

Christensen Sow Farm
Ground Water Discharge Permit No. UGW270011
Comment Response Summary
Utah Division of Water Quality
October 2018

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I. INTRODUCTION

A. Christensen Sow Farm

The Christensen Sow Farm is located approximately 7.6 miles northwest of Fillmore in Millard County, UT. Christensen Sow Farm will construct and operate one farm site comprised of three barns with up to 6,840 total hogs piped to a 34-million gallon containment basin and an 8.5-million gallon evaporative basin. Both containment basins are required to have two feet of freeboard. The primary 34-million gallon containment basin is a total containment anaerobic digester and will receive waste water from the swine production operations and is sized to hold accumulated sludge from barn operations for up to 20 years. After the design accumulation period, the sludge will be pumped to a State-certified drying pad. During the operational period, fluid will be transferred to an 8.5-million gallon evaporative basin designed to maintain a consistent fluid depth based on the annual average evaporative rate.

Concurrent with the ground water discharge permit for operation of the containment basin, a construction permit is being issued as described in Part I of the discharge permit. The ground water discharge permit will require compliance monitoring of process water and leakage from the primary liner into a perforated pipe tile-drain system that encompasses a gravel/pipe trench leak detection system. Fluids collected from the tile-drain system will be pumped back into the lagoon. A lower liner consisting of compacted native materials with a permeability of 1×10^{-5} cm/sec will minimize a release of any fluids from the lagoon containment system. The containment basins are sloped at a minimum of 0.25% to a riser access pipe for leak detection sump monitoring.

After reviewing the submitted comments, DWQ is satisfied from a substantive perspective that the permit order is properly protective, based on negligible risk to ground water and its present and future beneficial uses and importantly, to up-gradient water users in the Fillmore area.

B. Site Conditions

The Ground Water Rules take into account hydrogeologic conditions related to the potential for ground water contamination as well as varying natural ground water quality. In developing permit conditions the Ground Water Rules allow these factors to be taken into account so as not to impose unnecessary conditions on permittees.

Hydrogeology and Ground Water Occurrence at the Christensen Farm

The site is located in the Pahvant Valley with the Pahvant Range forming the eastern boundary of the valley. The Pahvant Range is generally considered to be the eastern edge of the Basin and Range physiographic province, consisting of consolidated rocks of Paleozoic to Cenozoic age. The Canyon Mountains at the northeastern part of the valley are similar to that of the Pahvant Range. In the vicinity of the proposed farm site, the geologic conditions consist of Quaternary alluvium or colluvium overlying basalt flows. The basalt flow is underlain valley fill which could be up to thousands of feet thick. Alluvial fans which developed along the mountain fronts, predominantly during Quaternary time, were deposited synchronously with sediments laid down by intermittent lakes. The fans extended into the

basin where they interfingered with lakebed deposits consisting of gravel, sand, silt, and clay (Oviatt and Currey, 1987). These deposits are unconsolidated and form one of the principal aquifers in the Pahvant Valley (Holmes and Thiros, 1990).

Basaltic rocks, found near or at the surface in the study area, were deposited during the past one million years. Basalt flows extend from 100 to 800 feet above the valley floor, fronting a north-south-trending ridge which divides the study area into Pahvant Valley on the east and the Sevier Desert on the west. Hoover (1974) divides these eruptive events into three episodes based on composition and age relations. Episode 1 includes the Beaver Ridge and Kanosh volcanic fields, ranging in age from 918,000 to 536,000 years B.P. The Kanosh field consists of several cones, including the Black Rock Volcano, and lava flows that also have been subsequently covered by alluvium. Episode 2 is composed of the Pahvant volcanic field from about 130,000 to 30,000 years B.P. The basalt flows of this field are the most extensive in the study area and contain abundant pressure ridges, lava tubes, and polygonal joints (Condie and Barsky, 1972). The final eruptive stage in the Pahvant field was subaqueous. Pahvant Butte, a 750-foot-high tuff cone, rests upon the older Pahvant field basalts. The last eruptive episode, Episode 3, occurred in the area of the Tabernacle and the Ice Springs volcanic fields. The subaqueous Tabernacle field basalts mainly were extruded during the Provo substage of Lake Bonneville (less than 12,000 years B.P.) from the base of a tuff cone called Tabernacle Hill (Condie and Barsky, 1972). The lack of Provo substage-level terraces and the occurrence of pillow-like structures at the outer edges of the flows indicate a subaqueous eruption. The cinders, spatter cones, and lava of the Ice Springs field, about 3 miles west of Flowell, overlie Lake Bonneville sediments with an estimated age between 4,000 to 1,000 years B.P. (Hoover, 1974). Ice Springs lavas also overlap the southern-part of the Pahvant field. Travertine ridges and deposits located west of Hatton are still being formed at hot and warm springs in the area. The travertine deposits follow a northward trend along which the Kanosh and Ice Springs Volcanic fields and Pahvant Butte are located (Holmes and Thiros, 1990).

Ground water in Pahvant Valley is present in both consolidated rocks and unconsolidated basin fill. The primary ground-water reservoir is the unconsolidated basin fill, but consolidated basalt flows crop out and are interbedded with the unconsolidated fill in some parts of the valley and are considered part of the primary ground-water reservoir. Water in consolidated rocks in the mountains surrounding the study area provides the baseflow of perennial streams and springs, but these rocks are not considered part of the primary ground-water reservoir (Holmes and Thiros, 1990). The fill consists of alluvial-fan and lacustrine deposits of gravel, sand, and silt near the mountains and lacustrine deposits of gravel, sand, silt, and clay interbedded with basalt in the central part of the valley. The fill becomes finer grained toward the central part of the valley. Previous studies have divided the ground-water system into an unconfined and an artesian system (Dennis and others, 1946, and Mower, 1965). The unconfined system includes about 50 feet of the saturated unconsolidated fill in most of the area and about 100 feet or less of basalt that is interbedded with the fill in the central part of the valley. The confined system, in the Flowell area, is encountered at a depth of between 140 and 200 feet and is separated from the unconfined system by 15 to 75 feet of clay under weak artesian conditions (Dennis and others, 1946). The farm site is located adjacent to an upward flowing ground-water discharge area locally known as “the Sinks”.

USGS topographic maps show that the surface water drains in a southeast direction at the location of the farm site. There are no known continuously flowing rivers, streams, or surface waters within several miles of the proposed site. The groundwater in the southern portion of the Pahvant Valley Basin is recharged by ephemeral streams, subsurface inflow from bedrock in the mountains, precipitation on the valley floor (Holmes and Thiros, 1990). The groundwater in the area of the proposed site flows to the west to northwest direction and the ground water slope in the basin is estimated 0.025 to 0.03% under the proposed site. Mower (1967) reports that ground water quality and water table slope support that a large part of water discharged from Clear Lake Springs is derived from the aquifers in the Kanosh district and is influenced by recharge from the artesian aquifers in Pahvant Valley. The groundwater depth under the farm site is estimated to be 75 to 100 feet below existing ground level. The rate of lateral movement in the aquifer is extremely slow compared to that of a surface stream. Well logs for the area indicate silty sand and sandy clay at water table depth. Therefore, the percentage of sand in the aquifer beneath the site can be assumed to be between 10% and 15% and the transmissivity for the full underlying aquifer thickness is approximately 3,000 to 5000 ft²/day.

The quality of ground water in the area west of Kanosh has deteriorated since large groundwater withdrawals began in about 1953. The deterioration is likely due to the movement of poor quality water from the southwest and possibly the west during periods of large groundwater withdrawals and recycling of irrigation water. (Holmes and Thiros, 1990). In the Kanosh district where all irrigation water is derived from wells, the chemical quality of the water has deteriorated because it is recycled irrigation water (Mower, 1967). The water that returns by seepage to the water table is more mineralized than applied water because of mineral matter leached from the soil and mineral matter from water evaporated and transpired from fields (Mower, 1967). Mower (1967) also points out that mineral matter available for solution from basalt is not known but ground water derived from other basalt aquifers is fresh and that little dissolution takes place as water passes through the basalt in Pahvant Valley. Water quality concentrations indicate that Clear Lake is consistent along potential flowpaths from Kanosh in the southern portion of Pahvant Valley while flowpaths from the Flowell area show much different water quality (Mower, 1965). Clear Lake discharge displays high sodium/potassium and chloride/nitrate concentrations, similar to concentrations west of Kanosh.

Condie, K.C., and Barsky, C.K., 1972, Origin of Quaternary basalts from the Black Rock Desert region, Utah: Geological Society of America Bulletin, v. 83, p. 333-352.

Dennis, P.E., Maxey, G.B., and Thomas, H.E., 1946, Ground water in Pavant Valley, Millard County, Utah: State of Utah, State Engineer Technical Publication No. 3, 96 p.

Holmes, W.F. and Thiros, S.A., 1990, Ground-Water Hydrology of Pahvant Valley and Adjacent Areas, Utah: State of Utah, Department of Natural Resources Technical Publication No. 98, 198 p.

Hoover, J.D., 1974, Periodic Quaternary volcanism in the Black Rock Desert, Utah: Brigham Young University Geology Studies, v. 21, p. 3-72.

Mower, R.W., 1965, Ground-water resources of Pavant Valley, Utah: U.S. Geological Survey Water-Supply Paper 1794, 78 p.

Mower, R.W., 1967, Causes of fluctuations in the rate of discharge of Clear Lake Springs, Millard County, Utah: U.S. Geological Survey Water-Supply Paper 1839-E, 31 p and Plate I.

Oviatt, C.G., and Currey, D.R., 1987, Pre-Bonneville Quaternary lakes in the Bonneville Basin, Utah: Utah Geological Association Publication 16, p. 257-263.

C. Permit Application and Comment History

On January 4, 2018, GEM Engineering prepared and submitted an application for a ground water discharge permit for Christensen Finisher Farms. After DWQ review of the draft permit a public comment period opened February 19, 2018. A public notice was published in the Millard County Chronicle and on the DWQ website on the same date. Comments to the public notice were accepted until March 15, 2018. Due to a substantial public interest on the draft permit, an initial public hearing was scheduled for March 20, 2018 in Fillmore, Utah. After the public hearing, additional comments were accepted until March 23, 2018. DWQ then prepared comment responses to the received written and oral comments. On April 6, 2018, the permittee decided to change from a finisher to a sow farm, which required significant changes to the draft permit. DWQ then received an addendum to the initial ground water permit application on May 31, 2018 and an updated version on July 12, 2018. DWQ reviewed the addendum(s) to the draft permit. On August 28, 2018, DWQ sent a response to public comments to all of the people who submitted comments with valid email and regular mail addresses stating the changes in the draft permit and the opportunity for another public comment and hearing period. The public notice and a public hearing notice for the updated draft ground water permit were published in the Millard County Chronicle and on the DWQ website on August 29, 2018. A public hearing was scheduled for September 13, 2018 in Fillmore, Utah. Comments were accepted until September 28, 2018 for the updated draft ground water permit.

D. Legal and Regulatory Requirements

1. The DWQ under the authority of the Utah Water Quality Act and the Utah Ground Water Quality Protection Rules¹ (Ground Water Rules) issues ground water discharge permits² to facilities which have a potential to discharge contaminants to ground water. As defined by the Ground Water Rules, such facilities include ponds, lagoons and land application of wastes.³ Ground water is divided into classes based on its quality⁴; and higher-quality ground water is given greater protection⁵ due to the greater potential for beneficial uses. The purpose of the Ground Water Rules is to provide for the maintenance and protection of current and probable future beneficial uses of ground water without ruling out man's economic, social or recreational activities:

Utah has adopted an anti-degradation policy for ground water protection. Broadly this policy provides for the maintenance and protection of current and probable future

¹ Utah Admin. Code R317-6

² https://deq.utah.gov/ProgramsServices/programs/water/groundwater/docs/2008/08Aug/GWQP_PermitInfo.pdf

³ Utah Admin Code R317-6-6.1A

⁴ Utah Admin. Code R317-6-3

⁵ Utah Admin. Code R317-6-4

beneficial uses of ground water; protection of higher quality waters at their existing water quality; and prevention of degradation of water quality that would be injurious to existing or potential beneficial water use. Thus, anti-degradation incorporates many of the beneficial characteristics of both the non-degradation and differential protection policy alternatives. It recognizes that there are some effects on ground water from man's activities but limits those effects to acceptable levels. It provides a greater degree of protection to higher quality ground water. Finally it does not rule out man's economic, social or recreational activities as a strictly-applied non-degradation policy might. Although some other states profess a non-degradation policy goal, they in actual practice function as an anti-degradation regulatory program.⁶

2. Under Rule 317-6-6.4A, DWQ may issue a ground water discharge permit if:
 - 1) The applicant demonstrates that the applicable class TDS limits, ground water quality standards protection levels and permit limits established under R317-6-6.4E will be met;
 - 2) The monitoring plan, sampling and reporting requirements are adequate to determine compliance with applicable requirements;
 - 3) The applicant is using best available technology to minimize the discharge of any pollutant; and
 - 4) There is no impairment of present and future beneficial uses of ground water.
3. Subsection 1 of Rule 317-6-6.4.A (protection levels) is satisfied for permit issuance because the applicable TDS limits for the existing ground water class, ground water quality standards and protection levels will be met with the incorporation of the HDPE flexible membrane liners, compacted soil fill material as a second liner, and a perforated-pipe tile-drainage system because no leakage is expected to reach ground water. The containment basin and evaporation pond will each be lined with 60-mil HDPE flexible membrane liners installed and constructed in accordance with the concurrently issued ground water permit and accepted construction quality assurance and quality control standards. A perforated pipe, tile-drain system underlays the containment basin liners and overlies State-certified compacted soil sub-base to prevent deeper infiltration to ground water aquifers. Sumps at the end of the tile-drain system will be used to regularly monitor fluid accumulation and as necessary, fluid water quality.
4. Subsection 2 of Rule 317-6-6.4.A (monitoring) is satisfied because the monitoring plan, sample analytes and frequency, and reporting requirements can be used to determine if there is a potential impact to ground water. Because there is an extreme difference between containment basin source and background ground water quality concentrations, influence of containment basins on the sump water quality is expected to be dramatic. The compliance monitoring parameters of TDS, chloride, nitrate and nitrite, ammonia, and bicarbonate are significantly higher in the containment basins than the ground water background concentrations. The monitoring frequency of at least weekly is more than adequate for typical ground water flow rates and therefore, any potential leakage or concerns can be addressed in a timely manner prior to impacting ground water quality.

⁶ Section 2.1 of the preamble to the Utah Ground Water Quality Protection Rules (1989).

5. Subsection 3 of Rule 317-6-6.4.A (BAT) is satisfied by incorporating a primary liner, a secondary liner in the form of a tile-drain system, and a compacted sub-base prior to approaching the ground water table. All containment basin leakage will be collected in the tile-drain sump and returned to the containment basin based on a maximum allowable head (MAH) threshold. The tile-drain systems will be manually monitored for fluid accumulation on a weekly schedule after an initial period of every two days. The water level in each tile-drain sump will be monitored and when MAH is attained, the material will be pumped to the containment basins and the volume recorded. Any fluids collected in the leak detection sump will be pumped back to the containment basins so that the water level in the leak detection sump is always less than three feet. In the event that the leak detection system has flow or heads that exceed BAT performance standards of the permit, a BAT failure exists and the permittee will be required to regain BAT by a number of solutions, including repairing liner integrity. In addition, a minimum two foot freeboard around each containment basin is required under the permit.
6. Subsection 4 of Rule 317-6-6.4.A (Impairment) is satisfied because under the proposed engineering design, no source contributions of waste material into the ground water aquifer is expected. The design is a total containment construction. Therefore, present and future beneficial uses of the area around the farm site are not expected to be impacted.

Therefore, DWQ has concluded that the proposed facility meets the required conditions for permit issuance.

DWQ Response to Comments for Christensen Sow Farm Ground Water Discharge Permit No. UGW270011

Overview

A total of 25 comments were received during the initial public comment period. Modifications to the permit application from the permittee were submitted and substantial enough that an additional public comment period was warranted. A total of 17 comments were submitted or supplied during the second public hearing on September 13, 2018.

The individual comments received on the issuance of permit number UGW270011 were of wide ranging concern. In order to minimize redundancy in response statements, DWQ has combined sections from each of the public comments into 6 different response groups. These major DWQ response groups are:

- Comments regarding the permitting process,
- Requests for public comments and public hearing,
- Comments concerning odor and nuisance species,
- Concerns about human health, aquatic life, and wildlife issues,
- Issues concerning water rights,
- Issues concerning management and operation, and
- Issues concerning pollution to groundwater

The provided comments are summarized in italics. Following the comments, DWQ responses are provided for each of the grouped DWQ responses. The DWQ permit action taken in light of the supported comments is further described.

DWQ appreciates the contributions of each of the public comments to this important permit issuance.

Grouped DWQ Responses to Comments

DWQ response to comments on the permitting process.

Summarized Comments (permitting process)

From the meeting I got the impression that you have already made up your minds and will issue the permits to the pig farm.

DWQ Response:

As per UAC R317-6-6.4, the Director may issue a ground water discharge permit if the applicant demonstrates that permit limits established under the permit will be met, the monitoring plan and sample and reporting requirements are sufficient, the applicant is using Best Available Technology to minimize the discharge of any pollutant and there is no impairment of present and future beneficial uses of the

ground water. The DWQ believes that these conditions were met and therefore the proposed permit was drafted after a lengthy process. More information on this process is outlined below.

The permittee provided an application for a ground water permit in January of 2018 to DWQ. We performed a series of reviews over the next several weeks that required modification and amendments to the application, more descriptive detail and background on the project, and modification to the engineering and construction design. This initial interaction and discussion required submission of alterations and review over multiple times. Once DWQ was confident that the proposed ground water permit met all required conditions to authorize a ground water discharge permit, the draft permit was provided through several outlets for a public comment period of 30 days. In this case, the draft permit was published in the *Millard County Chronicle* and on the DWQ webpage. There was substantial public concern and comments during this period that DWQ thought that a public hearing was warranted for the community to voice their concerns regarding ground water quality.

The public comments and the public hearing provided thoughtful and insightful suggestions on potential improvements in the draft permit that could improve containment issues and limit effects to the ground water quality. In fact, the requirement for the permittee to utilize the engineered total containment tile drain system was a product of community discussions. In addition, through our public comment period, DWQ has agreed to perform water quality sampling at Clear Lake prior to and during the proposed permit.

In addition, prior to DWQ involvement, the project would have had to meet all zoning and setback requirements, which would have been a function of county commissioner, planning, and zoning discussions.

Permit action:

No action.

DWQ response to requests for public comments and public hearing.

Summarized Comments (public comments and hearing)

I would like to ask for a public hearing. I feel many of the people here have not been properly informed and should know the effects this will have on our community. I believe Fillmore also has some wells which could potentially effect their town as well.

We are residents of Millard County Utah, and would like to voice our concerns about a large Pig Farm that is currently trying to move into our area. We are very concerned about the impact this could have on our water.

We have not had adequate opportunity to voice our concerns and would like a public comment meeting to be held.

I am a home owner in the Pahvant valley with a residential well I strongly suggests we have a public meeting where we can show study's of contamination of wells due to business like this coming in.

I am requesting a hearing to share more information.

The commissioners, mayors, city councils and citizens need to stop this pig farm. Our water, air, and general way we live will be affected by the pig farm. I'm a concerned citizen in Millard County. Please protect our county and our way of life.

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We have enclosed several attachments that we feel are significant in this decision making process. We ask the Division of Water Quality to carefully examine these issues that can negatively impact our natural water resources and our Aquatic Birds.

There are several legal inconsistencies regarding the "mailing of notices" regarding this pig farm – NO ONE IN THE AREA RECEIVED ANY NOTICES!! etc. etc. etc.

This whole thing has been push through without any notice send to the closet neighbor.

I appreciate this hearing because I don't feel like a lot of people really have known about this.

I'm grateful for this informational meeting. It was fabulous to be included. Um, I think a lot of citizens don't believe they've been truly included until this point and we're really grateful that we have this opportunity to speak out.

We have bureaucrats. I'm not a truster, sorry. Have bureaucrats, mayor, whoever you are, the city community councilmen or county or whatever. I don't trust these people because we don't have all the information and then you'd get recommended by somebody like on the planning commission to say, Oh, this is a good idea or it's not a good idea, without doing due diligence. One of the biggest parts that really, really bugged me about Smithfield and a lot of the other capitalists that are out there is that they target communities like ours. It was referred to by one of the Polish Schapiro, who is the United States humane society guy, and he said it's a kind of prejudice treatment, lower income community develop fish liner hook that says this is going to improve your economy at what cost. That's something to consider at what cost. And I was following comments that were being made on the Facebook. I don't know who the Christiansen's are, but I really appreciated a couple of things that Mr. Christianson said. And it seemed like he was being really straight forward, honest kind of a guy Yeah. I'm grateful that this is a communication without insult. OK. Some of the things that were said on Facebook were purely insulting, which were demeaning, and beneath the integrity of this community in this county, but our reality is it's inhumane.

I just have a concern, but we weren't able to address other concerns such as air pollution and smell. I realized that's not what you guys are here for. I know that's not what this meeting is for and that it's beyond your guys' scope, but I have concerns that we weren't allowed to address, uh, air pollution and odor and uh, things that are environmental concerns for the community and it's ridiculous. Um, to have a consideration that involves many legs and only be allowed to speak out on one of those legs. That's just ridiculous.

Lack of communication led people to believe this project had been rejected. I think this should be published again in a way that everyone could see what has been going on. Is this what we want? Is this what we need? No! Please reconsider your decision to issue the permits to the pig farm.

No notice was sent to anyone within five miles of the proposed site, even though it was stated to the contrary.

DWQ Response:

R317-6-6.5 requires a 30-day Public Comment period for the issuance of a ground water permit. In accordance with this requirement, Public Notice of a 30 day comment period was published in the local paper of concern (Millard County Chronicle); notice was also provided on the DWQ website. As stated in the Public Notice, all comments received prior to close of business on the deadline date are considered in the formulation of conditions to be imposed on the permit.

In addition, a Public Hearing may be held if written requests demonstrate significant public interest and substantive issues exist within the first 15 days of the notice to warrant holding a hearing. In response to significant interest and significant issues, a public meeting was held in Filmore, UT on September 13, 2018, to provide further opportunity for the community to raise concerns regarding the project permitting process and potential implications.

Individual e-mails and letters were sent to anyone who commented on the previous permit.

Permit action:

No action.

DWQ response to comments concerning odor and nuisance species. Summarized Comments (odor, zoning, nuisance)

I am a resident of Flowell, Utah and am very concerned about the pig farm, J and J Swine, LLC, permitted name: Andrade Christensen, that is attempting to come into my community. I am concerned there will be too many pigs too close to homes.

When I was growing up in a small farming town in Southern Utah, I grew up down the street from a pig farm. The smell was so terrible that you couldn't walk outside if the wind blew at all. The smell was in our clothes, our hair and our homes. It seemed like you could taste that awful smell in the food we ate. That awful smell has had a lasting impression on me for 50 years. When the residents of Millard keep jumping from area to area trying to get someone to sell their land and our clean air it makes me sick. The smell will permeate throughout this whole county. I can see why the pig farmers want to come to a less populated area. We are so trusting, believing everything we are told. Money has a big factor in bringing this pig farm here. Everyone wants to be rich regardless of the damage it will do to our area. I talked to a young man from Delta whose father tried to sell some of his property so he could build this pig farm, that keeps trying to get their feet into Millard County. I asked him why his father was so determined to bring another pig farm into our area after he owned one in Jensen Dale in the 1980's. I asked this young man who was going to run the farm and feed the pigs. He told me they would hire someone. I asked him why not do it yourself. He told me his mother wouldn't let any family member into her home after they had worked with the pigs. I guess the Johnson family still remembers the awful smell.

Not only is it an outrage that the pig farm is planned to be built within Flowell town limits and within two miles of many residential homes

Besides the odor arising from the open sewage ponds, from the pig sheds themselves, and from the dead pig carcasses that will be in open pits in the area, there will be a problem with flies, gnats and mosquitoes which will be attracted to the carcasses and the sewage ponds

I'm mortified by the prospect of the horrible stench that emanates from pig facilities. This will be much

worse in the hot weather. The flies and insects that will be attracted will spread disease. We have a small raw milk facility. The stink will adversely affect our business. The flies and other insects will be a risk to all of our animals as well as ourselves. Pig farms are not a natural environment and I'm worried that the creatures will be crying out in constant distress

...although I do have concerns with the pig farm. Between the flesh pit and pond with urine and feces there will be a smell.

This isn't a matter of what's legal and what isn't. It's a matter of what is best for the community as a whole and ultimately the pig farm is a small matter in the grand scheme of what's best for Flowell long term. Water conservancy is the bigger issue that involves all of us and future generations.

And I also feel like, um, maybe on farms not horrible. But I feel like, um, we've seen what happened out to Milford. And I feel like it's sort of like the camel's nose in the tent, and we're just going to keep seeing more and more people who want to, you know, come down here and do this type of farming. And where it's just going to multiply and grow, um, possibly beyond what we can even imagine.

Um, just a lot of concerns and again I want to reiterate, let's really pay attention to what's happening here and, and look at it, and make sure it's something we can live with. That our, that our kids can live with, and generations going forward. Um, I guess that's it. I'm trying to think. I just feel very concerned. I feel like that might be kind of a scary thing to let in. Um, sorry. Anyway, thank you for your time.

I am a citizen and we also represent ourselves as a small raw milk dairy facility, and as far as our dairy, I'm very concerned about the influx of flies and that they're unwanted insects that will be attracted, will spread disease.

The odor generated from the farm also poses a threat to people in the area. It increases bronchitis, high blood pressure, lung problems and migranes. No matter what you do it will STINK!

This pig farm will produce extreme air, water, and quality of life pollutants.

Summarized Comments (air quality)

I am also concerned about the water contamination from evaporation that will be coming down in the rain, as there appears there aren't many studies done on this and the effects this has on the neighboring communities.

Air pollution is another one of the biggest problems.

DWQ Response:

The provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953 set forth the ground water discharge and construction permit process in the Ground Water Section of DWQ. Furthermore, the permitted facility shall be maintained and operated in accordance with conditions set forth in the permit and the Utah Administrative Rules for Ground Water Quality Protection (R317-6). Therefore, DWQ does not have administrative authority to regulate noise, nuisance pests (flies, gnats, etc.), odors, or other air quality concerns. Typically, concerns related to air quality issues that emit any contaminant into the air are regulated through the Utah Division of Air Quality at <https://deq.utah.gov/division-air-quality>. Noise may be regulated at the county or municipal level.

Additionally, DWQ does not have administrative authority to regulate issues concerning zoning and setbacks. County and municipal legislative bodies have jurisdiction over zoning districts that regulate and

restrict erection, construction, and alteration of buildings and structures and enact ordinances regulating land use and development activities. The comments referring to proximity of residential zoning and agricultural facilities may be more appropriately addressed to county and municipal agencies, typically planning and zoning commissions.

As part of the proposed discharge and construction permit, DWQ requires under Section II, D of the permit that only swine wastes may be disposed of in the containment basin. There has been no formal proposal suggesting that hog carcasses or other wastes will be disposed of on the property. Carcasses are typically transported on a daily basis to an off-site rendering facility. Violation of these permit conditions is subject to \$10,000 per day and willful or negligent violations are subject to \$25,000 per day. Any person convicted under Section 19-5-115(2) of the Act a second time shall be fined up to \$50,000 per day.

Permit action:

No action.

DWQ response to concerns about human health, aquatic life, and wildlife issues.

Summarized Comments (human health)

I'd also like to mention that my mother in law is dealing with lung issues and is on oxygen. My son has asthma as well. Having almost 9,000 pigs, a flesh pit and extra traffic on dirt roads will only make them sicker! Our backyard is kitty corner from where they plan on putting these pigs. I fully intend to sue this company every time my son gets sick and every time he ends up in the hospital.

So many animals confined in a small area too close to people and their homes is an extreme concern both to health and to quality of life.

I agree with everything that has been stated tonight. I am very concerned this is too close to Clear Lake and too close to residents for our health safety

I have Health Issue a lot with my grandson.

I'm a concerned citizen, have some medical background and I'm very, very concerned about the health risks to, to our community. Um, air quality-there's been a number of studies done that indicate that swine farming is probably not the best to be living next to in a lot of different ways. So I'm very concerned about health.

Summarized Comments (aquatic life)

I am also concerned about the Clear Lake Water refuge. Back in the 80's when there was flooding, water disappeared down by the volcanic area and reappeared months later in Clear Lake. There are numerous reports that contaminated water can kill fish and harm the wildlife and plant life.

Summarized Comments (wildlife habitat)

Thus even water fowl could be impacted by that and by landing on the sewage ponds and on the sewage fertilized fields.

If we lose this natural resource that means waterfowl habitat and aquatic habitat will be lost forever. Nesting habitat will be lost for multiple species of birds. Deer and other game will have to find new water sources. From a hunter and a conservationist please take into consideration the harm that will come from the hog farms. We can't afford to lose our wetlands.

This email is to show my concern and displeasure for the hog farms proposed in the Flowell area. From

the information I have seen, it sounds like it could be a harmful situation, not only from a water quality standpoint but also from a fish and wildlife side as well.

Clear Lake is truly a desert oasis that supports waterfowl and numerous wildlife. It has been our livelihood for decades. My family has grown up enjoying and hunting the area, as have many others. I hope all of us can continue to enjoy the beauty and wildlife there. Water quantity and quality could change all that. Thank you for your consideration on this important matter.

I am writing to express concerns regarding the effects of the Christensen ... Farm on the nearby Clear Lake Waterfowl Management Area. While I do not live in Millard County, I frequently hunt Clear Lake. I enjoy this area due to the opportunity to hunt both waterfowl and upland game away from more congested areas along the Wasatch Front.

The maintenance of the Clear Lake Waterfowl Management Area is dependent on discharge from the Clear Lake springs located along the eastern portion of the Area. The groundwater in the area stems from a complex aquifer system incorporating permeable basalt flows. Ground water flows north to northwest through the Pavant Valley to the Clear Lake Springs Area. Ground water is recharged through precipitation, flood water runoff, and unconsumed irrigation water. The majority of the discharge from Clear Lake springs is attributed to inflows from Pavant Valley, in which the Christensen ... Hog Farm is located. An increase in the number of wells within the Pavant Valley has significantly affected the discharge rates of these springs into the Clear Lake Waterfowl Management Area. As ground water withdrawal increases, the hydraulic gradient between these wells and the Clear Lake springs is reduced thereby limiting the ability of groundwater to travel through the aquifer to Clear Lake and also reducing the volume of water available for discharge. The Clear Lake Waterfowl Management Area is located approximately 10 miles to the northwest of the proposed Christensen ... Farm site and potential affects are not addressed within the permit application. The additional groundwater draws associated with the farm will only further decrease discharge into Clear Lake and continue to adversely affect important waterfowl and wetland habitat.. Additionally, improper waste disposal or monitoring associated with the farm could result in pollution to the aquifer system resulting in further damage. Please consider these factors when reviewing applications for the Christensen ... Hog Farm. I sincerely would like to protect this area so that others can enjoy it as much as I do. Thank you for the opportunity to comment.

Sources:

Mower, R.W. (1967) Causes of Fluctuations in the Rate of Discharge of Clear Lake Springs Millard County, Utah. Water Supply Paper 1839-E. Retrieved from <https://pubs.usgs.gov/wsp/1839e/report.pdf>

Snyder, N.P. (1998) Map of Recharge and Discharge Areas for the Principal Basin-Fill Aquifer System Sevier Desert, Millard County, Utah. Map 175 Utah Geological Survey. Retrieved from <https://ugspub.nr.utah.gov/publications/maps/m-175.pdf>

We have some very sensitive fish there. We have Lee's Chub that have been there since Lake Bonneville.

We are in the business of providing habitat for wildlife, hunters, all different types of migratory birds, and all types of birds that live there. If you cloud that water, you cannot grow what those birds that feed on that, need.

So I hope that we can consider the wildlife that we're affecting, the loss of habitat. I know a lot of you have driven across the county road at Clear Lake.

I'm also concerned about wildlife-about, um, the things that we love about living here.

I agree with everything that's been said about Clear Lake. I'm very concerned about 3.7 million gallons of pig waste, and I think I understood that this was a 15 year commitment. So that's 3.7 multiplied by 15 and all of that being sprayed in our environment and what the balance of everything's going to be, I believe, is it nitrogen, and it, it just upsets everything. And it's very upsetting and the idea of this getting into Clear Lake, we have water birds that land in Fillmore. They're confused. They think they see water and they're going to be landing in this lagoon. You know, lagoon, it sounds so romantic, but it's a cesspool, and it's-it's, it's very concerning.

DWQ Response:

Similar to odor, nuisance, and air quality concerns stated previously, DWQ does not have administrative authority to regulate the facility outside of the ground water quality regulations, R317-6. The specific contaminant concentrations provided in R317-6-2 are based on U.S. Environmental Protection Agency maximum contaminant level goals, health advisories, risk-based contaminant levels, and standards established by other regulatory agencies and other relevant information. Therefore, concentrations provided in R317-6-2 are designed to be protective of human health and other classified beneficial uses for the proposed farm area.

Permit action:

Interim ground water protection levels for containment basin compliance monitoring wells as described in Section II, C of the permit are designed to be 25 % of the Utah Ground Water Quality standard provided in R317-6-2. Compliance of these ground water quality standards must be maintained or the permit will be in non-compliance status as outlined in Section II, G of the permit.

DWQ response to issues concerning water rights.

Summarized Comments (water rights)

I am ... concerned about the water usage, since Clear Lake has been very dry the past few years. They say the farms are not going to use very much water, but, it sounds like once they are in, they plan to expand.

We are ... concerned about many other issues in regards to our water supply.

I urge you to weigh carefully the negative impact on our water supply in Millard county, for the proposed Flowell, Smithfield-funded pig farm. There are people pushing for the construction of the pig farm, without notifying the public of the negatives of the pig farm. What the impact will be on air quality, ground contaminants from the pig sewage used for fertilizer, and most importantly, the impact it will have on our precious and precarious water supply that will be used for the pig farm. We have been told the pigs will "only" require five acre feet of water per day. In my estimation that adds up to a lot of gallons of water per year that will be taken from our dwindling aquifers.

It seems like the use of water for the 9,000 pigs and more to come—when water in this desert area is getting more and more scarce as the droughty years continue--is foolhardly for water to be taken for the production of pigs which are going to be mostly for China and benefit little else. Besides which the pig farm will benefit very few locals. Many will not see any positives by allowing the pig farm to be in their area. They will be the ones to have to bear the brunt of the negative impact of the pigfarm--increased allergens, bad odor, possibility of Mersa and airborne contaminants from the sewage ponds when the wind blows, and of course drinking water possibility of becoming contaminated--especially those wells close to the pig farm.

Someone has raised the question of what happens if there gets to be a scarcity of water, who gets first dibbs--the pigs or people? This person said she was told that the pigs will get first priority because they are under contract. I would say that if this is the way proponents are looking at things, that the pig farm should be stopped before it starts.

Water in Millard county is a precious commodity. A pig farm should not get priority. The first priority should be water quality being maintained for culinary use, and water levels being maintained for farmers to water their crops. When the pig farm starts pumping from our water acquifers, I fear that it will adversely impact what is available for farmers and/or culinary wells.

Someone has said that in droughty years, if the aquifers are drawn upon too much, the salt layer above the fresh water acquifers will collapse and pollute the good water below with salt. We cannot afford for this to happen because of the pig farm drawing water for the pigs. Please do what you can to stop the pig farm plan for Flowell from going forward.

We are ... concerned about many ... issues in regards to our water supply.

Our community relies on the "pristine" water denoted on this permit application. We ask the Division of Water Quality to please, take into consideration, the potential harm to resident's water and the near by Clear Lake Bird Refuge. Will the water usage take away from the refuge and what is the potential contamination to the environment that can damage our water birds?

This industrial size pig operation is too close to Flowell resident's water supply and too close to Clear Lake.

The aquifers will be depleted

I'm the closest neighbor to this site. I'm concern with this site, with my well going dry with the pigs Farm.

...inadequate water for such an operation. We live in a desert and water is precious.

I am emailing in regards to the proposed hog farm in Millard county. I have hunted clear lake wma my entire life and plan on taking my kids there some day. A hog farm will destroy any chance we have of clear lake in the future. We will lose our water for someone else's private profit which is ludicrous.

Thank you for allowing us to still voice our concerns about the water issues for Flowell Utah. Farming is our livelihood and the availability of water ultimately drives the economics of our community. Utah population continues to rise and the issue of water conservancy is not going to go away. Instead, the need for sustainable conservation practices will only increase. Millard county is behind the times on ensuring water usage is utilized in a sustainable fashion. I feel that if we do not start conserving this precious commodity we are going to lose the ability to sustain our livelihood, and future generations who would like to come and settle roots in Millard County. For some it has already affected them. Many families have already had to drop their wells lower because lack of water. Most of us pull sand through our pipes and have had to put filters on to obtain clean water. This issue is bigger than just a pig farm. It's about insuring that we and future generations will have the water resources necessary to sustain life in this area,...

I do support them [the Christensen's] but I would like to see it farther away from homes and in a place that is not lacking water already.

I feel a plan needs to be put in place to conserve water now. And to monitor the water that is being used

now. There needs to be an unbiased research on these issues. We try to simplify complex issues into saying that there is one solution to a problem (example: water metering) when in reality a fix all solution doesn't exist. It's going to take multiple solutions and sacrifices in order to ensure water is conserved into the future. We need unbiased data regarding intake and outtake of water in the aquifer so that conservation solutions can be found using quantifiable facts to make the best decisions moving forward.

I am writing in regards to the proposed hog farms in Flowell, Utah. I am very displeased about this and am against the farms. For the reason being that there is not enough water to support them. I believe that if the proposed farms come in that clear lake bird refuge will no longer have the water necessary to survive. I have hunted clear lake my entire life. I can trace back four generations of water fowl hunters that came before me. That being said my family has hunted there for four generations. It would deeply burden me to see clear lake dried up. I have so many memories out there that I want to share with my kids someday. Even now clear lake has seen it's better days. The last five years I have seen the decline of clear lake. The refuge can't afford to lose anymore water to farming.

I am writing to share my concerns with the proposed Christensen ... Farms water permit. My concerns are related to the effects the additional withdrawal of water will have on the Clear Lake Wildlife Management Area. My family and I have hunted and recreated on the management area for over 20 years. In the that time I have seen dramatic changes in the water available for wildlife and the challenges managers are having to provide critical migration habitat for waterfowl at Clear lake. It seems that every time a new pivot or irrigation project goes in between Fillmore and Clear Lake there is less and less water for Clear Lake. This last year (2017), after a banner water year, Clear Lake's water situation did not seem to show any improvements. I'm very concerned that the Pavant Valley Aquifer has finally reached its tipping point and the Christensen ... Farms proposed action will be the proverbial last straw on the camel's back at Clear Lake. Please consider the effects the additional withdrawal will have on water rights for Clear Lake, specifically 67-1658, 6716721, 67-735.

I have been hunting at the Clear Lake Bird refuge for 40 plus years. I have many fond memories of the refuge. Over the past years we have seen a dramatic decline in the water there. I fear that if the hog farms are allowed to go forward then it could very easily bring an end to Clear Lake. I am a 3rd generation water fowler and I'd hate to only tell my grandchildren about how we could go only 35-40 minutes away and see some of what nature has for us. I want to continue to make memories with my grandchildren instead of just talking about the "Good ol' days" of duck hunting. It is sad to see what Clear Lake has become from when I was a young boy to what it is now. If more water is pumped from underground this natural resource will be lost forever. A concerned life long Millard county water fowler and resident..

I am writing this email as a very concerned resident of Millard County. As you know, there is a proposal to build a hog farm in Flowell, Utah, to house 9,000 hogs. That location is fairly close to Clear Lake Waterfowl Management Area, a spring fed wetland. It is also within 1.5 miles of residences. The proposed hog farm would tap into the same aquifer that feeds Clear Lake and residential wells. Besides putting additional demand on an already limited water supply,

I am sending this email in behalf of Clear Lake Wild life management area and Millard County. I have hunted at Clear Lake for more than 15 years. It is a beautiful oasis amidst a desert. It has been shrinking year after year due to over pumping of the aquifer and the long lasting drought that central Utah. I have heard that a Hog farm is proposed to be built somewhere near the Fillmore area. I do not want to see that happen! Clear Lake is barely holding on as it is. A hog farm would leave it dry and wasted. If a hog farm goes in, Clear lake will be gone. I don't want to see such a thing happen and it can be stopped. I hope the State will step in and protect its natural resources before granting permits for this

hog farm to tap into the aquifer and take the water away from Clear Lake.

I'm concerned with the water Issue in this project. This will damages my family's property greatly. This will affect my present well on the family home and property. This is to much water coming out of the Christensen well. It will affect groundwater in the area greatly. Are the Christensen going to be HELD accountable for Loss of water and contamination in my near by well and Ground water?

I also live near this project. I'm concern this is a very bad Idea and spot for this project. People in this area are already having to dig well deeper already do to Low water table. This is not fair to the people that are already in the area. Clear Lake should be protective with Wildlife and water. This Augafer needs to be protected in this matter. Please don't approve this project.

For the past 26 years I've had the privilege of managing Clear Lake, which is, in my opinion, the greatest wetland in the world. I'm certainly concerned for its future. In a nutshell, I'm worried about the issuance of this water being taken out of the aquifer. We saw the graphic of the 3.7 million gallon holding tank. That's at least that much water that's coming out of the ground. Who knows how often?

What I'm noticing in Clear Lake is that every year the spring flows are going down, and what's happening there is going to continue.

...and I just think that the Clear Lakes have been there longer than any of us. And to continually tap our aquifer, to use more water, use it and use it and use it, that effect is going to continue upstream to effect u-folds. And I just hope we look at this very clearly, and recognize that it's going to be less water which used is going to be worse off,...

You know, our biggest use is October and it is dry except for one unit. That's it and the spring flows are going down. And here's another straw in the drink tapping that water. So that's basically my concern as a manager of Clear Lake. I appreciate the opportunity to speak and also I appreciate the opportunity as a duck hunter to write my concerns that can still be submitted until Friday.

I can't really ad anything, as far as ideas to what he said, but I think it's important on the record how many people care about Clear Lake. And whenever my family came that's the first place we'd take them. It's pretty sad to see it dry. And we want Clear Lake. As it is, it's vanishing before our eyes and it's ridiculous to take more water out. That's all I have to say.

And I'm very concerned about more water being taken, um and, and I, uh, applaud everything that has been said about Clear Lake. And, uh, I couldn't live with myself if I didn't stand up and say, please let's not let this happen here. Thank you.

Um, I'm also really concerned about the water. It feels like, you know, we see less and less each year. Um, I think that's going to be the cycle that's going to continue moving forward.

So I'm concerned about if there's a water shortage, will the people with the pigs go first, like some people think, I don't know what they think exactly. The pig farm like 3 miles away from my house. I could walk there. So I don't want it that close to my house.

DWQ Response:

While multiple comments refer to the Class I *Pristine Ground Water* classification described in the draft permit, the actual classification of this water ranges between Class 1 and Class III, based on regional total dissolved solids concentrations. The most recent samples collected and available for decision purposes indicate Class II and Class III water. The important concern is that no degradation of ground water is

required to be compliant with the permit. Maintaining the existing ground water classification for the area encompassing the permit will be implemented through engineered total containment. The waste containment basins will each be lined with 60 mil high density polyethylene (HDPE) flexible membrane liners and construction quality assurance and control CQAQC signed off by a licensed professional engineer. The subsurface will be compacted to permeability less than a clay liner to reduce vertical infiltration. A perforated-pipe, tile-drain system will be incorporated in the compacted soil to collect any fluids in a sump. The collected fluids will then be pumped back into the containment storage lagoons. Two vertical feet of freeboard will be maintained to ensure containment and prevent runoff from the containment basins. In addition, regular monitoring and evaluation of water quality, maintaining conservative ground water protection levels, using best available technology standards, and best management practices will be incorporated into the permit.

DWQ cannot address the issue of water usage, allocation, supply, and sustainability as these are water rights issues and beyond the authority of DWQ. Typically these water rights issues including distribution, regulation, and adjudication are regulated through the Utah Division of Water Rights at <https://www.waterrights.utah.gov/>.

Permit action:

As described in Section II, D and E of the permit, best available technology (BAT) standards and best management (BMT) practices will be implemented through construction specifications, compliance sump and containment basin monitoring, and spill containment, in accordance with the permit.

DWQ response to issues concerning management, operations, and facility design.

Summarized Comments (operations management)

We are responding to the Public Notice regarding the Ground Water Discharge Permit listed above. As residents of Fillmore in Millard County, we have great concerns about the impact this Swine Finishing Operation could potentially have on our environment, specifically our water and air. We have been told that this business is a local farmer. We all know the land belongs to the local farmer but the pigs and operation designs belong to Smithfield Foods. Smithfield Foods is currently involved in many court cases involving their alleged damage to the land around other Swine operations in this country

I have documents concerning Smithfield's and am worried about their past history. How will we know if honesty is something that we can depend on when it comes to our water and health.

CAFOs are NOT sustainable.

- The CAFO Industry's Impact on the Environment and Public Health ...*
- Boss Hog: The Dark Side of America's Top Pork Producer - Rolling ...*
- United States Is Turning Into a Factory Farm for China - Dr. Mercola*
- concentrated animal feeding operation*
- "Studies have shown that lagoons emit hundreds of different volatile gases into the atmosphere, including ammonia, methane, carbon dioxide and hydrogen sulfide. A single lagoon releases many millions of bacteria into the air per day, some resistant to human antibiotics. Hog farms in North Carolina also emit some 300 tons of nitrogen into the air every day as ammonia gas, much of which falls back to earth and deprives lakes and streams of oxygen, stimulating algal blooms and killing fish." from Boss Hog: The Dark Side of America's top Pork Producer.*

Conclusion: Allowance of such egregious, inhumane, irreversible polluting of land and air must not be

tolerated. The risks do not outweigh the puny possible gain.

Also the contract is with a large corporation that has no incentive to be interested in the economics and well-being of local communities.

The proposal also includes burying dead hogs on the property. That seems like a pretty serious risk to established residents and the wetland. A quality water supply is everything!

Um, I'm very particular to keep our facility as clean and pure as we possibly can, and, and uh, the concept of, of having this high concentration of small, intelligent animals all in a confined area, and the concentration of the excrement everything, um, it's not just a small thing. It's not just going to affect their, their place where they are. Um, we live very, very close to where this is proposed to be put up, and if it, if it ruins the air quality in any way, if it ruins the water in any way, there goes our dairy. And, uh, there's, there's people here that come and get milk from us, and I don't want it to taste like there's a pig farm nearby. And as just a citizen, um, I don't know if they can contain the sound of distressed, squealing pigs. And, uh, that's not what I moved into the country to hear. And even, even thoughts like that are very, um, I can't afford to move. Not that I would want to, and I wouldn't want to have to move because I didn't speak out when someone wanted to put his facility here.

There has been lagoons that have leaked. There has been um, uh, environmental damage in Iowa and North Carolina, very disturbing. And we don't have the wetlands and the wet grounds that they have, but it's still a concern and, uh, the high concentration and the, and just the amount of it is just alarming to us.

I'm a Fillmore resident and I am a fan of beautiful open fields and gorgeous country. Um, I have studied these kinds of finishing industrial farming for a long time and have been a huge supporter of organic and humane farming. It's called animal husbandry. This is not animal husbandry. This is inhumane. We have a confined imprisoned, intelligent creature. Pigs are smarter than dogs. Would you allow your dogs to be treated the way these confined in operations are going to function?

I know it's been said and the Smithfield group, which is the group I think that we're being operated - I don't think they have a good reputation. I don't know if you're associated with them or if you're hired by them or whatever. Going on the line and just researching what these guys do. It's, it truly is frightening and I don't know. I don't know how any human being who can come look for generations down the line can possibly think that this is a good idea. Not only just for the animals but for this pristine, beautiful land that we live on and that we're responsible for. I don't know how it can possibly be done.

...and then to think, to even consider putting a intelligent creature in a confined space and have them excrete three times the fecal stuff that you and I do as a single human, think three times. It's inconceivable to me that we're even here. But that's my comments. Let's be some intelligent people and minders of the Earth. Folks, we are supposed to be taking care of things. This isn't animal husbandry. This is animal enslavement. Thank you.

I'm also with the Utah Division of wildlife resources and of course I echo everything that Lynn said as we're absolute fans of our precious Clear Lake. I won't continue on with that. The one thing that I think hasn't been addressed, at a previous meeting there was talk about the disposal of, I mean animals die every day and uh, and it's probably written somewhere but, but where they talked about maybe a disposing of those animals on a, in a pit on site, um, again, it's a potential contaminant and I'm not sure if that is something that is eventually going to leach into our aquifer also and have additional contaminants but that, with that many animals and we need to be cognizant of where they go and if that is going to be a source of contamination.

I'm a citizen. And um, I might make myself slightly unpopular. I'm not sure I can say that. Um, we just, we moved here a few years ago from North Carolina and not far from where the Smithfield, um, facilities were there and while we were there and there were several episodes of flooding and a lot more water than we have here. There was, uh, a lot of flooding and there were a couple of occasions where the, um, holding facilities were breached and surrounding farms and creeks and rivers were contaminated. It was a problem. Um, I know we all like our bacon, we all like our ham, and uh, and, and these, these facilities have to be, we've got to have, if we're going eat our bacon and our ham, they got to be somewhere. I'm just not sure this is the right spot.

Yeah. One other thing I'd like to know is the quality of the food. Once you have put an animal in confined quarters, there's all kinds of things that go wrong with that meat. Really probably not even worth eating in the first place. So give up your pig.

I don't understand why a company from China would want to build a pig farm in Flowell, Utah. Avoid tariffs on incoming product? It wouldn't be that much of a savings so what is the real reason? This pig farm does nothing for Flowell or the surrounding communities. It will not bring in more employment options. As mentioned at the meeting it lowers property values. Once people and businesses find out about the pig farm they won't want to come here.

What will you do with all the waste? The dead animals. The after birth. Will this be buried somewhere and left to rot into the ground water supply? You said if there is a leak detected they are notified and they have 30 days to fix and clean up the problem. I think that what you said. What are people who use water from wells for their drinking supposed to do?

Has it been proven that there will be zero runoff from the "lagoons", as is required by the EPA? There are strong winds very frequently in this area, so having an evaporation lagoon is not acceptable. The noise level of the proposed number of squealing and screaming pigs will be harmful to the peace and solitude enjoyed by persons including families who have chosen to live in this area. The flies and mosquito will be detrimental to people, plants, gardens, and farm animals and pets. The size of the waste pools is beyond comprehension. These basins have been shown to contain pathogens, bacteria (often antibiotic resistant) heavy metals, salmonella, nitrogen, phosphorus, toxic nutrients and ammonia. There are documented incidences of disease outbreaks in the presence of pig farms, namely MRSA, salmonella, toxoplasma and campylobacter. If the waste matter is cycled repeatedly, the concentration of all the negative elements will increase exponentially. There is no way to predict natural disasters or the impact they will have on the cesspools and pigs. The stench of the pigs and their fecal matter will destroy the air quality and has been shown to cause mucosal irritation, respiratory ailments, increased stress, decreased quality of life, and elevated blood pressure. The property value will be negatively affected as has been reported in many areas near pig farms. This issue cannot be solely about water contamination. The odor alone could keep customers from local business such as our small dairy. There is too much talk about how to make corrective actions – you must be expecting a lot of problems: ground water pollution, lagoon seepage, and many other contamination problems. Where is all the water supposed to come from? Utah is the 2nd driest state in the nation.

DWQ Response:

Some examples of why DWQ believes that provided articles are not relevant to this permit are as follows. There is not a perennial water body within at least a one-mile radius of the study area that would be impacted by a potential spill. The proposed facility location is at an area of upward groundwater flow resulting in historically artesian wells or "flowing wells" in the area. In conjunction with historical water level, flow direction, water table, and water quality information through published reports and journal

articles, this location is not expected to contribute groundwater flow to adjacent neighbors. In addition, an area of significant concern is the Clear Lake Wildlife Refuge Area to the west. However, regional and local water table contours indicate groundwater flow potentially away from the Refuge to the East, toward the permitted location or a northerly flow toward Mud Lake in the basaltic aquifer. While the extremely limited groundwater wells in “the Cinders” volcanic area to the west increase the uncertainty of where groundwater is transported, several of the stated journal articles, reports, and other publications of the area suggest that the geochemistry of Clear Lake water is not consistent with that of the proposed farm area. Therefore, potential containment spills are not expected to directly affect regional waterbodies or neighboring residences. However, DWQ has agreed to collect water quality samples at Clear Lake prior to construction of the containment basins and periodically afterward.

DWQ also has a number of ground water permits with Smithfield, the parent company of the Christensen Sow Farm, and has not had incident with culpability. In fact, Smithfield has utilized management practices that are often more restrictive than those required under operating permits. For example, Smithfield conducts extensive geophysical tests on FML containment and uses 60-mil HDPE liners, which are often above construction specifications required under the permit. Therefore, based on prior experience and regulatory advisement, it is unlikely that denial of responsibility will occur.

Unlike Illinois, North Carolina, Pennsylvania, and other locations provided in the articles, the Division of Water Quality under the Utah Department of Environmental Quality administers all groundwater discharge and construction permits and does not have the conflict of interest that the Department of Agriculture or other agencies may have as evidenced in the various articles.

DWQ has evaluated the Christensen Sow Farm facility and design specifications, which are in compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5. In addition, the facility shall be maintained and operated in accordance with conditions set forth in the permit and the Utah Administrative Rules for Ground Water Quality Protection (R317-6).

The Best available Technology (BAT) monitoring has been implemented in the construction design plans and specifications including, vertical freeboard, spill containment, a tile-drain collection system, and regular monitoring of water quality.

Permit action:

As described in the permit, construction specifications, including best available technology monitoring, spill containment will be implemented.

DWQ response to issues concerning pollution to groundwater.

Summarized Comments (UIC groundwater injection)

I am a resident of the Pahvant Valley. I have a residence between 3-4 miles from the proposed swine farm operation. We have other people in the valley who are putting up sprinkler pivots and I hear that they might inject creek water in the ground which in turn could affect our culinary wells.

Summarized Comments (groundwater)

I am told they will be doing the open lagoon system. We are all on well water in our community. I have read numerous reports and stories of water contamination due to these large pig farms. I understand they will only monitor the wells twice a year. We have the best water and I don't think the risk to aquifers is something we should take lightly.

We are told that this will not contaminate our water supplies, but have found information that shows this

is something that is a legitimate concern.

I have a family with small children. Therefore I am very concerned about the future quality of our aquifer. How is the quality of our underground water going to be protected from the pig farm or other sources?

I wonder if proponents of the plan have thought of contingency plans if the sewage ponds wear through from pressure against the volcanic rock layer that will be underneath the pond plastic. Such leakage of pig waste water will drain into the water tables below and contaminate the ground water and/or surrounding wells in Flowell. Also, there is the consideration that there are a lot of lava tunnels in the area near the pig farm which could siphon contaminated water from the sewage ponds to pollute other areas. People were told that the ponds are checked twice a year. what happens if there is leakage into the water system between times? Another question is how much water will be required to send the sewage from the pig pens into the containment ponds?

Also, how will the pig sewage that will be used for fertilizer affect the eco system of the soil, when the sewage is contaminated with antibiotics fed to the pigs, as well as other chemicals they use on them and in their feed? What effect will the sewage have upon the ground water when the irrigation water carries it down into the ground? What of possible contamination with pig feces if the sewage ponds overflow for whatever reason? It has happened at other retainment ponds around the nation at other pig farm sites. Will this contaminate local Flowell springs and home wells in the area? There could be possible contamination with polluted water drainage going into the many underground lava tunnels which are in the area of the pig farm, with possible drainage going into lower aquifers that drain into the Clear Lake bird refuge at Pahvant only a few miles away.

We are residents of Millard County Utah, and would like to voice our concerns about a large Pig Farm that is currently trying to move into our area. We are very concerned about the impact this could have on our water. We are told that this will not contaminate our water supplies, but have found information that shows this is something that is a legitimate concern.

We are residents of Millard County Utah, and would like to voice our concerns about a large Pig Farm that is currently trying to move into our area. We are very concerned about the impact this could have on our water. We are told that this will not contaminate our water supplies, but have found information that shows this is something that is a legitimate concern.

We also have great concern for the quantity of animals and their waste. What the impact if any, will be on our air and ground water after the huge quantity will be used in near by farm land as fertilizer. Also, carcass processing is in question. How many animals will be buried in the ground on this property? We can't seem to get a straight answer as to the disposal of animals.

Will the collected excrement be sprayed as a fertilizer on area farms? Clear Lake and the birds and fish there will be contaminated and polluted.

The meeting seemed to be about where the pig farm water would come from. I'm not concerned about what goes INTO the farm, its 's the waste product that will be produced by 8800 pigs, ie excrement, urine, blood, and decomposed material from dead animals etc. and the impact that this will all have on our own (and our neighbors) water, ground, air and peace and well being.

I am not at all confident that the containment pool will hold up and keep from contaminating the surrounding ground water. What happens to the contents of this collection pool when it gets full??

I appreciate this opportunity to voice our concerns about the water concerns. Do we have the standards in place for CAFOSs to be properly monitored if the untreated waste does pollute ground and surface water? What are these methods?

I'm worried what the plan is to take care of the leakage of the Lagoon? Please stop this permit.

We live about 3.5 miles from the proposed site. I am concerned about how this might effect my well if the lagoon leaks. I would propose that they double line the lagoon so to make shure it doesn't leak.

If they spray 4 million gallons of waste on the fields won't it leach into the Ground Water?

Fragile aquatic and fowl life in the proposed area northwest of Flowell Utah.. There are no "adequate" measures that can be taken to prevent water contamination. ABSOLUTELY NONE! No guarantee can call back lost pristine areas when the so call "guarantee" fails. Past experience in several areas is proof of that

- *26 CAFO-related nuisance cases, filed in 2013 by 500 CAFO neighbors in Eastern North Carolina*
- *North Carolina Environmental Justice Network.*
- *The CAFO Industry's Impact on the Environment and Public Health ...*

Pristine water even more precious. Chris, you said that the location N. W. of Flowell was "pretty good". That statement is completely unnerving. "Pretty good" is no where near good enough. You also said that there were "appropriate" measures in place if water purity suffers. With "potential remedial" procedures to be implemented. There is not one single part of these vague comments that is reassuring.

A hog farm will take precious water from clear lake and pollute our aquafer. Keep the hogs and commerical hog industry away from our water.

I would like to share a few things to add to the comments. The informational part of the meeting was well done, and according to the information provided, it looked like the pig farm was in a good location as far as the water. However, I am concerned that they may not have done enough in-depth studies concerning the geology of the area. I spend a lot of time out exploring the area around there and there is a lot more to the area than meets the eye. I believe there could be a lot of things going on in the ground that need to be considered. We have hot springs off to the South about 12 miles away, ice caves appr. 3 miles away, and ice springs. Most people know of the lava tubes over by Tabernacle, but they are all over in the Devil's Kitchen area as well. There are lots of hollow areas that you can hear and see, some you can climb into. I have been in one that is about 3 miles from the CAFO site. As I mentioned, last night I have seen areas where air was blowing up out of the ground. One of these places is about 4 miles from the proposed CAFO site. I ran into a sheep herder about a month ago that mentioned he saw a place that had steam or smoking coming out of the ground. (Unknown which, because of the difference in language.) There are faults that radiate off of Sugar Loaf which may effect the geology of the proposed pig site as well. I am very concerned that this could effect Clear Lake's water should a spill or some other type of accident occur. There are two separate places the locals call Hell's Hole, one looks to go straight down and you can't hear a rock hit bottom, the other looks to be a closed off cave that goes to who knows where. Under the volcanic layer, in some areas there is a more porous softer looking rock that would probably be prime for water to seep through. From the geology that I have seen, I would hope they have done or will do some extensive studies before allowing the farm to go in at that location. I am worried for the health of my community, should the wells become polluted. I am concerned about Clear Lake becoming polluted. And it has been very, very dry already, as the man stated last night. I grew up on a farm, and am for agriculture and would like to see people succeed. Farmers have a tough time already, and I hate to put up road blocks for anyone, but this proposed

CAFO really does scare me. I know the Christen's and Smithfields have put a lot of work into this project already, but I would really like to see that our community will be okay in the years to come. I have a video of the air coming out of the ground if you need it. Please let me know if you receive this email. Thank you so much for everything! .

I would like to also add another comment. One of my neighbors suggested they have them double line the lagoon. I thought that sounded like a good idea, because if they were to err, it would be better to do it on the side of safety.

Water contamination is a possibility and I feel it should be placed farther away from homes.

any possible pollution from the hog farm could affect the aquifer and everyone and everything that depends on it. Large holding ponds are proposed to store millions of gallons of waste water on the farm.

Then the effluent leftover, your graphics didn't show much going west. My opinion is it will end up at Clear Lake, and I'm very concerned about the water quality there.

And with an increased nutrient load in our aquifer, what happens to me is as a water fowl manager is it increases algae on top of the water, and it clouds water. Hence the name Clear Lake, it's beautiful, clean water. When you put too much nutrients in it, there's an algae that will grow across the top and shades it.

So I have a hard time just agreeing to take my water, more water out of the aquifer, contaminating it, putting it back in the aquifer, sending it to the west... it's ok. And then it's going to be polluted once it comes out of Clear Lake. It's going to be in worse condition. And I'm just extremely concerned about that. That the compliance it's just not going to end once it passes the hog farm. That water's going to continue out there. It's going to go wherever it's easiest. And so I'm extremely concerned about that

... and it's going to be put back in your aquifer. It's going to mix around and it's a real concern.

I have a lot of questions about what happens in a, in the aquifer, in a, say the water here. Um, how that's going to affect he, the purification of our groundwater. I'm really concerned about things leaking into it eventually.

I don't want to repeat everything that's been said. I know that I'm going to forget what else I wanted to. Just very concerning this close to our bird refuge and our drinking water. There are people that live in, in uh, Flowell for generations and this is their water. I understand Fillmore, we have spring water. WE don't really-our concern with the wells. But it's their water. They're in the, this country.

I appreciate your presentation. Was very well done, but to us that's a lot of water and nothing's out of percent certain that I'm not an expert on hog farms, but that's the closest one I know of to other residences and major groundwater and groundwater fed wetland. And I guess, uh, you know, if we're going to be wrong, this might not be the place you want to be wrong. Uh, threat of water issues and we appreciate you guys coming down.

...you cannot guarantee that there won't be contamination. Clear Lake is already a problem with far as far as water, our, our fowl, the things that were said,...

First of all I think tests done in 1967 are outdated. They do not apply to conditions now! I feel another test should be done. Not a walk around...lets look and see test. The amount of water and the direction of

the flow changes over time. Water in Fillmore used to be plentiful but the past 2 years we have been rationed our irrigation water. What happened when and if the pig farm runs out of water? Where do they get more water?

The study fo the aquifer in the Pahvant Valley was done in 1967 as it was stated in the public hearing on Sept 13, 2018 in Fillmore UT. If there is water quality issues at the proposed pig farm the department would use “the best available technology” to address the issues. I feel that there needs to be another updated study on the aquifer using the “best available technology” using radar and computers to reevaluate the aquifer and the way the water flows. Then have another public hearing to review the results.

I would propose a environmental impact study for all the ecosystems in this area (especially in the clear lake area) to see what impact they would have on them.

As stated in the public hearing there has been and is ongoing water leaking in the lagoons at the hog farm in Millford UT. There is many residential wells within a five mile radius of the proposed site. Our well is between 4-5 miles from the site. I am afraid that there may be contamination to our wells in this area.

DWQ Response:

DWQ has evaluated the Christensen Sow Farm construction specifications and a construction permit is being issued concurrently with the discharge permit. In addition, the facility shall be maintained and operated in accordance with conditions set forth in the permit and the Utah Administrative Rules for Ground Water Quality Protection (R317-6). No ground water injection is authorized under this permit.

The Best available Technology (BAT) monitoring has been implemented in the construction design plans and specifications including, a 60-mil HDPE FML for containment, compacted sub-base material, a tile-drain collection system, pumping of fluid in sumps back into containment, a 2-foot vertical freeboard of the lagoon to prohibit overflow, and spill containment of all conveyance and storage structures. DWQ has discussed with the permittee to optimize site locations for the containment lagoon within the site that would have more soil material and be deeper to the basalt aquifer, underlain by clay stratigraphy for additional containment similar to a double-lined system, and elevated from historically flooded areas within “the Sinks”.

Tile-drain sumps will be monitored every other day during the startup period and then weekly throughout the life of the permit. When the fluid in the sump reaches 3 feet, the specific conductance (SC) will be evaluated and compared to the containment basin, and the fluid pumped back into the containment basin. If the SC of the sump fluid is greater than 50% of the containment basin SC, laboratory analysis of the fluid in the sumps will be required and reported to DWQ. While the study area is initially classified as Class II to Class III ground water due to total dissolved solids (TDS), the Interim Ground Water Protection Levels imposed in the permit are 25% of the Ground Water Quality Standard, implemented to avoid degradation of existing ground water quality. In addition, if parameters exceed groundwater protection levels, immediate resampling and then accelerated sampling will occur and a source contamination assessment will commence to identify the extent of contamination and evaluate remedial actions to restore groundwater quality. Any substantial change to the permit conditions, will require public notice, a 30 day public comment period and potentially a public hearing.

DWQ has evaluated ground water flow conditions and regional geology from published reports, documents, and journal articles. The proposed construction site is located in a ground water discharge zone with an upward gradient (Snyder, 1998) and reports from the owner indicate that during high

precipitation years, ponding throughout the site will remain for several years. This indicates there is at least a limited connection with subsurface ground water and more likely artesian flow with ground water rising to the surface in this area. Ground water flow is generally to the west at the site, away from neighboring residential well locations. Limited monitoring wells and geologic studies of the basalt aquifer have suggested potential ground water flow to the west toward Clear Lake (Mower, 1967) while others have indicated northerly flow toward Mud Lake (Holmes and Thiros, 1990). Mower (1967) states that a large part of the water discharged from Clear Lake Springs is derived from Kanosh District with recharge influence from Pahvant Valley artesian aquifers. In addition, ground water quality from Kanosh is consistent with Clear Lake Springs ground water quality while Pahvant Valley quality is much less. Since basalt does not contribute readily available ions such as sodium and chloride, there is no reason to believe that the volcanics are causing a significant change in water quality across the basalt field from Pahvant Valley.

Holmes, W.F. and Thiros, S.A. (1990) Ground-water Hydrology of Pahvant Valley and Adjacent Areas, Utah. Utah Department of Natural Resources, Technical Publication No. 98. Retrieved from <https://waterrights.utah.gov/docSys/v920/y920/y9200006.pdf>

Mower, R.W. (1967) Causes of Fluctuations in the Rate of Discharge of Clear Lake Springs Millard County, Utah. U.S. Geological Survey, Water Supply Paper 1839-E. Retrieved from <https://pubs.usgs.gov/wsp/1839e/report.pdf>

Snyder, N.P. (1998) Map of Recharge and Discharge Areas for the Principal Basin-Fill Aquifer System Sevier Desert, Millard County, Utah. Map 175 Utah Geological Survey. Retrieved from <https://ugspub.nr.utah.gov/publications/maps/m-175.pdf>

Permit action:

Monitor sump water quality in terms of ground water protection levels outlined in Permit UGW270011, Part IIC through compliance monitoring.

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