

MEMORANDUM

TO: Larry Waters, P.E., Wastewater Program Manager
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FROM: Dani Terhaar

DATE: July 8, 2019

SUBJECT: **DMI-258-01 - Groves Country Farms, LLC, Staff Analysis supporting reuse permit issuance.**

Executive Summary

Groves Country Farms, LLC is a gourmet mushroom agricultural facility located near Parma, Idaho. The facility produces a small amount of wastewater, primarily through washing down the grow room and washing hands and utensils. This wastewater contains only minimal amounts of bleach, soap, and dirt. It does not require treatment and for the purpose of this permit is considered to be recycled water. Stored recycled water will be reused to hydrate a small compost pile on site.

Issuance of a *de minimis* reuse permit for a 10-year term is recommended. Staff recommends the facility maintain a compost log demonstrating below regulatory concern (BRC) status. The draft reuse permit requires the owner of Groves Country Farms, LLC to certify annually in writing that the facility operation and conditions upon which the permit was granted have not changed.

1 Introduction

This memorandum satisfies the requirements of the “Recycled Water Rules” (IDAPA 58.01.17.400) for issuing reuse permits. The principal facts and significant questions considered in preparing the draft permit and a summary of the basis for the draft permit conditions are provided.

- Groves Country Farms met with Idaho Department of Environmental Quality (DEQ) to discuss water reuse on February 1, 2019. DEQ provided application materials on February 4, 2019.
- The permit application was received on April 4, 2019, and supplemental materials were received on April 15 and April 25, 2019.
- A Completeness Determination letter providing the effective date of application was issued on May 3, 2019.
- A Preliminary Decision to Prepare a Draft Permit was issued on June 3, 2019.

2 Site Location and Ownership

Groves Country Farms is located $\frac{3}{4}$ mile north of Parma at 29545 Parma Road, west of where Burden Road intersects Parma Road (see Figure 1). A public road (Parma Road) and several farm houses are located east of the site. The reuse site will be a compost pile directly west of the grow room on the dirt lot. Mr. Mason Groves owns Groves Country Farms, LLC, and his grandfather owns the land under the business 4G's Farms Inc. The mailing address is: Mason Groves, Groves Country Mushroom Farm, LLC, 29258 U of I lane, Parma, Idaho 83660.



Figure 1. Groves Country Farms location map, topographic, 20 ft. contours (USGS 2013).

3 Process Description

Groves Country Farms cultivates up to 200 pounds per week of various gourmet mushrooms, including shiitake and oyster, year-round. Mushrooms are pasteurized, colonized, and incubated in a straw bale insulated shipping container. The mushrooms are picked, boxed and refrigerated until they are delivered to local markets.

Water is sourced from an existing on site well (see Figure 2). Less than 100 gallons of recycled water will be produced per week (or up to 5,000 gallons annually) by hydrating sawdust mushroom substrate, washing down the grow room, and washing hands and utensils in the utility sink.

Recycled water is pumped from the sump tank to a sprinkler to spray onto the compost pile for reuse. The sump pump will be operated by a float switch. Piles will be turned as needed with a loader, rotated every six months, and stored onsite for up to one year. Completed compost will be used for the owner's personal use: gardening, agriculture, or possibly sold.

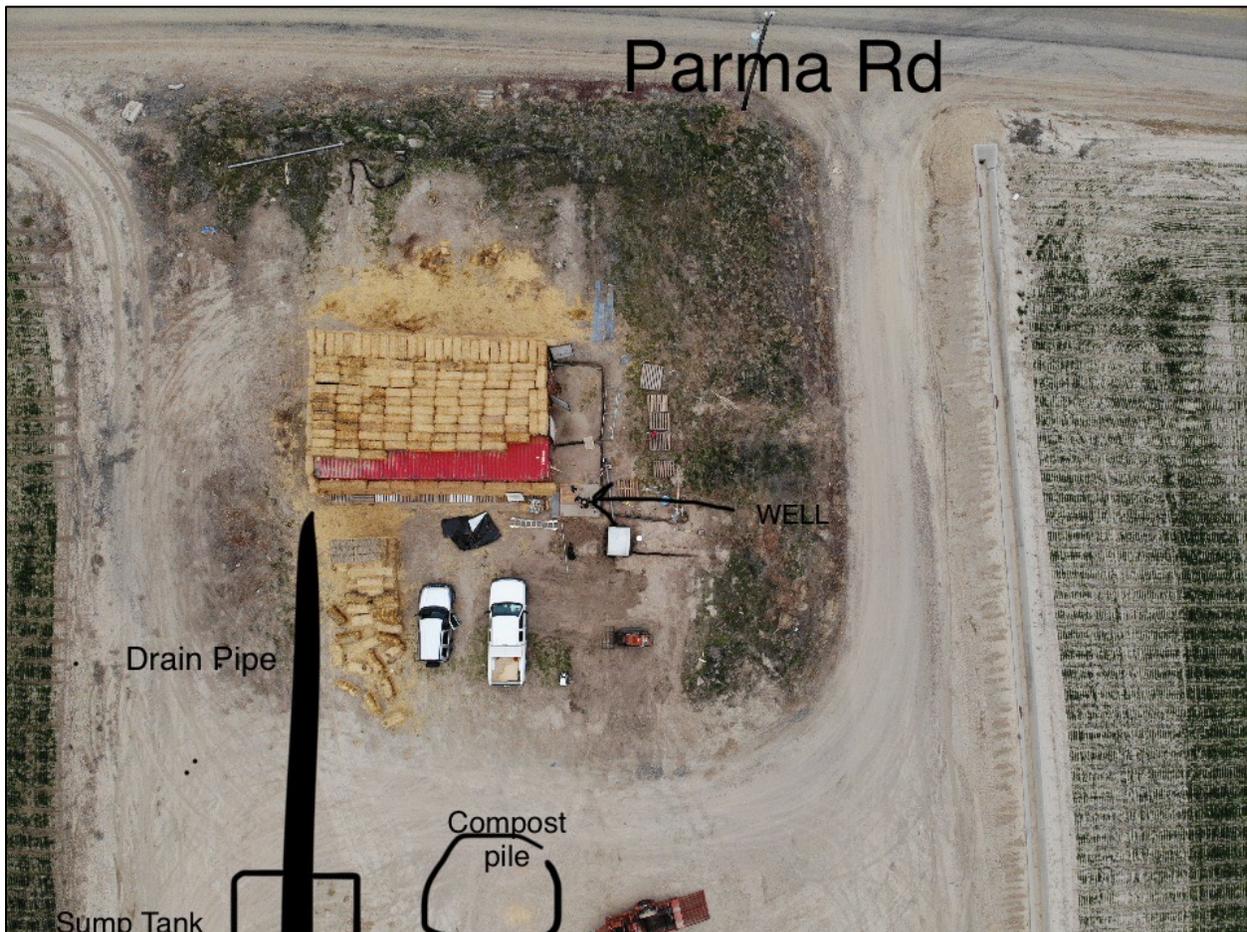


Figure 2. Site map showing straw-bale insulated shipping container (grow room: center), source water well, buried drain pipe leading to buried sump tank (bottom left), composting area (bottom center), surrounding irrigated fields, and public Parma Road (top). North is toward the left of photo.

4 Site Characteristics

4.1 Surface Water

Sand Hollow Creek is located 1.3 miles south west of the site, and the Farmers Cooperative Sebree Canal is 1,300 feet north of the site. An unnamed drain 200 feet east and south of the site flows southwest to Sand Hollow Creek (DEQ 2014). The Facility is approximately 1 mile northwest of the Sand Hollow Creek flood plain (see Figure 3).

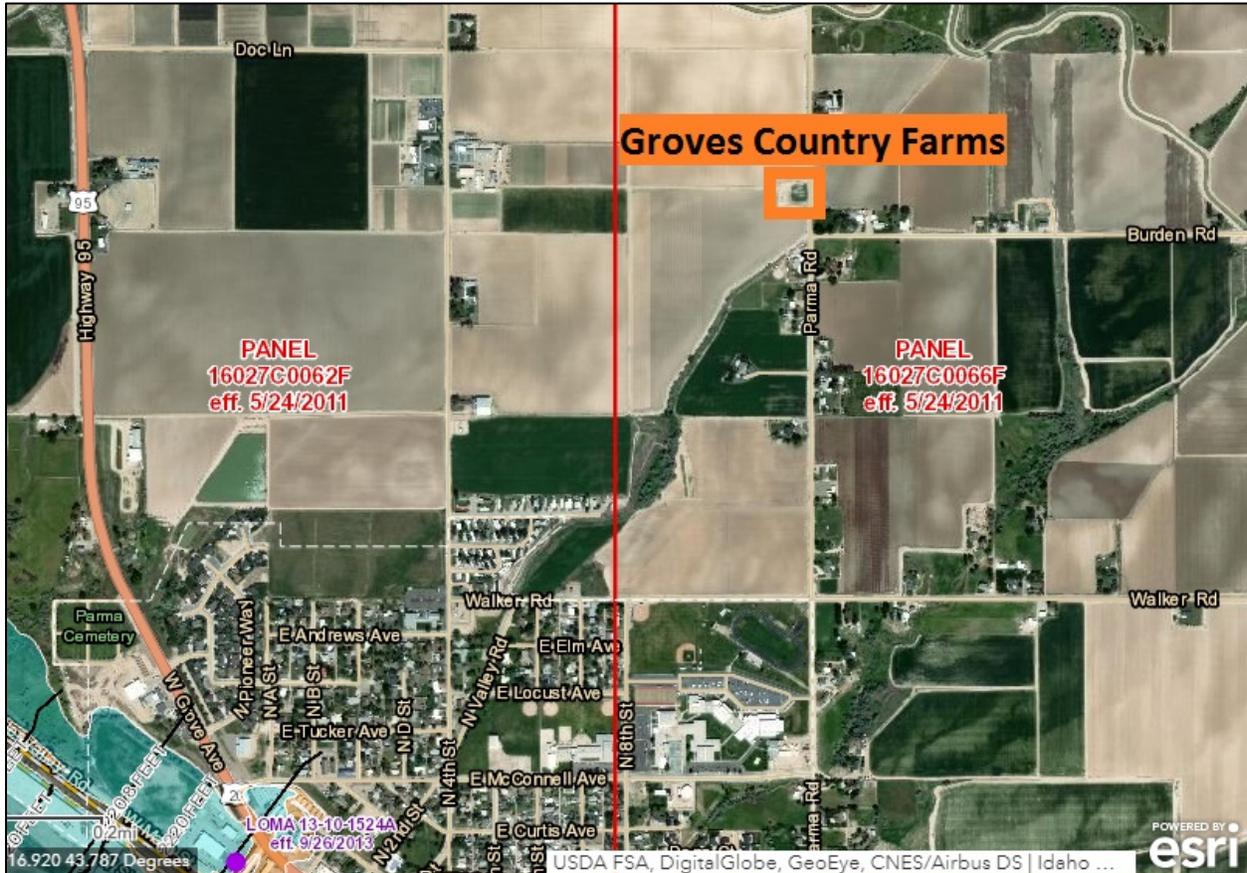


Figure 3. Groves Country Farms is located 1 mile northwest of the Sand Hollow Creek flood plain, which is blue and orange in the bottom left corner (IDWR 2019a).

4.2 Ground Water/Hydrogeology

The source of water used at the Facility is an existing well on the site, owned by Mr. Groves and his family. Well logs and date of construction are not available, and the well is not used for drinking water. The well is 35' deep and the depth to water is 17'. The pump produces 12 gallons per minute.

Regional ground water information was obtained from the Idaho Department of Water Resources Find A Well map (<https://idwr.idaho.gov/wells/find-a-well.html>). The facility is located near the southeastern edge of the Parma Nitrate Priority Area. There are 7 wells within one quarter of a mile of the Facility, which are primarily domestic, and the average depth to ground water is 27'.

Associated well logs show that the average depth to first encountered water was 44' when the wells were constructed, suggesting that groundwater is contained in a confined or partially confined aquifer. There is likely a restrictive layer above groundwater, and therefore a very low potential for reuse water to contact groundwater

4.3 Recycled Water Characterization and Loading Rates

4.3.1 Recycled Water Characterization

The recycled water contains minimal amounts of bleach and dish soap, minimal amounts of organic material from mushroom pieces and sawdust, and some dust and dirt from the floor. The grow room is cleaned with a solution of approximately 1 to 10 bleach to water ratio mixed in a spray bottle, which is hosed off and washed down the floor drain to a buried plastic sump tank for storage. Utensils and hands are washed with soap in the sink which drains into the tank. The water is not used to wash the mushrooms and therefore contains only minimal organic constituents, if any. Furthermore, the recycled water contains small amounts of bleach which somewhat disinfects.

No treatment is required before composting reuse. Standard industrial buffer zones are appropriate. Recycled water is not treated or monitored before being applied to the compost pile for reuse. Thus, any additional uses for recycled water, such as gardening or dust suppression, must be approved by DEQ in writing.

4.3.2 Hydraulic Loading Rates

No crops are grown. Instead the recycled water will be reused to hydrate compost. The Facility intends to utilize all of its recycled water. No excess recycled water application is anticipated.

5 Site Management

5.1 Buffer Zones

Buffer zones for protection of surface water, ground water, drinking water supplies, and the public is required by IDAPA 58.01.17.604. The DEQ Reuse Guidance Manual provides recommended buffer distances for various reuse scenarios (DEQ 2007). For this permit, the following scenario was used in determining buffer distances: *Industrial, residential location, sprinkler application*. A summary of buffer zones is shown in Table 1.

Table 1. Buffer Zones, in feet.

	Guidance Buffer Zone Requirements ^a	Actual Reuse Area
Nearest Inhabited Residence	300	350 (southeast)
Nearest Public Water System	1,000	2,300
Nearest Private Water Supply	500	400 (at nearest residence)
Areas Accessible to Public	50	75 (Parma Road)
Nearest Surface Water	100	1,300 (Farmers Cooperative Sebree Canal)

	Guidance Buffer Zone Requirements^a	Actual Reuse Area
Nearest Irrigation Ditches/Canals	50	50 (unnamed - on adjacent field)
Fencing	Not Required	None
Posting	Not Required	None

a. The DEQ Reuse Guidance Manual provides recommended buffer distances for various reuse scenarios. For this permit, the following scenario was used for determining buffer distances: *Industrial, rural location, sprinkler application*.

As shown in Table 1, all existing buffer zones satisfy the DEQ Guidance buffer requirements except the buffer distance between the reuse site and nearest private water supply. As the recycled water does not contain any harmful chemicals or bacteria (Section 4.6.1), and as recycled water is applied in such low volume (Section 4.6.2), and as the aquifer is likely confined such that groundwater contact is not anticipated (Section 4.5), therefore DEQ recommends that the current distance to existing private water wells of approximately 400 ft. is a sufficient buffer. The buffer zones requirements will be specified in the new permit.

5.2 Runoff

Recycled water will be applied to the compost pile with a sump pump and sprinkler. The operator will stop application if ponding is observed. The operator will add sufficient raw stock material to the compost pile as needed in order to utilize all of the recycled water. Runoff is not anticipated.

5.3 Cropping Plan

Excess recycled water may be used to irrigate landscaping on the facility grounds, but permission must be acquired from DEQ before use. Using recycled water to irrigate crops for human consumption will require additional monitoring requirements and DEQ approval.

5.4 Composting Plan

Approximately 50 cubic yards of compost will be produced annually. According to DEQ Guidance, the facilities producing less than 300 cubic yards are classified as below regulatory concern (BRC: DEQ 2013). All applicable requirements for BRC facilities are contained in IDAPA 58.01.06.010. BRC facilities owners are required to comply with basic operating practices, such as controlling odors and vectors, and need to maintain documentation at the site verifying the BRC status. DEQ staff suggests the facility maintain a log of the following: the date and volume of raw feed stock addition, type of raw feed stock (ex. sawdust spent block or straw), monthly recycled water volume, and the date and volume of finished compost removed from the site.

Composting will be managed in order to utilize all of the recycled water. The Facility produces abundant raw stock, which may require supplemental hydration (from the well) beyond the recycled water available. The compost raw stock is mushroom substrate spent block, which consists of sawdust from Parma Post and Pole. A float switch operates the sump pump which

pumps water to a sprinkler to apply recycled water to hydrate the compost. The pile will be turned with a loader as needed, and piles will be rotated approximately every six months, between in-process compost, finished compost, and moved off site. Finished compost will be used on the owner's personal property or sold, if possible.

6 Monitoring

It is expected that this activity will have a *de minimis* impact on the environment. The draft permit does not require monitoring.

7 Site Operation and Maintenance

The site is operated by the owner, Mr. Mason Groves. Operator responsibilities include:

- maintaining a composting log (Section 5.4),
- regular and frequent visual inspection of the drains, pump, sprinkler, and float switch,
- repairing damaged equipment as needed,
- and inspecting the compost pile for moisture content and hydrating when needed.

The sump tank will be surrounded by a wire fence to prevent driving over the buried tank. Weeds are managed by spraying and mowing. Emergency operation procedures include pumping water into an expansion tank and dumping at a local RV dump station.

8 Compliance Activities

The draft permit does not include compliance activities. The draft permit requires Grove Country Farms to submit an annual written statement certifying that there have been no changes to the facility operation, and that the conditions presented in the technical report and in sections 4, 5, and 7 of this staff analysis, upon which the permit was granted, continue to represent the facility operation.

9 Recommendations

Staff recommends a *de minimis* reuse permit be issued for a term of 10-years. The draft permit requires that the activities covered by the permit comply with the *Recycled Water Rules*, IDAPA 58.01.17, not cause a violation of the *Ground Water Quality Rule*, IDAPA 58.01.12. Staff recommends the facility maintain a composting log that demonstrates BRC status as specified in Section 5.4. Additionally, the draft permit requires an annual certification that the details upon which the permit was based still represent operating conditions.

10 References

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