October 24, 2016

Wayne Krafft
Waste 2 Resources Eastern Regional Office Section Manager
4601 N Monroe Street, WA 99205
Email: akra461@ecy.wa.gov

RE: Permit BT 9902. Fire Mountain Farms (FMF) Application to spread sewage sludge on the Lincoln County Gary Rosman Farm. (1)

To Mr. Krafft:

The Washington State Chapter of Sierra Club takes this opportunity to comment on the Environmental Assessment and other pertinent documents relative to the Fire Mountain Farms (FMF) application to spread sewage sludge, a.k.a. biosolids, on the Rosman wheat and forested farm in Lincoln County WA. We have attached a science-based document with over 160 citations prepared for testimony in Pennsylvania by Professor Emeritus Caroline Snyder, one of the nation's experts on the subject of land applying sewage sludge (Attachment 1) as well as additional citations (Attachment 2).

The Sierra Club based on years of careful study and scientific evidence, adopted this language in its most recent Food and Agriculture policy:

The Sierra Club opposes the use of contaminated toxics-containing or pathogen-containing waste as a compost ingredient and the application of municipal sewage sludge as a fertilizer. (2)

We have the following concerns:

- ***Potential impacts to neighboring certified organic growers' fields.*** The Tolstoy Organic Farms and those of Morton and Paige Alexander stand to lose their ability to claim their farm products are organic if sewage sludge particulates or runoff from the Rosman farm reaches those farms, or if the aquifer they share is polluted with the land applied sewage sludge contaminants.

- ***Toxic chemicals and pathogens may be contained in the proposed sewage sludge to be spread.*** Sewage sludge or liquid contains many thousands of contaminants and a range of pathogens, including MRSA. Sewage treatment plants were not designed to treat many contaminants that are in their effluent and often toxic chemicals and other contaminants become adsorbed to or contained in the sewage sludge. Treatment plants can create other synergistic contaminants and antibiotic resistant bacteria and genes. We are concerned that the sludge material will adversely impact farm workers, humans who live nearby, surface water and groundwater, and wildlife. Life downstream of runoff, or humans downwind, can suffer health impacts.

- ***The site owners and adjacent landowners and resource managers may not be fully aware of the impacts of sludge.*** Has Mr. Rosman been fully informed of the soil, aquifer, and crop risks of this sewage sludge? Are the other landowners in the area dependent on the aquifer shared by Mr. Rosman? And since FMF admits to sewage runoff into streams that empty into Lake Roosevelt, are managers of this lake aware of this potential pollutant source? Specifically, we believe that the Bureau of Land Management, the Lake Roosevelt National Park, and the Colville and the Spokane Tribes should be informed of this project, consulted with and asked to comment.

- ***Onsite storage of sludge could lead to air drift and surface water runoff impacts***. The Site Specific Land Application Plan http://www.ecy.wa.gov/programs/swfa/biosolids/pdf/FMFRosmanSSLAP.pdf (Page 6, 5.0) states that there will be *possible storage of the sewage sludge on site.* Onsite storage can lead to drift and runoff problems.

- ***Sampling is inadequate.*** The Plan (Page 76) states that *monitoring only includes nutrients (nitrogen), 9 metals (See Table 3), and total and volatile solids and fecal coliform.* This monitoring plan needs to also include toxic chemicals and pathogens that might be expected at the site.

- ***Industrial wastes will also be allowed to be spread.*** The State's General Permit for Biosolids Management (August 3, 2015) states that *Although the state program does not regulate surface disposal or incineration, the transfer of biosolids from a wastewater treatment plant to an incineration facility or surface disposal site is an activity covered under this permit.* Thus it is not clear where FMF will be getting its wastes. As the documents now read, FMF is allowed to spread industrial wastes in addition to municipal wastes, and maybe other wastes.

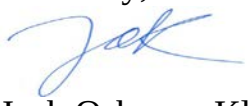
- ***There may be serious odor problems for neighbors.*** FMF states that odor dissipates quickly. Down winders will verify this is not so; that the smell

lingers and is horrible. The particulates of sewage sludge are known to be harmful to health. This concern is further detailed in Attachment 1.

- ***The buffer is inadequate***. The project documents describe a 10-meter buffer. That is a very narrow buffer from streams or abutting properties.

Thank you for consideration of our comments.

Sincerely,



Josh Osborne-Klein
Conservation Chair
Washington State Chapter of Sierra Club

Attachment 1: Written testimony prepared by Caroline Snyder to the Pennsylvania House Democratic Policy Committee regarding HR60 (biosolids policy) *http://www.sludgefacts.org/testimony_to_pa.pdf*

To: PA House Democratic Policy Committee

Re: Public Hearing on sewage sludge

From: Caroline Snyder

Date: August 29, 2016

My name is Caroline Snyder. I am emeritus professor at the Rochester Institute of Technology where I designed, administered, and taught interdisciplinary environmental science courses and chaired the Department of Science, Technology, and Society. In 2001 I founded the nonprofit group, Citizens for Sludge-Free Land.

I appreciate the opportunity to submit written testimony at this public hearing. A re-evaluation of the Commonwealth's biosolids policies is long overdue. HR 60 is a good first step.

Land-applied municipal sewage sludge (biosolids) is a highly complex and unpredictable mixture of biological and chemical pollutants. Most of the 90,000 man-made chemical compounds in commerce today--with 1000 new ones added annually-- end up in sewage, and many of those, concentrate in the resulting biosolids .[107] They include carcinogens, mutagens, neurotoxins, endocrine disrupters, solvents, pharmaceuticals, radioactive waste, leachates from landfills and superfund sites, as well as disease causing and antibiotic resistant pathogens. [52,61,66,79,87, 97,104,] Upgrading and building improved treatment plants that will remove more pollutants from sewage, will cause sludge to become even more contaminated. Biosolids generated in our large industrialized urban centers -- and 84% of land-applied sludge originates in those centers-- is very likely the most pollutant- rich waste mixture of the 21st century.

The US EPA Office of Water (OW) regulates biosolids. The regulations, 40 CFR Part 503, are usually referred to as the 503s. Despite the agency's claim to the contrary, OW also promotes land application. This is a gross conflict of interest. Government agencies should not be in bed with the industries they are supposed to regulate.[82] As a consequence of this industry-government alliance, the 503s are full of loopholes. The most damaging loop hole of all is the so-called "Domestic Sewage Exclusion" which permits every industry connected to a sewer to pipe its hazardous waste into POTWs. A partial list of those pollutants is posted on our webpage.[106] When these hazardous chemicals are mixed with sewage, they become exempt from RCRA's solid and hazardous waste laws. Industries and municipalities benefit from the Domestic Sewage Exclusion in several ways: they can avoid the expense of properly treating pollutants or refrain from piping hazardous waste into POTWs in the first place; and once these two waste streams mix, industries are no longer liable for any damages that might result from this toxic mixture., especially when it is processed and land applied. In an unpublished and un-dated document, titled Gatekeepers*: Who are They? What They think about Us? And What can we do about it?* Bill Toffey, a spokesperson for the biosolids industry and advocate of land application, tells his audience in no uncertain terms how important it is for industries to support the Domestic Sewage Exclusion:

You may have missed the proposed rulemaking to change the reporting requirements for lead as a "persistent and bioaccumulative toxic." The proposal would reduce from 10,000 to 10 the number of pounds annually that an entity can dispose without reporting, and the de minimis lead concentration for reporting would be eliminated. At first reading, it seemed to me that this reporting rule would capture most of Philadelphia's recycling programs. But apparently all other POTWs and we are saved by the fact that the rule doesn't apply to POTWs . This is one case where being a POTW making a fertilizer is preferred to being a manufacture [sic] making a fertilizer; we are in the right SIC code. But this is cold comfort. Some folks in Congress, in the environmental community and in EPA itself believe it is in the public's and environment's best interest to track the lead that is spread on land. Someday they will get us, and we need to be prepared. Fighting changes to the Domestic Sewage Exclusion may haunt us as an example to the environmental community that our claim to being concerned for the environment is a sham.

After ocean dumping was banned, land application increased, as did the reports of serious health, livestock, and environmental damage. The first comprehensive scientific appraisal of the 503s was published in 1999 by internationally renowned soil scientists at the Cornell Waste Management Institute (CWMI) —whose teams have been researching biosolids since the 1970s. Aptly titled *The Case For Caution* the report warns that the 503s do not protect human health, agriculture, or the environment.[23] Around the same time a team assembled by David Lewis-- formerly a senior level EPA research microbiologist-- documented human and animal sicknesses and deaths linked to land application under the 503 rule, the first scientist to do so.[35,36,37,84] Because of increasing concerns about health impacts, the National Academy of Sciences (NAS) was asked to examine the scientific basis of the 503s. Its 2002 report, *Biosolids Applied to Land*, questioned the science and risk assessment models of the rule and urged EPA to implement health studies of neighbors who lived adjacent to sites that had been treated with sludge. NAS panel members had available not only the work of Lewis' team and that of the CWMI, but also a 382 page document put together by sludge activist Helane Shields listing sludge "incidents" that had occurred in virtually every state of the union.[54] Particularly worrisome where the many reports of sicknesses and several deaths.[90] To include published papers that documented these incidents in the scientific literature would hurt the land application program. So industry-friendly NAS panel members deleted all references to David Lewis' papers in the published report, which includes the statement that there is "no documented evidence" that anyone was ever harmed by sludge. In the absence of any credible science that supports land application, industry and government agencies continue to cite the "no documented evidence" claim, making sure the evidence is not documented, or, if it is, to ignore or discredit it. [92]

Yet people are not easily fooled. Every week there are reports of sludge battles, especially in the heavily populated areas of the country where most sludge is produced and spread. Residents who believe they have been or will be harmed are pitted against government and industry officials who assure them that the practice is beneficial and safe. For example during a 2014 Town Meeting in Bell

County Township, Clearfield County PA angry residents demanded an end to sludge spreading in their community because it was making some of them sick. Despite the usual misleading assurances by state officials that biosolids will enrich the soil and improve the overall health of land and animals, residents

wanted the practice stopped. One neighbor who lives close to the permitted site was hospitalized with bronchial spasms when the spreading began. Her doctor said that such spasms, which resemble a heart attack, can be caused by air borne irritants. Other people attending the meeting complained of headaches and nausea. [96]

Government and industry representatives at these meetings usually assure affected residents that their health problems or their contaminated wells were caused by something else. For example, a few years ago, when an astute NH property owner learned that his neighbor uphill was about to use sludge, he decided to have his well water tested before and after the spreading. Not surprisingly, test results taken after the application showed high levels of pathogenic bacteria. After he complained a representative of the sludge company visited his home, looked around, and stated that the well must have become contaminated by his bird feeder!

However when deaths are linked to sludge-exposure, bird feeder explanations do no longer work. Two of those deaths occurred right here in the Commonwealth. The PA DEP and the company that spread the sludge went through extraordinary lengths to cover up the cause of these deaths. For a summary see ***Appendix A***.

Evidence keeps piling up that there is something seriously wrong with the 503s. Why, many people ask, are EPA and USDA--agencies whose mission it is to protect human health, promote sustainable and productive agriculture, and protect the environment—why are these agencies not substantially tightening the current land application rules, or better yet, why are they continuing to spend our tax dollars on a million- dollar Public Acceptance Campaign, when, instead, they should be using those funds to invest in safer and more sustainable alternatives?

One part of the answer is simple. Top managers at EPA's Office of Water and a highly influential agronomist at the USDA wrote the 503s. They decided that it would be acceptable for biosolids to contain hazardous waste, reasoning that small amounts do not matter, that the waste stream is getting cleaner, and that pretreatment of industrial waste is working. None of those assumptions proved to be true. Even very small amounts—parts per trillion-- of some pollutants can harm developing organisms, and instead of getting cleaner, the waste stream is getting more complex and more polluted. Several recent EPA Inspector General Reports, indicate that hundreds of priority pollutants discharged by industry are showing up in effluent and sludge. But the individuals who wrote the rules are still in charge of the nation's biosolids policy and have staked their reputation on the adequacy of the 503s. Apparently no amount of evidence will persuade them that they were wrong. [92]

The other part of the answer is also simple. Not only the sludge brokers who are paid for every ton of sludge they remove from sewage treatment plants, but also --as we explained earlier-- industrial users and municipalities save substantial sums by continuing this inexpensive method of sludge disposal. Communities are learning more about what biosolids are, and what they do when land applied. They are experiencing first- hand the resulting harm to their health,[51,55,68,71,108,109] their drinking water,[12,71,77,99,101] and their animals. [74,79,83,94,105] To counter this new awareness, government agencies and the sludge industry are spending millions to rev up their PR campaign to convince farmers, the media,

legislators, and the public that spreading this incredibly complex contaminated mixture on land is sustainable., beneficial and safe.

A key flaw of the 503s is that they depend on Quantitative Chemical-by-Chemical Risk Assessment (QRA) to assess health and environmental impacts. QRA works for calculating how strong a bridge must be to withstand the weight of daily traffic on a particular highway, but QRA cannot be used to assess the health and environmental impacts of such a complex and unpredictable mixture as land applied sewage sludge. See Appendix ***B***

Instead of calculating health and environmental risks using QRA models, the NAS panel recommended a different approach:

Even if a summary index of an adverse response to mixtures was available, it would not necessarily reflect the total hazards of exposure to biosolids because of the inability to identify all of its hazardous constituents and their potential for interaction in vivo . . . thus it is not possible to conduct a risk assessment for biosolids at this time (or perhaps ever) that will lead to risk-management strategies that will provide adequate health protection without some form of ongoing monitoring and surveillance . . . the degree of uncertainty requires some form of active health and environmental tracking."

A number of the biosolids incidents might have been prevented had there been exposure studies and health and environmental tracking.

Many serious health impacts have been linked to Class B sludge exposure, especially when this material is stockpiled and top dressed rather than incorporated into the soil. Sludge advocates are now promoting a material that is deceptively referred to as Exceptional Quality (EQ) Class A sludge. Many people do not realize that Class A EQ sludge contains just as many persistent toxic chemicals as Class B. When sludge is further processed to reduce indicator pathogens, it turns into Class A. However as the more vulnerable indicators are deactivated, much more robust pathogens survive and evolve. In the absence of microbial competition, they multiply and thrive, especially in in cool and moist climates. Some of the treatment methods prescribed to reduce the level of indicators are not working, so Class A sludge is often Class B sludge or turns into Class B sludge after it is spread or stockpiled. Further processing also appears to encourage the growth of superbugs which explains why many neighbors exposed to sludge contract MRSA infections. The question arises, why, if all of this is true, are industry and government agencies encouraging the production and use of Class A materials?

Again, the answer is simple. Under the current rules, Class A is virtually unregulated. As long as it contains some nitrogen, it can be spread anywhere—including on home vegetable gardens--during any weather, at any time during the year, in any amounts, and does not require public notices, public hearings, or the expense of getting a permit. Also Class A products can be sold in garden centers, often misleadingly labeled. But are they really safe? Consider two incidents. One took place in the summer of 2007 in Milwaukee, where sludge is used to make the Class A product Milorganite. Sewer workers dislodged large amounts of PCBs during a routine sewer cleaning operation. This resulted in thousands of tons of contaminated sludge-- some containing superfund high levels of PCBs—to be spread on dozens of school playgrounds and parks. When the problem finally was discovered, the contaminated

material had to be removed and shipped to out-of-state hazardous waste landfills. The entire incident cost the city millions. [104]

Consider another incident that happened in Shirley MA . In January of 2014 a farmer spread *Earthlife* on his frozen snow-covered field. *Earthlife* is a Class A product made by Casella Organics and fully approved and registered for use in MA, CT, and VT. Three weeks later, after a thaw, residents living next to the field on 15 and 20 Bumpus Road turned on their faucets and out came diluted sewage. Both families got their water from shallow wells. *Earthlife* apparently had leached into the water table and contaminated their wells. I was invited to attend a February 28 meeting of concerned neighbors and provided information and hand-outs. Appealing to the town for help was useless because what the farmer had done was legal under the 503s. Despite conclusive test results that the contamination was caused by *Earthlife ,* the homeowners could not afford litigation. A month went by and I did not hear from the affected home owners. So I contacted them to see how they were doing. During that interval Casella had paid for drilling a bedrock well at one home and had paid for a filtration system for the other family. In return, the home owners were put on a gag order and told never to discuss the case or share test results. Settlements like these explain why many sludge incidents remain unknown or are underreported.

The practice cannot be banned overnight. Something needs to be done with the millions of tons of sludge produced every year. Until more sustainable waste-to-energy technologies are in place to handle this volume, states might want to encourage increasing disposal in well sited subtitle 2 landfills with methane capture for energy and heat. Reclamation of contaminated land may also be an option as long as the site is securely fenced and signed, to prevent another Tony Behun tragedy. It is absolutely crucial that we preserve our dwindling productive farm land for future generations. We must not apply sewage sludge and other industrial waste on the land where we grow our food and forage.

Meanwhile, states, counties, and towns can put in place more protective inexpensive management practices that will at least reduce some of the risks. These would include permanently prohibiting land

application on grazing fields to prevent contamination of meat and dairy products; immediate incorporation of sludge into the soil to prevent pollutants from moving off site; prohibiting stockpiling; permanent pH management to prevent metals and other contaminants from becoming bioavailable; much more protective horizontal and vertical buffers from occupied buildings; and limiting the acreage and frequency of application.

The number of individuals and organizations that oppose land application is growing. There isn't a community in the country that welcomes the arrival of sludge trucks. Many farmers are no longer taken in by the brochures and videos that promise instant savings and high yields from this free mislabeled "natural organic" fertilizer. Over a hundred environmental organizations-- many supporting sustainable farming practices—oppose growing food and forage on biosolids-treated land. Among them are the Sierra Club, the Natural Resources Defense Council, the Rodale Institute, the Institute for Agriculture and Trade Policy, Western Growers, the National Farmers Union, the Food Rights Network, and the

Organic Consumers Association. All of these organizations depend on impartial scientific information to form their policy positions.

In conclusion PA legislators might be interested in the recommendations of Professor Jordan Peccia, Associate Professor of Engineering at Yale University and Professor Paul Westerhoff, Professor at the School of Sustainable Engineering at Arizona State University in their paper titled, ***We Should Expect More out of Our Sewage Sludge:***

The culmination of previous incremental technologies and regulations aimed at solving a current treatment problem, rather than developing the practice for the higher goals of sustainability have resulted in sludge becoming an economic and social liability. Sludge management practice must shift from treatment of a liability toward recovery of the embedded energy and chemical assets, while continuing to protect the environment and human health. This shift will require new research, treatment technologies and infrastructure and must be guided by the application of green engineering principles to ensure economic, social and environmental sustainability.[103]

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Appendix A

For land application to continue under the current policies, it was essential for the Pennsylvania Department of Environmental Protection (PA DEP) to deny that sludge might have caused the death of a Pennsylvania child. Len Martin compiled a chronological and detailed account of how, for almost two years, the PA DEP went to extraordinary lengths to hide the circumstances of Tony Behun's death.

In October 1994, 11-year old Tony had ridden his dirt bike through sludge that had been applied to a reclaimed mining site. The child developed headache, sore throat, furuncles on one leg and arm, difficulty breathing, and a high fever. On October 21, a week after he had been exposed to sludge, Tony died of staphylococcal septicemia. In 1999, Tony's mother, who had heard that sludge was causing health problems in other parts of the country, sought answers from the state about her son's mysterious death. The PA DEP repeatedly and publicly denied that there was any connection between sludge exposure and her son's death. According to public statements made by the agency and the company that had spread the sludge, Tony's death resulted from a bacterial infection caused by a bee sting, and sewage sludge had not been applied on the mining site. In May 2000, PA DEP secretary, James Seif, drafted a report claiming that both the National Institute of Occupational Safety and Health (NIOSH) and the state health department had investigated the case thoroughly and ruled out sludge as the cause or contributing factor of Tony's death. Every one of the above-cited claims proved to be false. The DEP was forced to retract the fabricated bee-sting story; truck weigh slips indicated that about 5,600 wet tons of sludge had been spread on the site next to the child's home; and on August 7, 2000, the PA Department of Health sent a letter to State Representative Camille George confirming that the department "in fact, did not conduct an investigation into Tony Behun's death." NIOSH also stated that it "had no involvement [in the case] because "our agency only investigates workers' health complaints." Subsequent public testimony by EPA's Robert Bastian about this case illustrates how EPA and the state agencies responsible for land-application policies work together to misrepresent facts to cover up incidents. On March 13, 2001, Bastian presented Seif's false report to the NAS panel that was seeking input about alleged health incidents linked to sludge-exposure. Bastian assured the panel that "the findings of [PA] state and local health officials have indicated that the Pennsylvania death was not attributable to biosolids".

Appendix B

Quantitative Risk Assessment Risk models are one tool used by industry and agencies to help determine whether or not a product or practice is reasonably safe. It is not a very reliable tool, because it is based on assumptions that can vary from assessor to assessor. For example, when a group of assessments for one chemical in one medium can yield such different results, how can it be a reliable tool to identify the various environmental and health risks from such a complex and unpredictable mixture as sewage sludge, spread on complex terrestrial ecosystems, affecting a variety of living organisms with varying susceptibility to infections? With so many unknowns, with stressors that have not even been identified, much less characterized, for which we do not yet know all the modes of action, and all the various potential synergistic interactions between chemicals and chemicals and pathogens, which we are just beginning to identify, any quantitative risk assessment will be an exercise in futility. The more complex a system, the more the uncertainties and the variables, the more unreliable are mathematical models used to assess risks.

Land application of sludge is wrought with uncertainties. Experts estimate that sludge generated in industrialized urban centers and most land applied sludge is generated in these areas—contains not only pathogens and toxic metals, but thousands of anthropogenic chemical compounds for which there are not even basic toxicity data. Many known unregulated sludge pollutants are carcinogenic, persistent, and/ or toxic; endocrine disrupting chemicals can damage living organisms in parts per trillion. Pathogens are evolving and becoming more virulent. Only a very few E.coli 0157:H7 bacteria, as little as ten, can cause life threateningdisease.Makingitimpossibletodeterminewhatpathogenlevelinsludgeissafe, especially since people's susceptibilities to infectious agents differ and they are exposed to other stressors from other sources. QRA is not suitable for mixture toxicity, for interactions between EPA scientists used four accepted models to calculate the cancer risk posed by trichloethylene in components in a complex mixture. With sludge, this cannot be done. Depending on risk assessment alone will never explain why sludge exposed people are getting sick.

Snyder

Attachment 2: Partial List of Toxic Chemicals Industries Can Legally Discharge Into Sewage Treatment Plants *from http: www.sludgefacts.org125.pdf*

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