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*Via email to peter.lyon@ecy.wa.gov*

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360-407-6381

Re: Comments on Fire Mountain Farms, Inc.'s proposal for a new biosolids land application site near Yelm, WA

Mr. Lyon,

Please consider these comments and the associated materials, which the Ziontz Chestnut law firm submits on behalf of the non-profit organization Preserve the Commons and the private individual Ed Kenney. Preserve the Commons (PTC) is an unincorporated group of local citizens who are opposed to the proposed biosolids application. Mr. Kenney is a retired schoolteacher who has advocated for protection of water quality, salmon, steelhead, and native ecosystems in the Nisqually River and surrounding area for decades, and resides in a cabin near the Nisqually River in the vicinity of the proposed biosolids application site.

The permit amendment request submitted by Fire Mountain Farms, Inc. (Fire Mountain) fails to comply with applicable biosolids regulations and the associated SEPA checklist is incomplete. Both documents contain sparse detail and appear to be templates not adequately applied to local context. PTC and Mr. Kenney respectfully request that the Department of Ecology (Ecology) deny the permit amendment application and withdraw the proposed determination of non-significance (DNS). If the permitting process moves forward, an environmental impact statement with full evaluation of alternatives must be prepared.

The deficiencies in the permit application and SEPA review are particularly troubling because the contamination from the proposed application poses severe risks to native ecosystems and human health. The application area consists of 265 acres adjacent to Yelm Ditch and Wheeler Creek. These waters flow into Yelm Creek and the Nisqually River, which flows into a wildlife refuge that provides the best estuarine salmon rearing habitat in Puget Sound. The Nisqually hosts a designated gene bank of wild Puget Sound steelhead, which are listed as threatened under the Federal Endangered Species list, threatened runs of Chinook salmon, a threatened population of bull trout, and populations of chum, coho, and pink salmon. Chinook from the Nisqually are

Comments re proposal by Fire Mountain Farms, Inc.  
February 13, 2019

an important food source for the imperiled population of resident Puget Sound orcas. In addition to water quality, fish, and orca concerns, the site is hydrologically connected to groundwater that supplies local groundwater supplies and the City of Yelm's drinking water supply. Long-term damage to the City's aquifer would cause incalculable financial hardship. The proposal is deeply unpopular, and highly controversial, with the local community.

This comment first explains why the permit application should be denied, and then explains why the SEPA DNS must be withdrawn.

### **Permit Criteria**

The regulations for biosolids application are found at Chapter 173-308 of the Washington Administrative Code. The permit application fails to meet many provisions of that Chapter.

### *Compliance*

The permit application repeatedly makes broad promises to comply with applicable law. The history of Fire Mountain dictates that Ecology must take a more proactive approach to ensure compliance with biosolids regulations.

Administrative records at the Pollution Control Hearings Board (PCHB) indicate that the applicant, Fire Mountain, has violated Ecology's biosolids regulations in past applications. These violations are cause for great concern, particularly because Fire Mountain's response was not to come into compliance, but rather to aggressively push for rule changes and to continue application to contaminated areas. In 2015, Ecology fined Fire Mountain for mixing industrial waste in biosolids prior to application. *See* PCHB No. P14-109c. Rather than comply, Fire Mountain attempted to register the dangerous waste as a fertilizer. *See* PCHB No. P16-302. After failing in that attempt, Fire Mountain attempted to resume spreading biosolids over the same areas already found to be contaminated by its industrial waste. *See* PCHB No. P16-050. Fire Mountain's repeated violations and attempt to skirt regulations indicate that the company cannot comply with WAC 173-308-090, which requires any person who prepares biosolids to ensure compliance with Ecology regulations and the permit, and WAC 173-308-110, which requires any person who applies biosolids to comply with Ecology regulations and the permit.

Given Fire Mountain's history, the commenters request that Ecology require as a condition of the permit regular testing of the proposed biosolids prior to application, as well as testing of soil where the biosolids are applied and groundwater sampling. This testing and monitoring should occur at least bi-monthly, and the data from these regular tests must be made easily available to the public. The biosolids monitoring regulations, found at WAC 173-308-150, reference the tables provided as the "minimum frequency," WAC 173-308-150(3), which allows for greater frequency when appropriate based on the site vulnerability and the prior violations of the applicator.

### *Protecting Waters of the State*

The proposed application poses grave risk of contaminating both surface and groundwaters. Biosolids contain myriad harmful substances, including: dozens of different chemicals derived

from detergents, fragrances, and pharmaceuticals, that are collectively referred to as “contaminants of emerging concern,”<sup>1</sup> polybrominated diphenyl ethers (PBDEs) and other dioxins;<sup>2</sup> and biological contaminants such as norovirus.<sup>3</sup> These substances cause significant short and long-term ecological and human health impacts.

Contaminants of emerging concern and dioxins found in biosolids evade treatment in municipal wastewater treatment plants. As such, they tend not to break down in soil, and can be transported by and to water. According to at least one peer-reviewed study of runoff following biosolids application, contaminants in biosolids are transported by runoff and can enter surface waters in dangerous concentrations.<sup>4</sup>

The proposed application site has high risk of direct runoff to surface waters because of its close proximity to Yelm Ditch and Wheeler Creek, which are hydrologically connected to Yelm Creek and the Nisqually River. There is also risk due to frequent precipitation and seasonal standing water that creates connection to surface waters. The region is quite rainy, and application would be allowed year-round absent affirmative objection by Ecology.

While the site is well-drained in many areas (see discussion of groundwater, *infra*), it also contains areas that are functionally marsh, as documented in the soil resources report accompanying the application. For instance, soil type number 76, “Norma silt loam,” features a depth to water table of “about 0 inches,” and “frequent ponding.” Soil type number 120, “Tisch silt loam,” has a depth to water table of “0 to 12 inches” and is “very poorly drained.” According to the surface water and soil maps provided with the application, these soil types are in close proximity to wetlands. Thurston County identifies “hydric soils” on the site, which are those with marshy, wetland conditions, as well as extensive unverified wetlands (see submitted materials). Areas within the site are within documented FEMA flood zones (see submitted materials). It is likely that biosolids distributed on these areas of hydric soils and marshy conditions will pond and not be absorbed, particularly at times of high rains, and instead run off into surrounding waters.

As detailed further below, the site also features strong connectivity between ground and surface waters, including local springs at which groundwater visibly enters the Nisqually River. Contaminants spread on the soil at the application site are likely to enter groundwater, and then indirectly flow to surface waters.

After reaching surrounding surface waters, the contamination would contribute to an already dangerous level of pollution in the Nisqually River that is attributed to septic effluent, and add cumulative harm to vulnerable aquatic ecosystem already bearing the effects of other

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<sup>1</sup> Kinney et al., 2006, Survey of organic wastewater contaminants in biosolids destined for land application. *Environmental Science and Technology*, Vol. 40, No. 23, pp. 7207-7215.

<sup>2</sup> Kim et al., 2017, Review of contamination of sewage sludge and amended soils by polybrominated diphenyl ethers based on meta-analysis. *Environmental Pollution*, Vol. 220 Part B, pp. 763-765 (finding consistent presence of PBDEs in biosolids in varying concentrations across 288 samples).

<sup>3</sup> Viau et al., 2011, Toward a Consensus View on the Infectious Risks Associated with Land Application of Sewage Sludge. *Environmental Science and Technology*, Vol. 45, Issue 13, pp. 5459–5469.

<sup>4</sup> Yang et al., 2012, Steroid hormone runoff from agricultural test plots applied with municipal biosolids. *Environmental Science and Technology*, Vol. 46, No. 5, pp. 2746-2754, doi:10.1021/es203896t.

contamination. Indeed, the Nisqually River, Nisqually Reach, and McCallister Creek exceed water quality standards for fecal coliform, and water and sediments contain contaminants of emerging concern. According to a recent Seattle Times article summarizing an EPA study,

The Nisqually estuary was more contaminated than expected with drugs, including cocaine, Cipro and Zantac. The source of the drugs there was unknown, the researchers reported. However, the Nisqually River, Nisqually Reach and McAllister Creek do not meet water-quality standards for fecal coliform. That makes leaking septic systems a possible source of the drugs.<sup>5</sup>

When present in water and sediments, the chemicals make their way into salmon and cause adverse health effects and death.<sup>6</sup>

Throughout the application, protection for surface waters is deficient and largely left to the discretion of Fire Mountain. The buffers for wetlands and creeks are only 10 meters (approximately 33 feet), and Fire Mountain proposes application in the often very rainy months of March, April, May, and June (App. 4, 3.0). On average, in Yelm there is a greater than 50% chance of precipitation on any given day in March, and more than five inches of rain over the month of March.<sup>7</sup> These extremely wet conditions are not appropriate for spreading contaminated materials near surface waters. Moreover, Fire Mountain seeks presumptive authority to apply biosolids throughout the year, by providing a very short window (7 days) for a busy agency to respond and deny authorization. Furthermore, Fire Mountain suggests that it may use any equipment it desires for application (App. 7.0), which as a practical matter means that the buffers and application rates will be variable and potentially exceeded. Given the relatively crude technology of “big guns” used for spreading biosolids, and Fire Mountain’s spotty compliance record, it appears likely that biosolids will enter the limited buffers. These factors combined suggest few meaningful limitations on the application of biosolids near important surface waters.

In light of the sensitivity and importance of surrounding waters, the limited protections provided for surface water in the application are insufficient. Ecology should explain the methodology for its buffer requirements, impose at least 200-meter buffers around all surface waters, and impose a more restrictive seasonal limit. Biosolids should only be applied in the reliably dry months of July through September. Applications for exceptions should require affirmative approval rather than receive presumptive approval upon lack of response, and made available online so that the public may comment on exceptions. Absent such limits, both the permit analysis and the SEPA analysis must assume that biosolid application will occur year-round, because such application is presumptively allowed.

The project also poses grave risk to groundwater. Under WAC 173-308-190(6), Ecology “may require groundwater monitoring or other conditions” where there is “potential for groundwater contamination.” Potential for groundwater contamination is well-documented at the site. The

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<sup>5</sup> Seattle Times, Drugs found in Puget Sound salmon from tainted wastewater (Feb. 23, 2016). Available at: <https://www.seattletimes.com/seattle-news/environment/drugs-flooding-into-puget-sound-and-its-salmon/>

<sup>6</sup> Seattle Times, Puget Sound salmon do drugs, which may hurt their survival (April 16, 2018). Available at: <https://www.seattletimes.com/seattle-news/puget-sound-salmon-do-drugs-which-may-hurt-their-survival/>

<sup>7</sup> <https://weatherspark.com/y/796/Average-Weather-in-Yelm-Washington-United-States-Year-Round>

USGS report titled “Hydrology and Quality of Ground Water in Northern Thurston County, Washington” documents regional aquifers that are horizontally connected and tend to flow toward the major creeks and rivers. These conditions are generally confirmed in the soil map at the application site, where the major application areas feature sand and gravel soil types that drain quickly and have moderate to high capacity for the most limiting layer to transmit water. See soil types 5, 6, 7, 8, 20, 32, 50. A 2008 report from licensed hydrogeologists at Aspect Consulting included a careful review of groundwater connectivity in the site area based on numerous wells (included with materials submitted with this letter). The study concluded that groundwater exhibits widespread “vertical leakage” into aquifers, and groundwater from the site flows downgradient directly to the Nisqually River (Fig. 3). County maps identify the proposed application site as a “groundwater hazard zone,” which means that there is high risk of flooding from groundwater in the area, resulting from an extremely shallow water table (see map in submitted materials).

Indeed, Thurston County has identified the area as an aquifer recharge zone within its critical areas ordinance (see map in submitted materials). The site consists of Category I, extreme aquifer sensitivity, and Category II, high aquifer sensitivity, classified areas. **The proposed application site is therefore specifically defined under local law as “extremely vulnerable to contamination” or “highly vulnerable to contamination.”** Thurston County Code 24.10.010. With respect to protection of critical aquifer recharge zones, Thurston County Code, 24.10.080, requires that:

Biosolid application and uses shall be regulated by the Washington Department of Ecology and meet all applicable federal and state standards, including chapter 173-308 WAC; and the memorandum of understanding, or similar document, between Thurston County and the Washington Department of Ecology in regard to biosolids and critical areas.

The application and SEPA materials must disclose and provide the referenced memorandum of understanding and comply with its terms. Additionally, Ecology must consider County land use designations of aquifer recharge zones, community well systems, and groundwater hazard zones as evidence that indicates potential for groundwater contamination, WAC 173-308-190(6), and identifies a likely impact that must be considered in the SEPA analysis (see *infra*).

Groundwater concerns are particularly pressing due to the reliance on groundwater in the surrounding area for both human health and ecological services. As recognized in Thurston County Code, 24.10.005, “vital groundwater resources” “serve as the county’s primary potable water source.” If contamination occurs, it is highly likely to enter drinking water. There are multiple wells downgradient from the application area. In addition, the site is in close proximity to the City of Yelm’s aquifer, and the area concerning Ecology’s recent decision to approve 2,987 new wells in the Nisqually watershed.<sup>8</sup> The multi-faceted watershed plan, negotiated by multiple stakeholders, relies on the continuing capacity for rural development and clean groundwater. The site is also close to several community water systems, identified in a map from the Thurston County geodata tool (submitted in attached materials). Contamination of groundwater would not only have devastating environmental and economic impacts, it would

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<sup>8</sup> <https://fortress.wa.gov/ecy/wrdocs/WaterRights/wrwebpdf/wria11/WRIA11Order-02012019.pdf>

endanger the carefully negotiated benefits for habitat protection and instream flows in the watershed plan. Department of Ecology guidance on critical aquifer recharge area guidance recommends that contamination should be avoided in these areas and local land use designations must be recognized, as “[t]here are all too many examples of groundwater contamination here in Washington...These events have been expensive and distressing” (DOE 2005, at 23).

The groundwater protection plan proposed by Fire Mountain is wholly inadequate in that it entirely fails to disclose the risks discussed above, is overly vague with respect to protections that would be provided, and impermissibly seeks to delay specification of groundwater protection measures until after permit issuance. For example, it relies on a yet-to-be determined number and location of monitoring points and promises not to apply biosolids to soil types that have water table within 36 inches of the surface. The plan provides no basis or justification for the 36-inch limit.

In order to have adequate public notice and review of the application, the water table monitoring points must be identified in the application. The application should also justify, based on contamination infiltration in the applicable soil types, the depth of the water table where biosolid application limits are appropriate. Biosolids should not be allowed in any area where the depth of the water table is less than the distance the likely contaminants can vertically migrate in the typically well-drained soils on the site. Based on this information, in addition to a commitment to ongoing monitoring, the permit application must identify and exclude areas that present an overly great risk of groundwater contamination. In order to correctly evaluate permit issuance criteria and environmental effects, disclosure of this critical information must occur before review by the public and Ecology.

The monitoring described in the application appears to be solely to measure water table, and not designed to detect contamination. Given the great importance of clean groundwater and the high potential for contamination at the proposed site, Fire Mountain must install permanent groundwater monitoring wells in sufficient number and in appropriate locations to detect unanticipated contamination from the proposed application. Similar projects in Washington have included groundwater monitoring and revealed that contamination spreads much deeper and farther into soils and groundwater than anticipated. For example, at an application site at North Ranch, near the town of Union, nitrates and other chemicals correlated with biosolids application were found 160 feet below ground surface following application.<sup>9</sup>

As part of the monitoring requirement at this site, Ecology should impose sufficient monitoring prior to application to form a reliable baseline, public disclosure of monitoring results, and mandatory responses to contamination, including compulsory cessation of biosolids application until existing contamination is resolved and future contamination can be prevented.

#### *Protection of Threatened and Endangered Species*

Biosolids application is not allowed where the application is likely to adversely affect a threatened or endangered species or its critical habitat as listed under Title 232 WAC or section 4

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<sup>9</sup> The commenters request that Ecology identify these and other biosolids areas where contamination has occurred in the SEPA documentation and make public associated monitoring results and studies.

of the Endangered Species Act. WAC 173-308-191. Notably, the regulation prohibits any likely harm to threatened or endangered species or their critical habitat and does not allow for *de minimus* exceptions or mitigation measures.

Issuance of the permit would not only violate State law, it would also likely violate the Federal Endangered Species Act (ESA). The ESA prohibits the “take” of species listed as threatened or endangered on the federal endangered species list. 16 U.S.C. § 1538(a)(1)(B). The ESA defines “take” as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” *Id.* § 1532(19). By regulation, the National Marine Fisheries Service has defined “harm” to include “significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 C.F.R. § 222.102; *Babbitt v. Sweet Home Chapter, Communities for Great Ore.*, 515 U.S. 687 (1995).

Under what is known as the “*Strahan* theory,” a governmental entity may be liable under the ESA for authorizing harm carried out by private third parties. *See Strahan v. Coxe*, 127 F.3d 155, 158, 163 (1st Cir. 1997) (state agency caused takings of the endangered right whale because it “licensed commercial fishing operations to use gillnets and lobster pots in specifically the manner that is likely to result in violation of [the ESA]”), cert. denied, 1998 U.S. LEXIS 7103 (Nov. 2, 1998) (No. 97-1485); *Defenders of Wildlife v. Administrator, Env'tl. Protection Agency*, 882 F.2d 1294, 1300-01 (8th Cir. 1989) (federal agency caused takes of the endangered black-footed ferret through its “decision to register pesticides” even though other persons actually distributed or used the pesticides); *Loggerhead Turtle v. Cty. Council of Volusia Cty.*, 148 F.3d 1231, 1251 (11th Cir. 1998) (finding plaintiffs had standing where they alleged harm from county’s failure to regulate artificial beach lighting, which harmed turtles).

An agency may receive authorization from the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service to issue permits that cause harm to listed species, under ESA Section 10. *See* 16 U.S.C. § 1539(a)(2)(B). For example, Washington State Department of Natural Resources has an incidental take permit for authorization of forest practices that cause likely harm to listed species. Ecology lacks such authorization for the biosolids program.

The ESA authorizes citizen suits “to enjoin any person, including the United States and any other governmental instrumentality or agency (to the extent permitted by the eleventh amendment to the Constitution), who is alleged to be in violation of any provision” of the Act. 16 U.S.C. § 1540(g)(1)(A). Agency officials acting in their official capacity are not protected by the eleventh amendment, and so state agencies are functionally subject to suit. Such suits may result in injunctive relief, civil penalties, and an award of costs and attorneys’ fees.

Fire Mountain’s permit application and SEPA checklist omit any reference to threatened or endangered species. That omission is an error that requires denial of the permit and rescission of the DNS. The Nisqually River is home to three populations listed as threatened or endangered under the Endangered Species Act: Fall Chinook salmon, Puget Sound steelhead, and bull trout. Chinook and bull trout are also State species of concern. The Nisqually is designated critical habitat for Chinook salmon and steelhead downstream of the Alder dam, 50 C.F.R. § 226.212, and also designated critical habitat and an important recovery area for bull trout downstream of La Grande dam, 75 FR 63897. The Nisqually is also a designated Wild Steelhead Gene Bank,

which means that hatchery fish are not introduced and continuation of the stocks is vital to the continued genetic diversity and success of wild steelhead. Wild steelhead are an iconic species—indeed, they are the State fish.<sup>10</sup>

Orca whales are impacted by water quality in the Nisqually River watershed, both directly as the Nisqually flows into Puget Sound, and indirectly based on impacts of contamination to orcas' main food source, Chinook salmon. In March of 2018, Governor Inslee issued an executive order directing state agencies to take immediate actions to help the struggling orca population and establishing the Southern Resident Orca Task Force to develop a long-term plan for recovering orcas. The task force includes nearly 50 members representing a wide range of sectors including state agencies, the legislature, and state, tribal, federal and local governments, as well as private sector and non-profit organizations. The task force winnowed down hundreds of ideas to four main recommendations to save orca whales from extirpation in Puget Sound:

- Increasing the abundance of Chinook salmon
- Decreasing disturbance and other risks posed by vessel traffic and noise
- Reducing exposure to toxic pollutants—for orcas and their prey
- Ensuring adequate funding, information and accountability measures are in place

In setting forth these recommendations, the Task Force cited many studies and reports documenting the impact of toxins found in biosolids on Chinook salmon and ultimately orcas.

As discussed above with respect to water quality, the proposed application is likely to contaminate surface waters with a persistent and harmful cocktail of emerging chemicals. These chemicals are known to harm fish, particularly the highly vulnerable juvenile Chinook. A study published in 2018 by NOAA scientist Dr. James Meador and others found that exposure to contaminants of emerging concern found in wastewater effluent (chemicals also likely to be found in biosolids given the shared source of municipal wastewater treatment facilities) caused metabolic disruption in exposed fish, resulting in likely adverse health effects such as starvation and decreased fitness.<sup>11</sup> These impacts are already occurring, which means that threatened species are especially vulnerable to new sources of contamination. For example, analysis in 2014 and 2015 demonstrated that one-third of juvenile steelhead outmigrating from the Nisqually River contain concentrations of PBDE sufficient to increase disease susceptibility and mortality.<sup>12</sup>

The application proposed by Fire Mountain is directly adjacent to Yelm Ditch and Wheeler Creek and permeates to groundwater that flows to the Nisqually River and its tributaries. Extensive, peer-reviewed scientific literature establish that: a) biosolids contain contaminants of emerging concern; b) these contaminants enter water; c) once in water the contaminants add to already degraded water quality to harm listed species such as Chinook and steelhead. Biosolids

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<sup>10</sup> The submitted summary report by the Salish Sea Marine Survival Project provides a helpful synopsis of current research on impacts to Puget Sound steelhead, including several of the studies referenced in this comment letter.

<sup>11</sup> Meador et al., May 2018, Adverse metabolic effects in fish exposed to contaminants of emerging concern in the field and laboratory. *Environmental Pollution*, Vol. 236, pp. 850-861.

<sup>12</sup> Chen et al., (in press). Nanophyetus salmincola infection and toxic contaminant exposure in outmigrating Steelhead Trout from Puget Sound, Washington: Implications for early marine survival. *Journal of Aquatic Animal Health*.



application at the proposed site is likely to cause contaminants of emerging concern to enter surface and groundwaters that flow into the Nisqually River watershed. Once in the Nisqually River watershed, these contaminants are likely to adversely affect several threatened or endangered species and their critical habitat, including the iconic wild steelhead, Chinook salmon, and resident Puget Sound orcas. **The State's expert Orca Task Force Report specifically identifies "lands where biosolids were applied" as a source of contaminants of emerging concern which imperil orcas and their prey, Chinook salmon.**<sup>13</sup> Because contaminants from biosolids are likely to enter the Nisqually River watershed, and are likely to adversely affect several protected species, the express and non-discretionary prohibition of WAC 173-308-191 mandates denial of Fire Mountain's permit request. If Ecology approves the permit, it would violate both State law and the Federal Endangered Species Act.

The concerns described in this letter potentially extend to other biosolids application sites. The commenters request that, as part of a broader review of the biosolids program, Ecology consult with the State expert agency on wildlife impacts, the Washington Department of Fish and Wildlife, as well as the U.S. Fish and Wildlife Service (bull trout) and National Marine Fisheries Service (orca, Chinook, steelhead) regarding potential liability and permitting under the Federal ESA.

#### *Pathogen Reduction*

Fire Mountain proposes to apply "Class B" biosolids, which are subject to limited treatment. Biosolids are the product of wastewater treatment and pose inherent risk of spread of biological pathogens that pass through the human body. Accordingly, WAC 173-308-170(5)-(7) set forth treatment requirements for Class B biosolids, focused on evaluation of fecal coliform or salmonella sp. as indicators of biological pathogens. The permit application does not specify the treatment mechanism that will occur, but rather simply states that one of the methods in the regulation will be applied (App. 9.3).

The proposed approach focuses solely on fecal coliform. Recent science indicates that this approach fails to account for the significant risks of other biological pathogens. In the study titled "Toward a Consensus View on the Infectious Risks Associated with Land Application of Sewage Sludge," Viau et al. concluded that generally speaking, risks of human infection from salmonella and fecal coliform in biosolids were low:

the inclusion of other emerging pathogens, specifically norovirus, increases this yearly infectious risk by over 2 orders of magnitude. Quantitative microbial risk assessment for biosolids exposure more effectively operates as a tool for analyzing how exposure can be reduced rather than being used to assess "safety". Such analysis demonstrates that the tradition of monitoring pathogen quality by Salmonella spp. and enterovirus content underestimates the infectious risk to the public, and that a rigorous biosolids pathogen treatment process, rather than extending community separation distances, is the most efficient method for reducing pathogen exposure and infectious risk.

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<sup>13</sup> Southern Resident Orca Task Force, reports and recommendations, November 16, 2018. Available at: [https://www.governor.wa.gov/sites/default/files/OrcaTaskForce\\_reportandrecommendations\\_11.16.18.pdf](https://www.governor.wa.gov/sites/default/files/OrcaTaskForce_reportandrecommendations_11.16.18.pdf).

Accordingly, the commenters request that Ecology impose a condition on the permit which requires treatment of all biosolids in a manner sufficient to eliminate norovirus and other biological pathogens in addition to fecal coliform and salmonella.

### *Air Quality*

Air quality is not adequately addressed in the permit application. The application references use of a “big gun” and “spray irrigation” of liquid biosolids. The commenters’ experience is that these methods of application result in large amounts of particulates emitted into the air, and requests that Ecology fully evaluate whether an Air Operating Permit under the Clean Air Act is required.

Air quality concerns are particularly relevant given the nearby presence of at least two chicken farms which produce organic eggs, and residential dwellings. If issued, to avoid trespass to surrounding properties and damage to local farms, the permit should be conditioned to limit aerial application.

### *Manufactured Inerts—Microplastics*

WAC 173-308-205(1) requires that “all biosolids...must be treated by a process such as physical screening or another method to significantly remove manufactured inerts prior to final disposition.” Additionally, “biosolids (including septage) that are land applied...must contain less than one percent by volume recognizable manufactured inerts.” WAC 173-308-205(4).

Biosolids generally contain large volumes of small plastics, referred to as microplastics and nanoplastics. A recent synthesis of literature focused on microplastics in biosolids, titled “An overview of microplastic and nanoplastic pollution in agroecosystems” (Ng et al. 2018),<sup>14</sup> states that “polyethylene, plastic fibres, and polystyrene foam occupied up to 5% w/w in compost from mixed municipal solid waste for all size fractions between 420 µm and 25 mm; with around 0.5 to 0.6% having sizes b2 mm.” Prevailing agronomic rates in the United States suggest maximum potential rate of microplastic inputs from biosolid in the order of 0.5 to 3.2 t·ha<sup>-1</sup>·yr<sup>-1</sup>. This unit measurement equates to 0.2 to 1.3 metric tons per acre per year of plastics present in biosolids (one hectare equals 2.471 acres). Plastics are “manufactured inerts.” Extensive study, widespread publicity dedicated to microplastic contamination in soils and waters, and the ability to eliminate microplastics if desired indicates that microplastics are “recognizable.” WAC 173-308-205(4).

Fire Mountain proposes to apply biosolids at agronomic rates to 265 acres. Given prevailing microplastic concentrations, that means that the **Fire Mountain application would deposit 53 to 344.5 metric tons of plastic per year on the application site.** Plastics take hundreds of years to break down: “projections indicate that the lifetime of polyolefins on land is in the vicinity of hundreds of years.”<sup>15</sup> This means that microplastics not dispersed into surface or

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<sup>14</sup> Ng et al., 2018, An overview of microplastic and nanoplastic pollution in agroecosystems. Science of the Total Environment, Vol. 627, pp. 1377-88.

<sup>15</sup> Ng et al., 2018, An overview of microplastic and nanoplastic pollution in agroecosystems. Science of the Total

groundwaters (with resulting harm to aquatic species), or ingested and adsorbed by grazing cattle, will bioaccumulate on site and quickly add up to tens of thousands of pounds of plastics in just a few years. The plastics are harmful in their own right, and also can transport and degrade into a variety of contaminants. The health effects of microplastics are believed to be detrimental but are still poorly understood. According to Ng et al.:

Classical soil ecotoxicological approaches use isolated organisms and standard substrates, with measures taken for survival, growth, reproduction and avoidance behaviour over a period of days and weeks. Such approaches may not capture the full impact of chemical additives in plastics that act as endocrine disruptors in addition to those which bioaccumulate, where long-term exposure at low doses may alter cell functions or cause DNA damage. Such damage manifests later in life or across generations as the damage accumulates.<sup>16</sup>

In short, the proposed application would put huge amounts of plastic onto the application site, that would likely enter surrounding waters and organisms and cause uncertain long-term impacts to the native ecosystem and human health.

Despite these risks, the Fire Mountain application does not specify any means by which the applicant plans to comply with the requirement to remove manufactured inerts. It is highly likely that the biosolids used will contain large quantities of microplastics and nanoplastics, well in excess of regulatory requirements. As a result the application is deficient and must be denied outright or conditioned to require rigorous screening for microplastics and nanoplastics.

### **State Environmental Policy Act (SEPA)**

SEPA requires that Ecology prepare an environmental impact statement (EIS) for major actions having a probable significant, adverse environmental impact. RCW 43.21C.031. In order to determine whether an EIS is required, Ecology must prepare a threshold determination based on a rigorous review of direct, indirect, and cumulative effects of the proposal. WAC 197-11-330. Impacts likely to be significant include impacts “to environmentally sensitive or special areas, such as loss or destruction of historic, scientific, and cultural resources, parks, prime farmlands, wetlands, wild and scenic rivers, or wilderness,” impacts that “[a]dversely affect endangered or threatened species or their habitat,” actions that “[c]onflict with local, state, or federal laws or requirements for the protection of the environment” and those impacts that “involve unique and unknown risks to the environment, or may affect public health or safety.” WAC 197-11-330(3)(e).

Ecology must make the threshold determination “based upon information reasonably sufficient to evaluate the environmental impact of a proposal,” and may require the applicant to submit more information or conduct independent further analysis if such reasonably sufficient information is not provided by the project proponent. WAC 197-11-335. The reasonably sufficient information requirement is ongoing. The lead agency “shall withdraw” the determination of nonsignificance if “[t]here is significant new information indicating, or on, a

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Environment, Vol. 627, p. 1380.

<sup>16</sup> *Id.* at 1385.

proposal's probable significant adverse environmental impacts" or "[t]he DNS was procured by misrepresentation or lack of material disclosure." WAC 197-11-340(3).

Here, the SEPA checklist is wholly deficient. It fails to disclose many impacts and provides incomplete information throughout. As detailed in the comments pertaining to permit requirements, which are incorporated here by reference and describe impacts that must be considered under SEPA, the proposal poses risk to farmlands and cultural resources (steelhead, salmon, and orcas), adversely affects endangered or threatened species and their habitat (steelhead, Chinook salmon, bull trout, and orcas), violates applicable biosolids regulations, and involves uncertain risks that may affect public health and safety (contaminants of emerging concern and microplastics). As a result, the DNS is not based on adequate information and must be withdrawn. The proposal has an adverse significant environmental impact and an EIS must be prepared.

In addition to those impacts already discussed herein, PTC and Mr. Kenney note the following flaws in the SEPA checklist:

- The checklist references appendices to the Site Specific Land Application Plan which are not actually provided for public review, such as details of impacts to threatened and endangered species ("Appendix 7(D)"), a flood map ("Appendix 2(F)"), and a spill plan ("Appendix 10").
- The application appears to list inaccurate parcel information. Please view the parcel map in the attached materials and compare with the parcels listed in the application. This inaccurate identification obscures environmental impacts and appears to exaggerate the degree to which biosolids would be applied on forest land.
- The checklist fails to disclose cumulative impacts to water quality and aquatic species.
- The checklist fails to identify many environmentally sensitive areas and fails to disclose impacts to them. The checklist, Section 8(h), incorrectly states that Thurston County mapping does not indicate environmentally sensitive areas. As described above and in materials submitted, the area includes aquifer recharge zones, a FEMA flood zone, and groundwater hazard zones. The checklist also incorrectly states that it is not within or in proximity to a flood zone. Please review and reference environmentally sensitive areas identified in maps from the Thurston County geodata system submitted with these comments.
- The checklist fails to acknowledge the nearby Yelm Hydro Project Wildlife Refuge and does not analyze impacts to the refuge.
- The checklist relies on protections in the Site Specific Land Application Plan, which are often not actually disclosed. For example, the protections for groundwater would be determined after permit issuance. A SEPA threshold determination absent thorough understanding of impacts and mitigation is premature and deficient. Without disclosing

planned mitigation, the checklist cannot actually evaluate environmental impacts that are reasonably likely to occur.

- The checklist wholly fails to acknowledge the great deal of uncertainty associated with the impacts of biosolids application. In particular, there is no analysis regarding contaminants of emerging concern or microplastics, which are increasingly well-established but poorly understood concerns regarding biosolids. In the face of such uncertainty, Ecology must either require much more robust analysis from Fire Mountain or conduct its own analysis. WAC 197-11-335.
- The checklist states only that the site is not classified as “highly erodible,” without meaningfully discussing the potential for runoff and erosion.
- The checklist fails to disclose air quality impacts other than cursory description of odor.
- The checklist states that “it is not known” if Yelm Ditch seeps into the Nisqually River, when in fact it is likely that such seepage occurs, and SEPA requires further review in the face of uncertainty. Moreover, the checklist fails to disclose likely discharge to Yelm Ditch, Wheeler Creek, Yelm Creek, associated wetlands, and to the Nisqually River via surface water and groundwater connections.
- The measures described to reduce runoff are vague and entirely non-committal.
- The checklist wholly fails to disclose or evaluate likely impacts to groundwater, and associated impacts to environmental and human health. These deficiencies are glaring in light of the multiple reports on groundwater in the region, the enormous consequences of groundwater contamination, and the established groundwater to surface water connectivity.
- The checklist does not identify nearby wells and critical areas protected under County zoning and comprehensive planning.
- The checklist fails to disclose the presence of threatened and endangered species near the site, and entirely fails to disclose the presence of any aquatic species near the site.
- The checklist imposes no limitations on timing of application, meaning it could occur at night or early mornings. The related noise and other impacts are not disclosed or analyzed.
- The checklist fails to analyze the impacts of application throughout the year, which would be presumptively authorized under the proposed permit application terms.
- Because the checklist must analyze all reasonably foreseeable environmental impacts, it must consider the likelihood that Fire Mountain will violate applicable law with resulting environmental harm.

Comments re proposal by Fire Mountain Farms, Inc.  
February 13, 2019

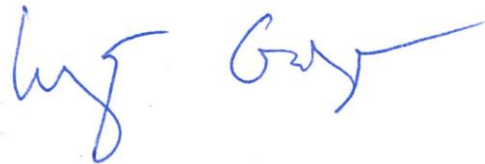
- The checklist wholly fails to analyze the traffic impacts of regular truck traffic and potential spills. Traffic on the limited access roads will impair access to services.
- The checklist entirely fails to disclose impacts of likely contaminants, including contaminants of emerging concern and microplastics and nanoplastics. Simply citing applicable laws does not constitute disclosure of environmental impacts. SEPA imposes a “look before you leap” requirement in addition to existing law.
- The checklist fails to analyze the cumulative effects of contamination over time and in particular, fails to disclose existing contamination of soils and nearby waters.
- The checklist fails to disclose or analyze Fire Mountain’s checkered history of regulatory violations and the impacts likely to occur from future violations.
- The checklist fails to note conflicts with the recommendations of applicable plans to protect and recover wild steelhead, Chinook salmon, and orcas, and fails to analyze the associated environmental impacts.

Based on these deficiencies and the flaws in the permit application, Protect the Commons and Mr. Kenney request that Ecology reject the permit application and withdraw the DNS. If Fire Mountain decides to resubmit a permit application, Ecology must require full disclosure of impacts in the SEPA Checklist and make a determination of significance.

Thank you for your consideration of these comments. If you have any questions regarding the content or wish to be provided with referenced materials, please email [wgolding@ziontchestnut.com](mailto:wgolding@ziontchestnut.com) or call 206-448-7142.

Sincerely,

ZIONTZ CHESTNUT



Wyatt Golding