March 31, 2023

Oregon Department of Environmental Quality
cleanerair@deq.oregon.gov

RE: Treasure Valley Grain Cleaner Air Oregon Evaluation

Dear Oregon DEQ:

Treasure Valley Grain (TVG) owns and operates an existing grain elevator located in Nyssa, Oregon (the Facility). On July 12, 2022, TVG submitted a Simple Air Contaminant Discharge Permit (ACDP) to construct and operate a corn flaking operation at this facility. TVG is submitting an evaluation demonstrating compliance with Cleaner Air Oregon (CAO) requirements pursuant to OAR 340-245 that incorporates this new process, including the required form AQ520 in ATTACHMENT 1. TVG is completing a Level 1 Risk Assessment for the natural gas fired boilers providing steam to the flaking operation.

FACILITY DESCRIPTION

The proposed project will function using natural gas fired boilers for a steam flaking operation at an existing grain elevator location. Operations at the Facility will include the receiving of corn and wheat via four truck receiving pits, one dust-controlled rail-receiving pit at the southwest corner of the Facility, flaking operations utilizing 4 cyclone separators for particulate controls and a grain cleaner / dust loadout process, and shipments of the final product off the premises via haul trucks. Of these units, the boilers are identified as significant toxic emission units (TEUs). Other units are not expected to emit toxic air contaminants (TACs). This risk assessment evaluates the risk associated with the two identical 25.2 million British Thermal units per hour (MMBtu/hr) natural gas fired boilers. The facility will operate 7 am – 7 pm, seven days a week. Boilers have the potential to operate all 12 hours per day.

TOXIC EMISSION INVENTORY

Toxic emission estimates are included in ATTACHMENT 1 on Form AQ520 for the proposed boilers. Annual throughput is determined in MMBtu/yr assuming at capacity operation for 12 hours per day, 7 days per year, and 52 weeks per year. Daily throughput assumes operation at capacity of 12 hours per day.

Emission factors for natural gas combustion in the boilers are determined by Oregon DEQ Combustion Source Emission Factor Search Tool for natural gas external combustion on a unit 10-100 MMBtu/hr. The default heating value of natural gas, 1,020 British Thermal units per standard cubic feet (Btu/scf) is used to determine annual and daily emission rates. These emission factors are determined by WebFIRE/ AP-42 Section 1.4 (metals) and South Coast Air Quality Management District (SCAQMD) AB2588 - Default Emission Factors for Fuel Combustion, Table B-1c. Ammonia is included as provided by the SCAQMD Reporting Procedures drafted in June 2020[1] using default natural gas combustion factors for equipment without SNCR/SCR.

[1] South Coast Air Quality Management District, *Quadrennial Air Toxics Emissions Inventory Reporting Procedures,* http://www.aqmd.gov/docs/default-source/planning/risk-assessment/quadrennial_atir_procedure.pdf?sfvrsn=2, June 2020.

MODELING PROTOCOL

A level 1 risk assessment analysis was conducted to determine facility risk, following the basic equation represented below.

$$\sum \frac{\text{Emission Rate } \left(\frac{\text{lbs}}{\text{yr}}\right) \times \text{Dispersion Factor } \left(\frac{\mu g/m^3}{\text{lb/yr}}\right)}{\text{Pollutant and Risk Category Specific Risk Based Concentration } \left(\frac{\mu g}{m^3}\right)} = \text{Chronic Risk}$$

Dispersion factors are listed in OAR 340-245-8010, Tables 3A through 3D and are dependent on distance to exposure location and emission source parameters. The calculation above identifies the calculation for chronic risk, using Tables 3A for points/stack sources. The same calculation is used for acute risk, with dispersion factors pulled from Table 3B for point/stack sources.

TVG has used the conservative methodology of the minimum distance to the facility fenceline, as listed in OAR 340-245-8010, as the equivalent distance to all receptor types.[2] Measured parameters for the stack height and distance from the emission point to the facility property boundary are provided in Table 1. Dispersion parameters used to determine potential risk are interpolated values to match boiler stack heights, and are also included in Table 1.

Table 1. Dispersion Factor Summary

Emission Unit	Point/Fugitive	Stack Height (meters)	Distance to Fenceline (m)	Chronic Dispersion Factor	Acute Dispersion Factor
Boiler 1	Point	9.14	58.64	1.73E-03	4.57
Boiler 2	Point	9.14	58.64	1.73E-03	4.57

Risk-Equivalent Emission Rate (REER) tables are used for calculating risks by taking lb/yr or lb/day emission rates divided by Risk Based Concentrations (RBCs) provided by the DEQ and listed in OAR 340-245-8040 Table 4 (see ATTACHMENT 2). REERs are calculated for each pollutant, source, and exposure type. The summation of the REER for each risk exposure type is included in Table 2.

Table 2. Facility Calculated Risk-Equivalent Emission Rate

Type	Residential Chronic Risks		Non-residential Chronic Risks				Acute Non-cancer Risks
	Chronic Cancer	Chronic Non-cancer	Child Cancer	Child Non-cancer	Worker Cancer	Worker Non-cancer	
REER	3,292	345	92	35	138	35	0.04

[2] OAR 340-245-0200(2)(c)(C).

RISK ASSESSMENT

REERs in Table 2 are multiplied by the dispersion factors in Table 1 to determine the potential risk listed in Table 3. The natural gas fired boilers meet the gas combustion exemption identified in OAR 340-245-0050(5). As such, potential risk is calculated but is not required to be compared to the Risk Action Levels.[3]

Table 3. Potential Risk

Type	Residential Chronic Risks		Non-residential Chronic Risks				Acute Non-cancer Risks
	Chronic Cancer	Chronic Non-cancer	Child Cancer	Child Non-cancer	Worker Cancer	Worker Non-cancer	
Total Excess Cancer Risk / Hazard Index	5.68	0.60	0.16	0.06	0.24	0.06	0.17

If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at (806) 353-6123 or Beth Ryder, Trinity Consultants, Inc., at (458) 206-6770.

Sincerely,
EnviroAg

Anissa Purswell
Environmental Consultant
Attachments

cc: Mr. Kenneth Hanna, Bend DEQ Permit Writer
Mr. Owen Rudloff, Air Quality Manager
Mr. Tim Brady, TVG Project Supervisor
Mrs. Beth Ryder, Managing Consultant

[3] OAR 340-245-0050(5)(b).

ATTACHMENT 1. FORM AQ520

Submitted electronically only.

ATTACHMENT 2. RISK-EQUIVALENT EMISSION RATES

Submitted electronically only.