for all future CAFOs.<sup>14</sup>

May 2014 – AgPro tells NDEP that a new draft permit [application] will be submitted the following week.<sup>15</sup>

May 2014 – AgPro asks NDEP to influence Lyon County to issue county building permits.<sup>16</sup>

May 2014 – Lyon County emails NDEP regarding building permits.<sup>17</sup>

May 2014 – NDEP site inspection for Stormwater Construction Permit

June 2014 – NDEP tells AgPro that they called Lyon County and that Lyon County has decided to not issue the milking barn permit until the state has issued their permit.<sup>18</sup>

June 2014 – NDEP receives second version of the permit application.<sup>19</sup>

June 2014 – AgPro asks for document saying they can milk up to 700 cows without a permit.<sup>20</sup>

June 2014 – Lyon County issues milking parlor building permit<sup>21</sup>

July 2014 – AgPro submits initial Groundwater Monitoring Plan.<sup>22</sup>

July 2014 – NDEP has informal comments regarding Groundwater Monitoring Plan.<sup>23</sup>

July 2014 – AgPro submits revised Groundwater Monitoring Plan<sup>24</sup>

August 2014 – NDEP prepares comments on revised Groundwater Monitoring Plan.<sup>25</sup>

August 2014 – NDEP tells citizens they can't have access to public file.<sup>26</sup>

September 2014 – AgPro responds to Kaminski deficiency letter of July 31, 2014.<sup>27</sup>

September 2014 – Citizens express concerns that construction is occurring and public is denied access by NDEP to the permit application file.<sup>28</sup>

October 2014 – Significant portions of leak detection section removed.<sup>29</sup>

October 2014 – AgPro and NDEP work on public notice and fact sheet.<sup>30</sup>

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<sup>14</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated May 28, 2014

<sup>15</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated May 30, 2014

<sup>16</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated May 30, 2014

<sup>17</sup> NDEP record "Big File, Loose Binder #1 – EPA and County correspondence" email dated May 27, 2014

<sup>18</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated June 2, 2014

<sup>19</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated June 11, 2014

<sup>20</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated June 17, 2014

<sup>21</sup> Lyon County Building Permit for Milking Parlor attached as Exhibit 2

<sup>22</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated July 16, 2014

<sup>23</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated July 18, 2014

<sup>24</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated July 31, 2014

<sup>25</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated August 15, 2014

<sup>26</sup> NDEP record "Big File, Loose Binder #2 – Smith Valley Residents", email dated August 26, 2014

<sup>27</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated September 15, 2014 and Tab 6

<sup>28</sup> NDEP record "Big File, Loose Binder #2 – Smith Valley Residents", email dated September 25, 2014

<sup>29</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated October 8-10, 2014

<sup>30</sup> NDEP record "Big File, Tab 3 – Correspondence" email dated October 13-November 3, 2014

## 1. Public Access to files was difficult and inconsistent.

Some parts of the electronic version of the permit application appear to only have been scanned as “one-sided documents” when in fact some of those documents were clearly “double-sided documents”. For example, the NRCS Standard for Mortality Disposal has NRCS pagination and the scanned version only includes pages 1, 3 and 5. What is not clear is how many other documents were also double-sided, but because of a lack of pagination, one cannot truly know if the entire document was scanned. For example, parts of the September 15, 2014 submittal as they appear in the scanned version is not paginated. The scanned version refers to “tab 1”, “tab 3”, etc., which seems to reflect that the submittal may have been in a binder with physical tabs to separate out various documents. The Nutrient Management Plan portion of the June 2014 application only contains 10 of the 27 pages (per the pagination)<sup>31</sup>.

Citizens that went in person to acquire a copy of the permit application were provided 2 CDs from Michele Reid. The content of those CDs does not reflect the much more significant document production provided to the citizens (per repetitive written open records request) as a link to an agency online document storage access portal.

Citizens were told during 2014 that they could not have access to the permit application because “it was not complete”. There is no requirement that a permit application be complete before honoring a citizen request for a copy of the public file. In fact, at the time of the citizen written requests, the agency was in possession of not one, but two permit applications (November 2013 and June 2014 versions), as well as numerous email exchanges between the applicant and the agency. Those items should have been provided to the citizens in response to both their in-person request and their written requests (email or otherwise).

To add drama to this lack of transparency, citizens were stonewalled at the county level as well. Requests for copies of public files were left unfulfilled for months under some auspicious claim that the District Attorney needed to review the files to see if they qualified as public access documents.

Once we started reading the files, specifically the “Big File – Tab 3 – Correspondence”, it became clear that the NDEP had telephone calls with the applicant’s consultant (AgPro), Lyon County officials, and perhaps others without producing a “telephone memo to the file”. If there are “telephone memo to the file” documents in the file, they were not scanned and provided in the document response. Of particular interest is the email dated June 2, 2014 from Michele Reid to Tom Haren (Ag Pro) that states<sup>32</sup>:

“With respect to ‘something in writing from us to the effect that a CAFO permit is not a requirement necessary for release of the building permit for a milking parlor’

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<sup>31</sup> NDEP record “Big File – Tab 6” Second version of Permit Application dated June 4, 2013

<sup>32</sup> NDEP record “Big File, Tab 3 – Correspondence” email dated June 2, 2014

NDEP has spoken recently with Nick Malarchik, Lyon County Building Department Director, regarding the CAFO permit and his recent decisions regarding the Smith Valley Dairy building permits. In that discussion we addressed AgPro's concerns about the building permit for the milking barn and our CAFO permitting process. It is NDEP's understanding that Lyon County has decided to not issue the building permit until permits are in place for the ag well and the CAFO."

This email refers to a fairly important telephone conversation and if this is the only written summation of the telephone call, then the citizens should be concerned that other telephone conversations that are vaguely referred to in emails are not being documented in the public file.

On several occasions, the NDEP, specifically Michele Reid, has told the citizens (via Denise Luk email exchange) that they cannot have access to the public file.

In August, Ms. Reid stated in her email<sup>33</sup>:

"As we discussed, because the permit is still draft, and the application is not complete, I am not able to provide to you the application form. Once the permit has gone out for public notice the file will be open for public review."

In September, Ms Reid stated in her email<sup>34</sup>:

"As stated prior, the application that has been submitted is not a complete or approved application. The facility may delay submission of the complete application, however a permit for CAFO operational discharges will not be issued until the application is complete, reviewed and approved by BWPC. Again, as long as the site does not meet the definition of a CAFO any agricultural related discharges, as described in NAC 445A.228, that occur on the site are exempt from BWPC permitting."

## 2. True Applicant

Smith Valley Dairy is not a registered business name listed on the State of Nevada Secretary of State website. Building permits from Lyon County are not issued to Smith Valley Dairy (see attached) but are issued to Dirk and Valerie J. Vlot, Trustees.<sup>35</sup>

The initial permit application date-stamped received on September 23, 2013 lists the Owner/Responsible Party as Smith Valley Dairy and the response to Fed Tax ID is "none at this time". The applicant is not presented as an LLC or an incorporated business, so it could be assumed that it is a "dba" or "doing business as" and thus, the Tax ID would be the Social Security Number for the owner of the business. The application was signed by Dirk Vlot "owner" on September 3, 2013.

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<sup>33</sup> NDEP record "Big File – Loose Binder #2 – Smith Valley Residents", email dated August 26, 2014

<sup>34</sup> NDEP record "Big File – Loose Binder #2 – Smith Valley Residents", email dated September 25, 2014

<sup>35</sup> Lyon County Building Permit for Milking Parlor issued June 27, 2014

On page 2 of 3 of the Original Permit Application “Engineer’s Narrative” it states: “all land application areas in the nutrient management plan are owned by the dairy.<sup>36</sup>” No deeds, warranty deeds, or other proof of ownership was provided in the September 2013 original permit application. The concern is that it is unclear if the “dairy” that owns the land application land is Smith Valley Dairy (dba) or Dirk and Valerie Vlot, Trustees.

The June 2014 permit application contains the certification signature by Dirk Vlot of September 3, 2013. It does not contain a new certification signature page.

#### **4. Commencement of Construction**

Construction was observed by NDEP as early as March 17, 2014 and was confirmed by AgPro/Applicant in a March 18, 2014 email that states, “Currently the excavation activity which you observed at Smith Valley Dairy on 3.17.14 is the borrowing of soil at the proposed pond locations for use in grading of the dairy footprint.” This email also includes the AgPro/Applicant’s awareness that “Any construction which occurs prior to approval is at the owner’s risk and may be required to be redone if the ponds do not receive approval by the Department.” The NDEP response was “Thank you Janine. Have a good day! mickie”. The NDEP made no other comment in the March 18, 2014 email (time stamped 8:52 am) with respect to whether or not the applicant has been authorized to commence construction of the dairy. However, the NDEP did send another email on March 18, 2014 (time stamped 10:03 am) that states “as a follow-up I just wanted to provide you with our State regulation that supports our conversation.” – thus implying there was a telephone conversation between 9:00 and 10:00 am on March 18, 2014. No telephone memorandum was included in the public file that details who was on the call nor any information about what was discussed.

The 10:03 am email does include regulation citation as follows:

NAC 445A.283 Permit required to construct, install, expand, or modify treatment works. (NRS 445A, 425, 445A, 585) No person without first obtaining a permit from the Department may:

1. Construct, install, expand or significantly modify any factory, mill, plant or other industrial or commercial facility which will result in a discharge not authorized by an existing permit to waters of the State.
2. Add extensions to existing municipal or privately owned sewer systems or provide a new sewer service to existing or newly constructed buildings which could cause the raw sewage influent to the treatment plant to exceed the limits prescribed by the permit issued in accordance with NAC 445A.228 to 44A.263 inclusive.
3. Construct, install or significantly modify any facilities designed or used for treatment or discharge of pollutants.

[Environmental Comm’n, Water Pollution Control Reg §§ 3.1.1-3.1.3, eff 5-2-78]  
– (Substituted in revision for NAC 445.179)

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<sup>36</sup> NDEP record “Big File – Tab 6” Original Permit Application dated September 19, 2013

The AgPro/Applicant response at 10:03 the same day asks “Do we need to wait for it to be public noticed as well prior to initiating construction?” To which the NDEP responded at 10:32 on March 19, 2014, “Construction may not be initiated until there is a permit in place. So yes, you will need to wait until the public notice is complete and comments have been addressed and the permit officially issued.”

Thus on March 19, 2014, the Applicant was informed by the NDEP that construction may not commence until a permit is officially issued. That permit has still not even today been officially issued as we are now in the public comment period discussed in that same March 2014 email. We are in January 2015, basically nine months after the applicant knew it cannot construct – and yet, the applicant continued to construct the dairy as can be testified to by the neighbors who witnessed the construction activity. This expert observed the construction activity the day before the public meeting and noted that both waste storage ponds were fully excavated and lined with plastic sheeting – thus “constructed”.

An earlier email thread dated March 10, 2014 (time stamped 12:49) from Michele Reid to Janine Baratta (AgPro) references standard language requirements including:

**B.CO.14 Facility Specifications:** The waste collection, storage, and treatment facilities shall be constructed in conformance with plans approved by the Division. The plans must be approved by the Division prior to initiating construction activities. All changes to approved plans must be approved by the Division prior to implementation.”

Email discussions in June 2014 between Janie Knuffke (AgPro) and Michele Reid include the following request<sup>37</sup>:

“Explanation of the CAFO permit as not “subjective” and that we can milk up to 700 cows without a permit.”

At this point, one must ask how experienced folks are at Ag Professionals (AgPro) and why they would ever think that any dairy could be constructed without a permit if they just kept the numbers below 700 animals. The federal law triggers a permit at 200 animal units, not in number of animals. The state law allows an exemption if less than 700 dairy cows, but Smith Valley Dairy has never been described as a dairy with only 700 dairy cows. It has always been described as a significantly larger dairy with at least 4000 mature dairy cows and nearly 4000 heifers and calves. Perhaps, AgPro was scrambling for a reason to keep constructing the unpermitted dairy without being in violation of state law requiring a permit before construction?

In May 2014, NDEP and Lyon County Building Department Director, Nick Malarchik, exchanged emails regarding the building permits to be issued after NDEP issues their permit.<sup>38</sup> The email states:

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<sup>37</sup> NDEP record “Big File, Tab 3 – Correspondence” email dated June 17, 2014

“However, I have advised this developer that we will not issue a building permit for the milking barn or the commodity (feeding) barn until they have evidence of the required permits from Division of Water Resources to lawfully drill an agriculture well and from NDEP (CAFO permit) that provides for drainage and waste disposal.”

The Bureau of Water Pollution Control Guidance Document for the Design of a Lined Wastewater Holding Pond, WTS-37 (Revised September 2011) states in the first paragraph<sup>39</sup>:

“Surface impoundments storing and/or treating wastewater require a discharge permit to be issued from BWPC prior to commencement of construction and operation.”

Finally, the proposed draft permit includes this statement on page 26 and 27 of 41:

“The waste collection, storage, and treatment facilities shall be constructed in conformance with plans approved by the Division. The plans must be approved by the Division prior to initiating construction activities. All changes to approved plans must be approved by the Division prior to implementation.”

In the face of all of these directives to obtain a permit prior to construction, the applicant continued to construct the dairy facility and its waste management systems without a state permit to do so.

## **5. Groundwater Monitoring Plan**

The first version of the Groundwater Monitoring Plan appears to have been submitted by AgPro to NDEP on July 15, 2014. The version provided in the electronic public document request response has an email followed by a cover sheet, two pages of text, a blank page, and two aerial maps (ST-2: GW Elevation Map and St-1: Site Vicinity Map). It is unclear what the blank page represents.

On July 18, 2014, an email by Michele Reid provides “informal comments from our engineering group regarding the Groundwater Monitoring Plan”, such as the plan lacks overall detail; someone misunderstood how to show groundwater flow direction; that the drawings need to have more details; well placement locations don’t have distances to treatment facility; and lack of GPS coordinates. Interestingly enough, the example of monitoring well detail provided by NDEP is the same image used by AgPro to describe how they will be constructing monitoring wells. This begs the question as to whether AgPro has experience installing monitoring wells if they rely upon illustrations from NDEP rather than illustrations their own engineers have drawn.

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<sup>38</sup> NDEP record “Big File – Loose Binder #1 – EPA and County communication” email dated May 27, 2014

<sup>39</sup> The word ‘prior’ is underlined in the guidance document to emphasize when construction can occur

The Groundwater Monitoring Plan dated July 31, 2014 includes a map showing the location of the three proposed groundwater monitoring wells (one upgradient, two downgradient)<sup>40</sup>. The “upgradient” well is proposed to be located near the southeast corner of the South Pond. Unfortunately that is “downgradient” from the unlined manure solids storage area. Any leakage from the stored manure solids that enters the subsurface can contaminate shallow groundwater, thus negating the whole purpose of having an upgradient well to show whether pollution is greater downgradient. That well could be used to determine if the manure piles are causing pollution.

The applicant should propose another location onsite that is upgradient from all manure storage areas including the corrals. It should be clear that the location of the waste storage ponds is on the farthest north portion of the dairy property and any groundwater pollution that occurs will almost certainly escape the property boundary as it is being detected in the monitoring wells. The NDEP has not provided sufficient safety net to allow for detection of groundwater pollution before it leaves the dairy property.

## **6. Volume of Allowable Seepage and Mass Loading of Nitrogen and Salts to Shallow Groundwater**

The volume of allowable seepage can be calculated (assuming 500 gal/acre/day) as follows:

North Pond working surface area = 256,200 ft<sup>2</sup> = 5.88 acre  
South Pond working surface area = 219,600 ft<sup>2</sup> = 5.04 acres

Allowable Seepage Volume:

500 gal/acre/day x (5.88 + 5.04 acres) x 365 days/yr = 1,993,423 gal/year

Seepage volume for South Pond only = 1,076,100 gal/yr

Mass loading of nitrogen in seepage:

1.9 mil gal x 758 ppm Nitrogen x 8.34 lbs/gal = 12,011 lbs nitrogen per year

South Pond only: 1.076 mil gal x 758 ppm Nitrogen x 8.34 lbs/gal = 6,783 lbs N/yr

Mass loading of total dissolved solids (salts) in seepage:

1.9 mil gal x 4258 ppm TDS x 8.34 lbs/gal = 67,472 lbs TDS

South Pond only: 1.076 mil gal x 4258 ppm TDS x 8.34 lbs/gal = 38,211 lbs TDS

Over the expected operating life of 20 years, this dairy would be allowed to discharge into the shallow groundwater nearly 40 million gallons of milking parlor wastewater, manure wastewater, and contaminated stormwater by virtue of an allowed seepage rate for the two waste storage ponds. That permitted volume would contain up to 250,000 lbs of nitrogen and 1,349,440 lbs of total dissolved solids.

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<sup>40</sup> NDEP record “Big File – Tab 6” Sheet ST-1 of the amended Groundwater Monitoring Plan July 31, 2014

Using Conservation of Mass ( $C_1V_1 = C_2V_2$ ), one can predict the volume of the shallow aquifer that must be contaminated to maintain a maximum concentration of 10 ppm nitrates as follows:

$C_1 = 758$  ppm nitrogen

$V_1 = 1.9$  million gallons

$C_2 = 10$  ppm nitrogen

$V_2 =$  volume of aquifer needed to dilute pollution

$V_2 = (758 \text{ ppm} \times 1.9 \text{ million}) / 10 \text{ ppm} = 144$  million gallons of shallow aquifer per year

Assuming the shallow aquifer is composed of sand with porosity of 30%, the volume of aquifer that would be impacted each year is calculated as:

144 million gallons  $\times$  ft<sup>3</sup>/7.48 gal = 19,254,010 ft<sup>3</sup> of groundwater

Volume of aquifer available for groundwater is 30% of the total volume, divide by 0.30 to get the volume of sand and water impacted: 64,180,036 cubic feet.

The areal extent of the dairy is approximately 140 acres or 6,098,400 ft<sup>2</sup>. Dividing that into the volume of aquifer suggests at least 10 feet of the aquifer below the entire dairy will be polluted to 10 ppm when the first year's allowable seepage volume hits the shallow aquifer and disperses.

Similar calculations can be made for total dissolved solids (TDS) as follows:

$C_1 = 4258$  ppm TDS

$V_1 = 1.9$  million gallons

$C_2 = 10$  ppm nitrogen

$V_2 =$  volume of aquifer needed to dilute pollution

$V_2 = (758 \text{ ppm} \times 1.9 \text{ million}) / 10 \text{ ppm} = 144$  million gallons of shallow aquifer per year

Assuming the shallow aquifer is composed of sand with porosity of 30%, the volume of aquifer that would be impacted each year is calculated as:

144 million gallons  $\times$  ft<sup>3</sup>/7.48 gal = 19,254,010 ft<sup>3</sup> of groundwater

## **7. Separation distance between liner and shallow groundwater.**

In the volume to depth tables provided in the permit application and signed and sealed by Chad Arthur TeVelde (Nevada PE No. 22147), the designed depth of the two waste impoundments is as follows:

North Pond is 11.3 feet below ground surface (bgs)

South Pond is 14.9 feet bgs.

In the Groundwater Monitoring Plan submitted with the Supplemental Application materials, it states:

“On-site during two separate geotechnical investigations in support of construction, groundwater was encountered at approximately 14-15 feet below grade.”

The September 15, 2014 Supplemental answer labeled “# 9 ballast” includes the following statement:

“Groundwater is more than 4 feet below the liner/pond bottom per the geotechnical investigation.”

These statements are incongruous. The NDEP has not explained how the allowable seepage rate and the associated mass loading of pollutants will not violate water quality standards for the shallow aquifer located at 14 feet below ground surface and from 0 to 4 feet below the bottom of the two waste storage ponds.

#### **8. Permits cannot be issued if they will cause degradation of drinking water.**

Nevada regulation regarding the protection of ground water quality from degradation in NRS 445A.490 does not allow the issuance of a permit as follows:

NRS 445A.490 Permits: Issuance prohibited in certain cases. No permit may be issued which authorizes any discharge or injection of fluids through a well into any waters of the State:

1. Of any radiological, chemical or biological warfare agent or high-level radioactive waste;
2. Which would substantially impair anchorage and navigation in any waters of the State;
- 3. Which would result in the degradation of existing or potential underground sources of drinking water;**
4. Which is inconsistent with an applicable areawide plan for management of the treatment of waste; or
5. Which the Director determines is inconsistent with the regulations and guidelines adopted by the Commission pursuant to [NRS 445A.300](#) to [445A.730](#), inclusive, including those relating to standards of water quality and injections of fluids through a well.

(Added to NRS by 1973, 1711; A [1985, 766](#))

The proposed draft permit No. NS2014502, Section A.7 Water Quality Standards on page 21 of 41 states:

“There shall be no discharge of substances that would cause the groundwater quality to degrade below drinking water standards.”

On page 24 of 41 of the proposed draft permit it states:

“If the total nitrogen-N concentration increases to 10.0 mg/L, discharge to groundwater shall cease unless authorized with written approval from the Division.”

The proposed permit suggests that the discharge to groundwater could actually be stopped without addressing the fact that once the dairy is in operation, it cannot cease milking over 3000 cows every single day and cleaning/sanitizing the milking parlor, both activities which creates the wastewater.

### **9. Discharge to Wilderness Area and Artesia Lake unnecessary when using evaporation and land application.**

The proposed permit allows for a discharge from the South Pond in Section A.2.2 as follows<sup>41</sup>:

“..the Permittee [sic] is authorized to: discharge manure and process wastewater[sic] to land application areas in accordance with a Division reviewed Nutrient Management[sic] Plan (NMP), and discharge manure and process wastewater in response to storm events or chronic rainfall events that exceed the 25-year 24-hour storm design, provided that the production area is operated in accordance with parts B.CO.3, B.CO.28 and B.CO.29 of this permit.”

Part B.CO.3 reads as follows:

“Facilities and their production are must be properly designed, constructed, operated, and maintained to contain manure, pollutants, direct precipitation, and the runoff from a 25-year, 24-hour storm event.”

Part B.CO.28 refers to inspection frequency for various aspects of the proposed facility. Part B.CO.29 requires a minimum of two feet of freeboard.

The Engineer’s Narrative fails to mention that its proposed discharge is to a Wilderness Area in the following introductory statement:

“Discharges from the facility would ultimately flow through a series of public ditches to the evaporative Artesia Lake, an alkali flat 3 miles north of the facility.”

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<sup>41</sup> NDEP Record “Big File – Tab 4 - proposed draft permit” page 2 of 41

The design of the North and South Ponds includes storage from the runoff from a 25-year, 24-hour storm event (2.07 inch storm) as indicated in the table titled “Rectangular Waste Storage Pond Design Computations”<sup>42</sup>. That same table provides evaporation volumes for the storage system, but does not provide the pan evaporation rate used to calculate evaporation.

The applicant has access to land for disposal of wastewater by land application and has installed a pipeline to transport that wastewater from the ponds south to the land parcels. The applicant claims it has plenty of its own lands, plus will use other farmland when needed, to dispose of manure and wastewater generated by the dairy.



**Figure 1** – Overflow portion of North Pond with wooded area in flow path.

There is no reason for NDEP to entertain or allow a discharge from Smith Valley Dairy waste storage ponds that contain high concentrations of nitrogen and salts and allow said discharge to flow across private lands not owned by the Dairy, enter public ditches, a Wilderness Area, and ultimately Artesia Lake. The proposed permit language appears to mimic antiquated federal language rather than use state authority to prohibit discharge so that the permit will be protective of Nevada’s waters of the state.

#### **10. Land application of wastewater high in TDS not addressed in permit**

In Tab 6 of the permit application, tables are provided for each parcel of land used for land application of manure-laden wastewater stored in North and South Ponds. The

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<sup>42</sup> NDEP Record “Appendix A-1” pdf page 14

first table on pdf page 179 refers to land parcel SH-1N. It proposes to land apply 2.6 million gallons of wastewater on 154 acres used to grow corn silage (CS)<sup>43</sup>.

Mass loading of total dissolved solids (salts) in land applied wastewater:

$$\begin{aligned} 2.6 \text{ mil gal} \times 4258 \text{ ppm TDS} \times 8.34 \text{ lbs/gal} &= 92,330 \text{ lbs TDS} \\ 92,330 \text{ lbs TDS} / 154 \text{ acres} &= 600 \text{ lbs TDS per acre} \end{aligned}$$

The applicant does not provide discussion on how elevated levels of TDS will adversely impact expected crop yields at any and all of the land application parcels.

### **11. Permit language that refers to sewage sludge not appropriate for this facility.**

There is no reason to include language in the dairy permit that would allow the disposal of sewage sludge. This facility has a septic system and the only sewage sludge they generate would be better disposed of by a septic hauler and disposal company. The inclusion of such language in the dairy permit causes alarm that this dairy may inadvertently be given authorization to dispose of sewage sludge generated by municipalities.

This includes two definitions: C.1.32 - "biosolids" and C.1.36 - "sewage sludge", which are self-explanatory that they relate to sewage sludge and seem harmless. However, the definition C.1.41 for "land application" is not harmless as written<sup>44</sup>:

**"Land Application** means the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil."

Why would the definition of land application focus on sewage sludge and not manure? Is this an artifact from another permit from which language was borrowed to develop this particular permit?

Section C.13 also refers to sewage sludge as follows:

"All solid waste screening and sewage sludge shall be disposed of or reused in a manner approved by the Division and the County. Facilities that generate and dispose of sewage sludge, or prepare it for reuse, shall monitor for..."

This dairy *will* have solid waste screening, but to include the words "sewage sludge" in this section is not necessary, and as stated earlier, gives the impression that the facility is permitted to handle and dispose of sewage sludge.

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<sup>43</sup> NDEP record "Big File - Tab 6" pdf page 167, Table of acreage for each land application parcel

<sup>44</sup> NDEP Record "Big File – Tab 4 - proposed draft permit" page 34 of 41

On page 41 of 41 of the proposed permit, there is a section on Public Owned Treatment Works (C.34) and Existing Manufacturing, Commercial, Mining, and Silvicultural Discharges (C.36). What does any of that have to do with a dairy CAFO and why is that language included in the proposed draft permit?

## **12. Lack of designed area for solid/sludge removal equipment.**

The constructed waste storage ponds do not seem to have a designated area for equipment to be used to remove solids/sludges that would serve to protect the plastic liner from damage. Figure 2 shows the installed liner area near the inlet pipe to illustrate the lack of a protective concrete pad or other installation.



**Figure 2** – Photo of inlet pipe and corner of waste storage pond taken January 2015.

## **13. Waste calculations do not include silage leachate.**

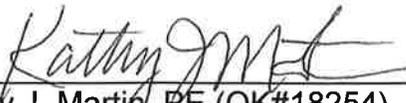
Fermented silage by its very nature generates silage leachate in the first month of storage. According to the NRCS, approximately 0.5 cubic foot of leachate is generated per ton of stored silage<sup>45</sup>. Silage leachate exhibits low pH, has high concentrations of nitrates and ammonia, and can cause severe adverse impacts to surface and ground water quality. The design engineer for Smith Valley Dairy did not provide calculations of the volume of leachate based on expected tonnage of ensiled storage.

<sup>45</sup> <ftp://ftp.wcc.nrcs.usda.gov/wntsc/AWM/handbook/ch4.pdf> page 4-39

## Expert Opinion

After reviewing the Smith Valley Dairy permit application and the NDEP proposed draft ground water discharge permit, this expert has found significant and numerous deficiencies in the permit application and several critical errors in the proposed draft permit. Although this report is not an exhaustive list of all deficiencies, it identifies enough problems with the application to warrant the Bureau to require additional information prior to issuing any permit.

It is my professional engineering opinion that the Bureau should not issue the proposed draft permit as it is currently written based on inappropriate language in the draft permit and because the permit application is lacking fundamental information necessary to evaluate the impacts to surface and ground water, the wilderness area, and Artesia Lake.

  
Kathy J. Martin, PE (OK#18254)

Date: January 29, 2015

Seal:

