

Hot Springs Composting Facility Operating Plan

The following information is a modification to the Arkansas Department of Environmental Quality (ADEQ) Solid Waste Processing Facility permit application for the City of Hot Springs composting operation. This Operating Plan was prepared in accordance with the requirements of the ADEQ Solid Waste Management Division Regulation 22.805(c).

The procedures used by HSU staff to compost stabilized biosolids, racetrack straw, and wood chips are described below.

1. Compost Production

Biosolids composting at the Hot Springs Wastewater Treatment Plant is being converted to the aerated static pile method. The composting operation is being relocated to a 150' x 175' roof structure on the existing site. A public tree trimming disposal area is located east of the 3.7-acre compost pad inside the plant entrance. Straw from the racetrack is deposited in piles as directed by the facility operator, then baled and stacked to avoid moisture absorption.

Compost piles are created by first laying out a base of wood chips approximately 50' long x 12' in width using the 3.5 cy bucket of the wheel loader. The wood chips are placed around and on top of 100' of perforated polyethylene pipe connected to the aeration blowers. Biosolids from the adjacent wastewater treatment plant are mixed with straw and wood chips to achieve the desired mixing ratio, generally 3:1:1 straw/wood chips/biosolids. A mechanical mixing box is used to blend the raw feedstocks. Wood chips screened from finished compost are also added to seed microbes into the new piles and provide faster heating to 55°C. Upon mixing, the raw material is placed on top of the wood chip base to a height of approximately 8'. The blowers are turned on, and the composting process is initiated.

Following past practices, it is planned that each new aerated static compost pile will be given a consecutive ID number and recorded in a log. Historically, this log contains all data relevant to the individual aerated static compost pile and includes:

- Amount of amendment (straw or wood chips) in cubic yards
- Amount of biosolids in cubic yards
- Amount of culls or other amendments in cubic yards
- Percent solids of dewatered biosolids
- Dates with temperature readings

- Other notes and details.

Temperatures will be measured daily in each active pile with a 1m thermometer and recorded in °F. Typically, 10 measurements of each pile are taken in the morning by composting personnel. On weekends, plant operators are charged with recording temperatures. All temperatures are recorded in the log with dates and a calculated average for each date.

Initially, the blowers are designed to operate in negative aeration mode whereby all air is pulled into the composting piles from outside and sent through a biofilter for odor treatment. After 3 days when most of the objectionable volatile material has been reduced, the airflow is reversed to a positive mode and forced through the compost piles without treatment. After 3 days of temperatures above 55°C, pathogen standards are achieved and compost samples are sent to an analytical laboratory for final pathogen and metals testing. Upon receipt of the lab results demonstrating that PFRP or Class A standards have been achieved the composted material is removed and placed in a curing pile and allowed to cure for an additional 1-3 months. Here further stabilization occurs until the composting process naturally ceases. The material is ready for distribution.

2. Product Distribution

To distribute the finished compost, a sign is placed at the front gate indicating its availability. Additionally, many people contact HSU to track status of compost production, and word of compost availability typically travels rapidly. As a result a finished pile is generally completely gone within four days of issuing an announcement.

All compost is distributed in bulk. A \$6/cy loading fee is charged for up to 3 cy of compost for local residents only, and \$12/cy for everyone else. Compost purchasers include local garden centers, landscape contractors, and the general public. At present, demand outpaces supply.

3. Personnel

Currently, 3 full time employees are responsible for the production of compost. These consist of the facility manager and 2 equipment operators. The equipment operator handles daily construction/removal of piles, baling hay, recording temperatures, maintenance, screening, fire suppression, and loading large bulk customers. The facility manager is primarily responsible for overseeing public purchases, monitoring incoming straw and tree trimmings, recording temperatures, sampling and supervising compost production.

The designated person for operation, control, and maintenance of the facility is:

Ron Wacaster, Superintendent, Hot Springs Wastewater Treatment Plant

Mr. Wacaster holds his Class C Solid Waste Management Facility Operator's License.

Mr. Bill Reiss, Facility Manager, holds his Class C Solid Waste Management Facility Operator's License, and is currently satisfying the time and training requirements.

4. Equipment Requirements

Equipment involved in daily operations includes:

- Large wheel loader with 4 cy bucket
- Small wheel loader with 1 cy bucket
- Bulk 4-auger mixer
- Hay baler
- Trommel screen
- Equipment/maintenance truck

As compost production increases in the future, additional equipment will be procured as required.

5. Traffic Control and Safety

Signage and facility staff direct customers where to go for purchasing and loading of finished compost. Facility personnel and signage also direct drivers to the appropriate location for dropping off racetrack straw or tree trimmings.

For safety reasons, the sales and loading of compost are conducted in such a way that customers do not need to leave their vehicle.

6. Control of Dumping

Composting facility staff controls dumping of wood waste that will be used in the composting operation. These personnel have received instruction in the proper locations within the composting facility for dumping of straw and tree trimmings, and direct traffic accordingly. HSU composting facility staff inspects each load of wood waste entering the facility. Any problematic materials, such as metal, trash, tires, wolmanized or treated lumber, or other inappropriate material are rejected by the plant staff. This includes any liquid waste or containerized waste. Vehicles carrying any rejected material are prohibited from unloading. Dumping of unauthorized waste or hazardous waste has not been a problem due to the close scrutiny of incoming loads by facility staff.

7. Fire Prevention and Suppression Plan

Fires are an occasional problem that typically occurs in the straw piles by spontaneous combustion, although lightning may also be a cause. Biological activity can occur within localized areas of the straw piles with the right conditions. Biological respiration can push temperature as high as 85°C. Once temperatures exceed 85°C, chemical reactions can take over and this can result in spontaneous combustion in the pile. Frequently, this occurs inside the pile and the fire may smolder for long periods of time before it finds a vent on the edge or top of the pile.

When a fire occurs, the City of Hot Springs Fire Department is summoned to control or extinguish the fire. Generally, traditional fire fighting methodologies are only partially successful in controlling the fire. Other methods are employed by facility staff to assist the Fire Department. These include breaking apart the pile using heavy equipment, covering the smoldering area with sand, or water application/soaking for prolonged periods of time (5-10 hours on affected area) followed by smothering with sand or dirt. Once controlled or contained, the hot area is normally removed from the pile, further wetted if necessary, broken up, and finally redistributed on the pile.

With purchase of the new hay baler, straw will be baled and stacked which will aid in keeping them dry. As a result, the conditions for spontaneous combustion are expected to be reduced significantly such that fires would not be expected in the future, except on rare occasions.

Fires are also possible in the tree trimmings piles as well as finished compost. However, fires in these materials have not occurred. If a fire does break out in the other materials, it will be controlled using conventional fire fighting techniques by the Fire Department as well as the fire suppression measures developed by the HSU facility staff.

8. Control of Windblown Material

As described earlier in this report, windblown material is controlled through the maintenance of proper moisture levels in the active composting units to prevent formation of friable material that would be subject to dispersion by the wind. The plant currently has a tractor-mounted water tank and sprayer suitable for applying additional moisture to all areas of the operation. Also, supplemental water is added to the compost screen to minimize windblown material during compost screening operations. These measures serve to control windblown material from the site to the maximum extent practicable.

9. Equipment Failure Contingency Plan

Equipment failure is a hazard of any and all industrial processes. In the event of critical equipment failure, e.g. mechanical mixer, dewatered biosolids can either be stored on the compost pad for future composting or taken directly to a suitable landfill for disposal. Additionally, the wheeled loader can be used to mix the raw material if

necessary. In the case of other equipment failure, e.g. wheel loader, equipment can be rented to fulfill the needs of the operation while equipment is repaired or replaced.

10. Anticipated Final Grade of the Material

According to the EPA terminology, the compost produced at the City of Hot Springs is of **Exceptional Quality**. This means that the compost “meets low pollutant and Class A pathogen reduction limits and has a reduced level of degradable compounds that attract vectors” (EPA/832/R-93/003). Compost of this quality is basically unregulated for use. All compost produced by the facility has documentation that the EPA standards were met.

11. Handling of Materials That Do Not Meet End Product Requirements

In the past, the only problem that the existing composting operation has ever had with regard to not meeting end-product standards was failing to meet fecal coliform requirements for Class A compost. Although time and temperature requirements are always achieved before the test is run, on occasion an aerated static pile will fail to meet the coliform standard. When this occurs, the composting process is continued for one or more weeks and then the aerated static pile is retested. Composting continues until the aerated static pile passes the coliform test. Given enough composting time, no aerated static pile has ever failed the test for Class A compost. At present, staff are using an alternative test method (salmonella) in lieu of fecal coliform testing. Since this change, all compost piles selected for testing have easily passed.

Although it has not been a problem in the past, should material fail to meet metals or pathogen requirements for Class A compost the material could be beneficially reused on the property of the plant or disposed of in the landfill. In the event that any material was unable to achieve minimum requirements it would be disposed of in the landfill.

12. Other Operational Procedures

The following operational procedures are described in the accompanying Design Narrative that describes the facility design:

- Odor management
- Leachate and stormwater control
- Vector, dust, and litter control