TECHNICAL SUPPORT DOCUMENT
NOTICE OF CONSTRUCTION PRELIMINARY DETERMINATION
EASTERDAY FEEDLOT
MESA, WASHINGTON
JUNE 29, 2009

1. EXECUTIVE SUMMARY

The Washington State Department of Ecology (Ecology) has determined that the applicant, Easterday Feedlot, has satisfied all of the requirements of New Source Review for its 2009 proposed feedlot operation near Mesa, WA. An air quality analysis was performed to demonstrate that the expansion and operation of this facility to finish up to 30,000 head of cattle at a time will not cause or contribute to a violation of any state or federal ambient air quality standard. Ecology now finds that the project will have no significant adverse impact on air quality. The following outlines Ecology's technical analysis of this proposed facility.

2. INTRODUCTION

2.1. The Project

On October 8, 2008, Easterday Feedlots, Inc. proposed to develop a new 30,000 head feedlot operation on a property near Mesa, WA. The proposal includes construction and operation of a feed milling and storage facility, buildings for shops, offices, animal medical care, and a horse barn, a runoff lagoon, a freshwater pond, and 115 acres of animal pens.

2.1.1.1. The Easterday facility is proposed at a location approximately 9 miles southeast of Mesa, WA. The legal description of this location is the South ½ of the Section 13, Township 12, Range 31 East, Willamette Meridian and the entire adjoining Section 24. This is a 960 acre parcel bounded on the north by Owsley Road, the east by Gertler Road, and the south by Overturf Road. The west boundary of the property is the west boundary of sections 24 and 13.

2.1.1.2. The project involves construction activities including moving one million yards of earth to level the portion of the property the pens will be located on, and construction of the feed mill and buildings. Due to concern over the potential for large scale dust storms in the area, the applicant has agreed to expose the surface of no more than 14 acres at any one time, and to implement an aggressive watering program to control dust from leveling.

2.1.1.3. During operation of the facility, there will be emissions from the feed mill, dust from the pens and ammonia and possibly hydrogen sulfide from the manure in the pens, and hydrogen sulfide and ammonia from any lagoons with wastewater run-off from the pens.

2.1.1.4. This is a new source so there have been no Air Quality Program enforcement actions taken against this facility.

3. Applicable Regulations

3.1. WAC 173-400-113, Requirements for new sources in attainment or unclassifiable areas, is the State regulation that defines the evaluations of the Easterday feedlot project(s). The subsections of WAC 173-400-113 require the following:

3.1.1. WAC 173-400-113(1): "The proposed new source will comply with all applicable new source performance standards (NSPS), national emission standards for hazardous air pollutants (NESHAP)…". Easterday's projects are subject to the following standards under this subsection of the WAC:

3.1.1.1. The small boiler NSPS (at 40 CFR 60, Subpart Dc) applies to the feed mill boiler.

Ecology is not aware of any other NSPS or NESHAP that apply to the Easterday operations.

3.1.2. WAC 173-400-113(2): "The proposed new source or modification will employ BACT for all pollutants not previously emitted or whose emissions would increase as a result of the new source or modification". Easterday is required to employ BACT in the terms and conditions of the Approval Order associated with this Technical Support Document. Presumptive BACT levels, generalized for the types of exhaust streams at the Easterday facility are as follows:

3.1.2.1. Exhaust Streams with dry aerosols: Fabric filtration to reduce the exhaust concentration to 0.005 gr/dscf or less.

3.1.2.2. Natural gas fired equipment: exhaust concentrations of NOx of 9 ppmv or less, of CO of 50 ppmv or less.

3.1.3. Specific BACT

3.1.3.1. PM:

3.1.3.1.1. During construction (ground leveling, building construction): Easterday has agreed to a progressive fugitive dust control plan that includes watering of freshly disturbed ground surfaces, limiting the fresh surface disturbance to a maximum of 14 acres on a given day, and to apply straw mulch to each area after earth moving.

3.1.3.1.2. Following construction activities, PM in the pens will be controlled with a computerized sprinkler system, automated cross fencing, maintenance of a uniform (thickness and moisture content) pad of manure over the pen surface, and truck watering of alleys and access roads.

3.1.3.1.3. Grain milling PM will be controlled by enshrouding delivery pits, enclosing dry material transfer conveyors, by bin vent fabric filters on dry grain storage silos, and by the design of the feed mill systems which include enclosed scalpers and flaker, moistened or naturally moist ingredients (steamed grain, moist silage, moistened hay), and a processing building enclosed on the three sides toward the prevailing winds. PM emissions from the boiler will be reduced by the choice of boiler fuels as natural gas or LPG are both fuels that result in lower PM emissions than oil or solid fuels.

3.1.4. WAC 173-400-113(3): "Allowable emissions from the proposed new source or modification will not delay the attainment date for an area not in attainment, nor cause or contribute to a violation of any air quality standard." Easterday's emission

estimates have been used as inputs for screening ambient air quality modeling for the facility at its proposed maximum operating or emission rates. The modeling likely overestimates the impacts of the facility, but still indicates compliance with this subsection of the regulation.

3.1.5. WAC 173-400-113(5): "If the proposed new source or the proposed modification will emit any toxic air pollutants regulated under chapter 173-460 WAC, the source meets all applicable requirements of that program." Easterday's feedlot emits two pollutants regulated under WAC 173-460: ammonia and hydrogen sulfide. The limitations on facility operations that result from these emissions through WAC 173-460 are addressed in the section on toxics, below.

3.2. WAC 173-460, Controls for New Sources of Toxic Air Pollutants, is the State regulation that addresses the risk to the public from routine releases of toxic air contaminants from new and modified sources. Easterday's operations emit two known pollutants that are listed in WAC 173-460 as toxic air pollutants: ammonia and hydrogen sulfide.

3.2.1. WAC 173-460-050: The applicant must quantify the facility's emissions of toxic air contaminants. Easterday has done this in its application. The critical toxics emission points (those with emissions higher than the small quantity emission rates) are wastewater impoundments and the pens with manure and urine on the surface.

3.2.2. WAC 173-460-060: The applicant must install and operate t-BACT on each emission point for which there is an increase in a toxic air pollutant. The Approval Order based on the analyses described in this technical support document contains limitations that reflect t-BACT for each emission point or activity where toxics have been identified as being released. The Best Management Practices (BMP) proposed as t-BACT for this feedlot are as follows:

3.2.2.1. Animal Diet Manipulation: a portion of the protein consumed by animals (including those fattened at a feedlot) passes through the animals and becomes part of the manure or urine. Excess protein fed to feedlot animals will increase the amount in the animal waste. Proteins are composed of amino acids which can be up to nearly 20 % nitrogen by weight. Nitrogen in the waste stream will form ammonia where ponds or manure piles become oxygen depleted. By regulated the protein intake of the feedlot cattle to the amount necessary for growth without excess, Easterday will be able to reduce the quantity of nitrogen in the waste, thus reducing the potential ammonia produced.

3.2.2.2. Aeration: ammonia and hydrogen sulfide are produced most rapidly in anaerobic conditions (sulfates and nitrates being favored if oxygen is present). If the manure pad is maintained at a low depth (1-2 inches) and any runoff in lagoons is prevented from becoming anaerobic, the formation of ammonia and hydrogen sulfide will be minimized. This BMP requires constant scraping of pens to maintain a uniform depth of packed manure, preventing the formation of oxygen-starved areas.

3.2.2.3. pH Control: ammonia will volatilize out of solution (including the multi-phase mixture in the manure pad) if the pH rises above 8.0. Below that pH, ammonia will primarily be dissolved in the media as the ammonium ion NH4+. The BMP that addresses this phenomenon is that of control of the manure pad pH by introducing a weak acid or base as needed into the sprinkler system. The acid selected by Easterday for this BMP is citric: dilute citric acid

will be safe for the animals and contains no sulfur impurities which can produce hydrogen sulfide.

3.2.3. WAC 173-460-070: This section of the regulation requires that impacts of emissions of toxic air pollutants be demonstrated to be sufficiently low to protect human health and safety. This was accomplished by modeling the dispersion of any TAP emitted at a rate greater than the WAC 173-460 small quantity emission rates to determine the concentration of that pollutant at the property boundary. Application materials submitted on May 7, 2009 show that the pollutants requiring modeling by WAC 173-460 would be below the ASILs if the Best Management Practices (BMPs) were as effective as the limited literature on this topic suggests. Emissions impacts less than the ASILs are considered to be protective of human health.

4. The NOC Application:

The Feedlot NOC application was received on October 10, 2008. Additional information was received on February 9, April 7, April 28, May 7, May 28, and the application was determined to be complete after submittal of a monitoring plan for the TAPs BMPs received on June 16, 2009.

5. Determinations of Best Available Control Technology (BACT) and Best Available Control Technology for Toxics (t-BACT)

5.1. The emission points determined to emit significant quantities of criteria or toxic air pollutants are the feed mill for PM from grain handling and emissions from the proposed boiler, the feedlot due to ammonia and hydrogen sulfide from manure and urine, and wastewater impoundments which can be significant sources of ammonia and hydrogen sulfide.

6. Ambient Air Quality Analysis

6.1. Modeling Methodology

Easterday's consultant used the EPA-approved screening dispersion model (Screen 3) to determine toxics impacts of the feedlot. The modeling techniques used were acceptable to Ecology.

6.2. NAAQS Analysis

Dispersion of the emissions of the criteria pollutants from the feedlot was modeled using Screen3. The modeling indicates that with the controls proposed for fugitive dust, this project should operate without exceeding the NAAQS. The project, then, will comply with the NAAQS and State Standards.

6.3. WAC 173-460, Toxic Air Pollutant Modeling Results

For emissions of toxic air pollutants listed in WAC 173-460, if the emission point or activity has t-BACT control, the emissions impacts of that pollutant after control may be approved if they are demonstrated to be less than the acceptable source impact levels (ASILs) in WAC 173-460. The pollutants whose emissions were determined to be

greater than small quantity emission rates (SQER) are listed in the following table with a comparison of the modeled impacts to the ASIL.

Toxic Air Pollutant	ASIL (ug/m^3)	ASIL Averaging Period	Modeling Results (ug/m^3)	Results Less Than ASIL?
Ammonia	100	24-hour	73.92	Yes
Hydrogen Sulfide	0.9	24-hour	0.507	Yes

Criteria Pollutant emission estimates used to evaluate this project for its impacts and ambient air quality standards comparison are outlined in the following table:

Source	**Pollutant**	**Uncontrolled PTE Tons per year**	**Permitted Emissions Tons per year**
Feedlot	PM10	131	26.3
	PM2.5	26.5	5.3
Feed Mill	PM10		0.575
Feed Mill Boiler	PM10	0.53	0.15
	VOC	0.09	0.03
	SOx	0.092	0.03
	NOx	0.83	0.24
	CO	2.0	0.6
Project Total PM10			27.03