MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 052019-009

Project Number: 2019-03-041
Installation Number: 035-0004

Parent Company: Royal Oak Enterprises, LLC

Parent Company Address: 1 Royal Oak Avenue, Roswell, GA 33067

Installation Name: Royal Oak Enterprises, LLC - Ellsinore

Installation Address: Highway FF, Ellsinore, MO 63937

Location Information: Carter County, S35, T27N, R2E

Application for Authority to Construct was made for:
Construction of a new briquette plant at Ellsinore. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.*

☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

Director or Designee
Department of Natural Resources

MAY 31 2019

Effective Date

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Enforcement and Compliance Section of the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit using the contact information below.

Contact Information:
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:
http://dnr.mo.gov/regions/

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted to the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (3)(E). "Conditions required by permitting authority."

Royal Oak Enterprises, LLC - Ellsinore
Carter County, S35, T27N, R2E

1. PM_{10} Emission Limitation
   A. Royal Oak Enterprises, LLC - Ellsinore shall limit the production of briquets from this project to 13,313 tons per any consecutive 12-month period from the equipment listed in Table 2.

   B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1.A.

2. Control Device Requirement-Baghouse
   A. Royal Oak Enterprises, LLC - Ellsinore shall control emissions from the equipment listed below using a baghouse (CD-3).
      1) EP-34 Fines Discharge Conveyor (CD-01 from previous permit #102008-003)
      2) EP-104 Screw Conveyor
      3) EP-114 Blend Conveyor
      4) EP-115 Hammermill
      5) EP-116 Screw Conveyor
      6) EP-117 Bucket Elevator
      7) EP-118 Char Silo Loadout
      8) EP-119 Screw Conveyor
      9) EP-142 Cooling Conveyor 2
      10) EP-143 Bucket Elevator Infeed Conveyor
      11) EP-144 Bucket Elevator
      12) EP-145 Briquet Silo
      13) EP-146 Feeder/Screen
      14) EP-148 Briquet Conveyor 2
      15) EP-149 Bagger

   B. The baghouse shall be operated and maintained in accordance with the manufacturer's specifications.

   C. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.

SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

D. Replacement filters for the baghouse shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

E. Royal Oak Enterprises, LLC - Ellsinore shall monitor and record the operating pressure drop across the baghouse at least once every 24 hours when the associated equipment is in operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.

F. Royal Oak Enterprises, LLC - Ellsinore shall maintain a copy of the baghouse manufacturer's performance warranty on site.

G. Royal Oak Enterprises, LLC - Ellsinore shall maintain an operating and maintenance log for the baghouse which shall include the following:
   1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

3. Local Exhaust Requirements
   A. Royal Oak Enterprises, LLC - Ellsinore shall use hoods to capture emissions from the emission units indicated in Table 2 (EP-114, EP-148 and EP-149). A hood is a shaped inlet to a pollution control system that does not totally surround emissions from an emission unit.

   B. The maximum distance between the hood inlet and the emissions source shall not exceed 1.5 times the diameter of the exhaust duct.

   C. Royal Oak Enterprises, LLC - Ellsinore shall minimize cross drafts by locating the emissions source and the hood inside a building with 4 sides and a roof.

4. Record Keeping and Reporting Requirements
   A. Royal Oak Enterprises, LLC - Ellsinore shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.

   B. Royal Oak Enterprises, LLC - Ellsinore shall report to the Air Pollution Control Program's Compliance/Enforcement Section, by mail at P.O. Box 176, Jefferson City, MO 65102 or by e-mail at AirComplainceReporting@dnr.mo.gov, no later than 10 days after the end of the month during which any record required by this permit shows an

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2019-03-041
Installation ID Number: 035-0004
Permit Number: 052019-009

Installation Address:
Royal Oak Enterprises, LLC - Ellsinore
Highway FF
Ellsinore, MO 63937

Parent Company:
Royal Oak Enterprises, LLC
1 Royal Oak Avenue
Roswell, GA 33067

Carter County, S35, T27N, R2E

REVIEW SUMMARY

- Royal Oak Enterprises, LLC - Ellsinore has applied for authority to construct a briquette plant at Ellsinore.
- The application was deemed complete on March 26, 2019.
- HAP emissions are expected from the combustion of propane from the dryers and boiler.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- A baghouse is being used in association with the some of the new equipment as listed in Special Condition 3.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM_{10} are conditioned below de minimis levels.
- This installation is located in Carter County, an attainment/nonclassifiable area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as item number 25. Charcoal production facilities. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels except PM, but PM does not trigger dispersion modeling.

- Emissions testing is not required for the equipment as a part of this permit. Testing may be required as part of other state, federal or applicable rules.

- No Operating Permit is required for this installation.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Royal Oak Enterprises, LLC (Royal Oak) operates a charcoal production facility in Carter County near Ellsinore, Missouri. Charcoal is currently produced in 40 kilns ducted to four separate afterburners to control kiln emissions. In addition to the kilns' exhaust, there are fugitive particulate matter emissions from material handling, storage and hauling.

The following New Source Review permits have been issued to Royal Oak Enterprises, LLC - Ellsinore from the Air Pollution Control Program.

Table 1: Previous Construction Permits Issued to the Installation

Permit Number	Description
0782-008	Sawdust fired boiler and charcoal operation (Under ID 035-0004)
1297-014	Brix plant (Under ID 035-0021)
062003-004	Sixteen (16) charcoal kilns (Under ID 035-0004)
102003-009	Sixteen controlled kilns (Under ID 035-0004)
102008-003	New lump processing plant
082017-004	Four sets of 10 kilns each with thermal oxidizers

The equipment/processes in Permits #102008-003 and #082017-004 are currently operational. The briquet plant that was permitted under Permit #1297-014 has not operated in the last five years and this permit will be using some of this original equipment and some new additional pieces. All the other equipment in Permits #0782-008, #062003-004 and #102003-009 has been dismantled and is non-operational.

PROJECT DESCRIPTION

Royal Oak Enterprises plans to revitalize an old charcoal briquette plant that has not been operational in over five years. Some of the existing pieces of equipment will be incorporated into the new charcoal briquette plant that has been stored/dismantled at the site at Ellsinore.

At the new charcoal briquet plant, raw char (wet) will be trucked from the storage pile across the road from the plant and blended with the dry char fines coming from the lump processing plant by way of three screw conveyors. The fines will then be conveyed outside the building and deposited in a pile. The mix fines are then trucked over to the briquette plant and stored outside in a bunker along with sawdust that will be trucked in from outside the plant. The bunker has a roof and three sides and may provide

emission control, however, no value was relied upon in the emission calculations or special conditions. The fines and sawdust will be loaded into separate hoppers for processing inside the building. Super sacks of starch will also be trucked in and delivered inside the plant. The starch will cook with the aid of steam from the propane fired boiler (1.67 MMBTU/hr) and then be sent to the mixer where the other two raw materials will be blended together to form the briquette mix. From there, the mix will be conveyed to a press roll and made into briquettes. The mix is considered wet material with a 20%-30% moisture consisting of a starch slurry, steam and sawdust/char fines from EP-125 Mixer through EP-135 Belt conveyor. The briquettes will then be dried and screened. The briquette dryer will consists of three burners at 2 MMBTU/hr each fueled by propane.

Any fines or reject briquettes from the process are discharged from the building and conveyed outside to piles. The areas are not covered. Individual piles will not exceed one acre. Material will be loaded and mixed back into the process as raw material.

From the screens, briquette charcoal is conveyed to the bagging operation through the use of one hopper with a double headed bagger. Bagged charcoal is palletized and then stored in an adjacent warehouse and trucked off-site via an unpaved haul road.

The facility will add one high efficiency dust collector/baghouse (DC1). Emission points that will be controlled are noted in Table 2 Equipment List with either hoods or total enclosure.

Equipment from the "old" briquette processing plant (dryer and steam boiler) will be used in the new permit.

Table 2: Equipment List

Emission Unit	Description	MHDR
EP-34	Fines discharge conveyor (throughput increase)*	2.4 tph
EP-35	Fines discharge conveyor (throughput increase)	2.4 tph
EP-40	Fines storage pile-load in (throughput increase)	2.4 tph
EP-40	Fines storage pile-load out (throughput increase)	2.4 tph
EP-40	Fines storage pile-vehicular activity (throughput increase)	0.284 VMT
EP-40	Fines storage pile-wind erosion (no increase in size)	N/A
EP-41	Fines truck loading	2.4 tph
EP-101	Char haul road (wet char)	0.0682 VMT
EP-102	Char hopper loading	2.4 tph
EP-103	Hopper discharge	2.4 tph
EP-104	Screw conveyor*	2.4 tph
EP-105	Fines Haul Road (blended wet and dry)	0.2098 VMT
EP-106	Fines bunker-load in	4.8 tph
EP-106	Fines bunker-load out	4.8 tph
EP-106	Fines bunker-vehicular activity	0.0114 VMT
EP-107	Fines hopper loading	4.8 tph
EP-108	Hopper discharge	4.8 tph
EP-109	Sawdust haul road	0.0157 VMT
EP-110	Sawdust bunker-load in	0.6 tph

Emission Unit	Description	MHDR
EP-110	Sawdust bunker-load out	0.6 tph
EP-110	Sawdust bunker-vehicular activity	0.0014 VMT
EP-111	Sawdust loading	0.6 tph
EP-112	Hopper discharge	0.6 tph
EP-113	Blend screw conveyor	5.4 tph
EP-114	Blend screw conveyor ***	5.4 tph
EP-115	Hammermill *	5.4 tph
EP-116	Screw conveyor *	5.4 tph
EP-117	Bucket elevator *	5.4 tph
EP-118	Char silo load-out *	5.4 tph
EP-119	Screw Conveyor *	5.4 tph
EP-120	Starch haul road	0.008 VMT
EP-121	Starch hopper loading	0.6 tph
EP-122	Hopper discharge	0.6 tph
EP-123	Mix tank **	0.6 tph
EP-124	Boiler (Propane)	1.67 MMBTU/hr
EP-125	Mixer (material transfer) **	6.0 tph
EP-126	Reversing belt **	6.0 tph
EP-127	Reject conveyor (not worse case) **	0.0 tph
EP-128	Reject storage (not worse case) **	0.0 tph
EP-129	Belt conveyor **	6.0 tph
EP-130	Briquette roll press **	6.0 tph
EP-131	Vibrating screen **	6.0 tph
EP-132	Fines belt conveyor (not worse case)	0.0 tph
EP-133	Fines belt conveyor (not worse case)	0.0 tph
EP-134	Belt conveyor **	6.0 tph
EP-135	Belt conveyor **	6.0 tph
EP-136/1	Briquette dryer-Process emissions	6.0 tph
EP-136/2	Briquette dryer-Propane combustion emissions (3 @ 2 MMBTU/hr)	6.0 MMBTU/hr
EP-137	Dryer Discharge Conveyor	6.0 tph
EP-138	Reject belt conveyor (not worse case)	0.0 tph
EP-139	Reject screw conveyor (not worse case)	0.0 tph
EP-140	Cooling conveyor 1	6.0 tph
EP-141	Transfer Conveyor	6.0 tph
EP-142	Cooling Conveyor 2 *	6.0 tph
EP-143	Bucket Elevator Infeed Conveyor	6.0 tph
EP-144	Bucket Elevator *	6.0 tph
EP-145	Briquette Silo*	6.0 tph
EP-146	Feeder/Screener*	6.0 tph
EP-147	Briquette conveyor 1	6.0 tph
EP-148	Briquette conveyor 2 ***	6.0 tph
EP-149	Briquette bagger***	6.0 tph
EP-150/1	Briquette shipping (to warehouse)	0.2525 VMT
EP-150/2	Briquette shipping (out)	0.0795 VMT
EP-151	Fines screw conveyor (not worse case)	0.0 tph
EP-152	Fines storage pile – load in (not worse case)	0.0 tph
EP-152	Fines storage pile – load out	0.3 tph

Emission Unit	Description	MHDR
EP-152	Fines storage pile - vehicular activity	0.0095 VMT
EP-152	Fines storage pile – wind erosion	1 acre

*Enclosed and controlled by a dust collector/baghouse
** Wet Material consisting of 20%-30% moisture consisting of starch slurry, steam and sawdust/char fines
*** Hooded and controlled by a dust collector/baghouse

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition and WebFIRE.

Emissions from haul roads and vehicular activity areas:

- Calculated using the predictive equation from AP-42 Section 13.2.2 "Unpaved Roads," November 2006. There will be no dust control for the haul roads.

Emissions from briquet production:

- Missouri DNR memo dated December 12, 1995 sited emission factors from WebFIRE that could be used as charcoal SCCs and emission factors. The various emission factors for briquet production were obtained from Factor Information Retrieval (FIRE) V6.23, *Source Classification Codes and Emission Factors Listings for Criteria Air Pollutants* (SCC: 30501607(Conveying), 30501602 (Hammermill [updated from WebFIRE]), 30501012 (Screening), 30501011 (Conveying briquets), 30700803 (Charcoal loading), 30100508 (Bagging of briquets) and 30502011 (Briquet shipping).
- The mix is considered wet material with a 20%-30% moisture consisting of a starch slurry, steam and sawdust/char fines from EP-125 Mixer through EP-135 Belt Conveyor, and therefore given a 90% control.
- Hood capture efficiency of 70% as outlined in Special Condition 3 was given to EP-114, EP-148 and EP-149.
- Briquet drying emission factor was taken from the stack test conducted in Meta, Missouri in December 5-14, 1995 as stated in a memo from Shell Engineering dated February 7, 1996.
- Mixer loading AP-42 Section 11.12, Concrete Batching, June 2006 Table 11.12-2 Concrete Batching/ Mixer Loading (central mix).

The following table provides an emissions summary for this project. Existing potential emissions were taken from Permits 102008-003 and 082017-004. Existing actual emissions were taken from the installation's 2018 EIQ. Potential emissions of the application represent the potential of the new equipment, storage piles and haul roads, assuming continuous operation (8760 hours per year).

Table 3: Emissions Summary (tpy)

Pollutant	Regulatory *De Minimis* Levels	[a]Existing Potential Emissions		Existing Actual Emissions (2018 EIQ)	Potential Emissions of the Project	New Project Conditioned Potential
PM	25.0	N/D	10.6	N/D	122.52	31.03
PM_{10}	15.0	<15.0	10.6	11.5	59.22	<15.0
$PM_{2.5}$	10.0	N/D	<10.0	7.9	18.07	4.58
SOx	40.0	N/A	N/D	0.0	0.01	0.01
NOx	40.0	N/A	83.2	49.8	6.98	6.98
VOC	40.0	N/A	0.32	1.6	0.11	0.11
CO	100.0	N/A	1.17	10.8	1.18	1.18
HAPs	10.0/25.0	N/A	0.0	0.0	0.06	0.06

N/A = Not Applicable; N/D = Not Determined

[a] A lump charcoal packaging plant is operating at this site Permit 102008-003 with a 15 ton PM_{10} annual limit. The remaining existing PTE was taken from Permit 082017-004 when 40 new kilns were constructed and the existing kilns were dismantled/removed. Test results were conducted on PM_{10}. Half of the PM_{10} emissions are condensable (which would be $PM_{2.5}$) according to the stack test. It is assumed that not all filterable PM_{10} emissions equal $PM_{2.5}$ emissions. Based on this assumption, $PM_{2.5}$ emissions are expected to be less than 10 tons per year.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

Royal Oak Enterprises, LLC - Ellsinore shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *No Operating Permit is required*
- *Start-Up, Shutdown, and Malfunction Conditions,* 10 CSR 10-6.050
- *Submission of Emission Data, Emission Fees and Process Information,* 10 CSR 10-6.110
    - Per 10 CSR 10-6.110(4)(B)2.B(II) and (4)(B)2.C(II) a full EIQ is required for the first full calendar year the equipment (or modifications) approved by this permit are in operation.

- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170

- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220

- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070
    - *The boiler is exempt from* 40 CFR Part 60 because the heat input rate is less than 10 MMBTU/hr.

- *MACT Regulations*, 10 CSR 10-6.075
    - *The boiler is exempt from* 40 CFR Part 63 because it is fueled with propane.

- *Emission Standards for Hazardous Air Pollutants,* 10 CSR 10-6.080
    - *The boiler is exempt from any NESHAPs,* 40 CFR Part 61 because it is fueled with propane.

- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-6.405

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated March 22, 2019, received March 26, 2019, designating Royal Oak Enterprises, LLC as the owner and operator of the installation.
- Stack test data from Meta, Missouri conducted December 1995 by Shell Engineering for Royal Oak.
- Missouri DNR memo dated December 12, 1995.

Attachment A – 12 Month Production Totals Compliance Worksheet

Royal Oak Enterprises, LLC - Ellsinore
Carter County
Project Number: 2019-03-041
Installation ID Number: 035-0004
Permit Number: 052019-009

This sheet covers the period from _____ to _____.
(month, year) (month, year)

Month	Production (tons)	12-Month Rolling Total Emissions[1] (tons)
January	*1,000*	*1,000 + 11 previous months at this site*

[1]Add the monthly emissions (tons) to the sum of the monthly emissions from the previous eleven months. A total of less than 13,312 tons is necessary for compliance.

APPENDIX A

Abbreviations and Acronyms

% ..... percent
°F ..... degrees Fahrenheit
acfm ..... actual cubic feet per minute
BACT ..... Best Available Control Technology
BMPs ..... Best Management Practices
Btu ..... British thermal unit
CAM ..... Compliance Assurance Monitoring
CAS ..... Chemical Abstracts Service
CEMS ..... Continuous Emission Monitor System
CFR ..... Code of Federal Regulations
CO ..... carbon monoxide
CO_2 ..... carbon dioxide
CO_2e ..... carbon dioxide equivalent
COMS ..... Continuous Opacity Monitoring System
CSR ..... Code of State Regulations
dscf ..... dry standard cubic feet
EIQ ..... Emission Inventory Questionnaire
EP ..... Emission Point
EPA ..... Environmental Protection Agency
EU ..... Emission Unit
fps ..... feet per second
ft ..... feet
GACT ..... Generally Available Control Technology
GHG ..... Greenhouse Gas
gpm ..... gallons per minute
gr ..... grains
GWP ..... Global Warming Potential
HAP ..... Hazardous Air Pollutant
hr ..... hour
hp ..... horsepower
lb ..... pound
lbs/hr ..... pounds per hour
MACT ..... Maximum Achievable Control Technology
$\mu g/m^3$ ..... micrograms per cubic meter
m/s ..... meters per second
Mgal ..... 1,000 gallons
MW ..... megawatt
MHDR ..... maximum hourly design rate
MMBtu ..... Million British thermal units
MMCF ..... million cubic feet
MSDS ..... Material Safety Data Sheet
NAAQS ..... National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NO_x ..... nitrogen oxides
NSPS ..... New Source Performance Standards
NSR ..... New Source Review
PM ..... particulate matter
$PM_{2.5}$ ..... particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10} ..... particulate matter less than 10 microns in aerodynamic diameter
ppm ..... parts per million
PSD ..... Prevention of Significant Deterioration
PTE ..... potential to emit
RACT ..... Reasonable Available Control Technology
RAL ..... Risk Assessment Level
SCC ..... Source Classification Code
scfm ..... standard cubic feet per minute
SDS ..... Safety Data Sheet
SIC ..... Standard Industrial Classification
SIP ..... State Implementation Plan
SMAL ..... Screening Model Action Levels
SO_x ..... sulfur oxides
SO_2 ..... sulfur dioxide
SSM ..... Startup, Shutdown & Malfunction
tph ..... tons per hour
tpy ..... tons per year
VMT ..... vehicle miles traveled
VOC ..... Volatile Organic Compound

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program
Table of Hazardous Air Pollutants and Screening Model Action Levels

Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM
ACETALDEHYDE	75-07-0	9		Y	N
ACETAMIDE	60-35-5	1		Y	N
ACETONITRILE	75-05-8	4		Y	N
ACETOPHENONE	98-86-2	1		Y	N
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005	V	Y	Y
ACROLEIN	107-02-8	0.04		Y	N
ACRYLAMIDE	79-06-1	0.02		Y	N
ACRYLIC ACID	79-10-7	0.6		Y	N
ACRYLONITRILE	107-13-1	0.3		Y	N
ALLYL CHLORIDE	107-05-1	1		Y	N
AMINOBIPHENYL, [4-]	92-67-1	1	V	Y	N
ANILINE	62-53-3	1		Y	N
ANISIDINE, [ORTHO-]	90-04-0	1		Y	N
ANTHRACENE	120-12-7	0.01	V	Y	N
ANTIMONY COMPOUNDS		5	H	N	Y
ANTIMONY PENTAFLUORIDE	7783-70-2	0.1	H	N	Y
ANTIMONY POTASSIUM TARTRATE	28300-74-5	1	H	N	Y
ANTIMONY TRIOXIDE	1309-64-4	1	H	N	Y
ANTIMONY TRISULFIDE	1345-04-6	0.1	H	N	Y
ARSENIC COMPOUNDS		0.005	I	N	Y
ASBESTOS	1332-21-4	0	A	N	Y
BENZ(A)ANTHRACENE	56-55-3	0.01	V	Y	N
BENZENE	71-43-2	2		Y	N
BENZIDINE	92-87-5	0.0003	V	Y	N
BENZO(A)PYRENE	50-32-8	0.01	V	Y	N
BENZO(B)FLUORANTHENE	205-99-2	0.01	V	Y	N
BENZO(K)FLUORANTHENE	207-08-9	0.01	V	Y	N
BENZOTRICHLORIDE	98-07-7	0.006		Y	N
BENZYL CHLORIDE	100-44-7	0.1		Y	N
BERYLLIUM COMPOUNDS		0.008	J	N	Y
BERYLLIUM SALTS		2E-05	J	N	Y
BIPHENYL, [1,1-]	92-52-4	10	V	Y	N
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		Y	N
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003		Y	N
BROMOFORM	75-25-2	10		Y	N
BROMOMETHANE	74-83-9	10		Y	N
BUTADIENE, [1,3-]	106-99-0	0.07		Y	N
BUTOXYETHANOL ACETATE, [2-]	112-07-2	5	P	Y	N
BUTYLENE OXIDE, [1,2-]	106-88-7	1		Y	N
CADMIUM COMPOUNDS		0.01	K	N	Y
CALCIUM CYANAMIDE	156-62-7	10		Y	Y
CAPROLACTAM (Delisted)	105-60-2				
CAPTAN	133-06-2	10		Y	Y
CARBARYL	63-25-2	10	V	Y	Y
CARBON DISULFIDE	75-15-0	1		Y	N
CARBON TETRACHLORIDE	56-23-5	1		Y	N
CARBONYL SULFIDE	463-58-1	5		Y	N
CATECHOL	120-80-9	5		Y	N
CHLORAMBEN	133-90-4	1		Y	Y
CHLORDANE	57-74-9	0.01		Y	Y
CHLORINE	7782-50-5	0.1		N	N
CHLOROACETIC ACID	79-11-8	0.1		Y	N
CHLOROACETOPHENONE, [2-]	532-27-4	0.06		Y	N
CHLOROBENZENE	108-90-7	10		Y	N
CHLOROBENZILATE	510-15-6	0.4	V	Y	Y
CHLOROFORM	67-66-3	0.9		Y	N
CHLOROMETHYL METHYL ETHER	107-30-2	0.1		Y	N
CHLOROPRENE	126-99-8	1		Y	N
CHROMIUM (VI) COMPOUNDS		0.002	L	N	Y
CHROMIUM COMPOUNDS		5	L	N	Y
CHRYSENE	218-01-9	0.01	V	Y	N
COBALT COMPOUNDS		0.1	M	N	Y
COKE OVEN EMMISIONS	8007-45-2	0.03	N	Y	N
CRESOL, [META-]	108-39-4	1	B	Y	N
CRESOL, [ORTHO-]	95-48-7	1	B	Y	N
CRESOL, [PARA-]	106-44-5	1	B	Y	N
CRESOLS (MIXED ISOMERS)	1319-77-3	1	B	Y	N
CUMENE	98-82-8	10		Y	N
CYANIDE COMPOUNDS		0.1	O	Y	N
DDE	72-55-9	0.01	V	Y	Y
DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		Y	N
DIAMINOTOLUENE, [2,4-]	95-80-7	0.02		Y	N
DIAZOMETHANE	334-88-3	1		Y	N
DIBENZ(A,H)ANTHRACENE	53-70-3	0.01	V	Y	N
DIOXINS/FURANS		6E-07	D,V	Y	N
DIBENZOFURAN	132-64-9	5	V	Y	N
DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01		Y	N
DIBROMOETHANE, [1,2-]	106-93-4	0.1		Y	N
DIBUTYL PHTHALATE	84-74-2	10		Y	Y
DICHLOROBENZENE, [1,4-]	106-46-7	3		Y	N
DICHLOROBENZIDENE, [3,3-]	91-94-1	0.2	V	Y	Y
DICHLOROETHANE, [1,1-]	75-34-3	1		Y	N
DICHLOROETHANE, [1,2-]	107-06-2	0.8		Y	N
DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		Y	N
DICHLOROMETHANE	75-09-2	10		N	N
DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	C	Y	Y
DICHLOROPROPANE, [1,2-]	78-87-5	1		Y	N
DICHLOROPROPENE, [1,3-]	542-75-6	1		Y	N
DICHLORVOS	62-73-7	0.2		Y	N
DIETHANOLAMINE	111-42-2	5		Y	N
DIETHYL SULFATE	64-67-5	1		Y	N
DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	5	P	Y	N
DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1	V	Y	Y
DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008	V	Y	Y
DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02		Y	N
DIMETHYL FORMAMIDE	68-12-2	1		Y	N
DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008		Y	N
DIMETHYL PHTHALATE	131-11-3	10		Y	N
DIMETHYL SULFATE	77-78-1	0.1		Y	N
DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1		Y	N
DIMETHYLANILINE, [N-N-]	121-69-7	1		Y	N
DINITRO-O-CRESOL, [4,6-] (Note 6)	534-52-1	0.1	E	Y	Y
DINITROPHENOL, [2,4-]	51-28-5	1		Y	N
DINITROTOLUENE, [2,4-]	121-14-2	0.02		Y	N
DIOXANE, [1,4-]	123-91-1	6		Y	N
DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	V	Y	Y
DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	V	Y	N
EPICHLOROHYDRIN	106-89-8	2		Y	N
ETHOXYETHANOL, [2-]	110-80-5	10	P	Y	N
ETHOXYETHYL ACETATE, [2-]	111-15-9	5	P	Y	N
ETHYL ACRYLATE	140-88-5	1		Y	N
ETHYL BENZENE	100-41-4	10		Y	N

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program
Table of Hazardous Air Pollutants and Screening Model Action Levels

Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM
ETHYL CHLORIDE	75-00-3	10		Y	N
ETHYLENE GLYCOL	107-21-1	10		Y	N
ETHYLENE GLYCOL MONOBUTYL ETHER (Delisted)	111-76-2				
ETHYLENE GLYCOL MONOHEXYL ETHER	112-25-4	5	P	Y	N
ETHYLENE IMINE [AZIRIDINE]	151-56-4	0.003		Y	N
ETHYLENE OXIDE	75-21-8	0.1		Y	N
ETHYLENE THIOUREA	96-45-7	0.6		Y	Y
FORMALDEHYDE	50-00-0	2		Y	N
GLYCOL ETHER (ETHYLENE GLYCOL ETHERS)		5	P	Y	N
GLYCOL ETHER (DIETHYLENE GLYCOL ETHERS)		5	P	Y	N
HEPTACHLOR	76-44-8	0.02		Y	N
HEXACHLOROBENZENE	118-74-1	0.01		Y	N
HEXACHLOROBUTADIENE	87-68-3	0.9		Y	N
HEXACHLOROCYCLOHEXANE, [ALPHA-]	319-84-6	0.01	F	Y	N
HEXACHLOROCYCLOHEXANE, [BETA-]	319-85-7	0.01	F	Y	N
HEXACHLOROCYCLOHEXANE, [DELTA-]	319-86-8	0.01	F	Y	N
HEXACHLOROCYCLOHEXANE, [TECHNICAL]	608-73-1	0.01	F	Y	N
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		Y	N
HEXACHLOROETHANE	67-72-1	5		Y	N
HEXAMETHYLENE,-1,6-DIISOCYANATE	822-06-0	0.02		Y	N
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01		Y	N
HEXANE, [N-]	110-54-3	10		Y	N
HYDRAZINE	302-01-2	0.004		N	N
HYDROGEN CHLORIDE	7647-01-0	10		N	N
HYDROGEN FLUORIDE	7664-39-3	0.1		N	N
HYDROQUINONE	123-31-9	1		Y	N
INDENO(1,2,3CD)PYRENE	193-39-5	0.01	V	Y	N
ISOPHORONE	78-59-1	10		Y	N
LEAD COMPOUNDS		0.01	Q	N	Y
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01	F	Y	N
MALEIC ANHYDRIDE	108-31-6	1		Y	N
MANGANESE COMPOUNDS		0.8	R	N	Y
MERCURY COMPOUNDS		0.01	S	N	N
METHANOL	67-56-1	10		Y	N
METHOXYCHLOR	72-43-5	10	V	Y	Y
METHOXYETHANOL, [2-]	109-86-4	10	P	Y	N
METHYL CHLORIDE	74-87-3	10		Y	N
METHYL ETHYL KETONE (Delisted)	78-93-3				
METHYL HYDRAZINE	60-34-4	0.06		Y	N
METHYL IODIDE	74-88-4	1		Y	N
METHYL ISOBUTYL KETONE	108-10-1	10		Y	N
METHYL ISOCYANATE	624-83-9	0.1		Y	N
METHYL METHACRYLATE	80-62-6	10		Y	N
METHYL TERT-BUTYL ETHER	1634-04-4	10		Y	N
METHYLCYCLCOPENTADIENYL MANGANESE	12108-13-3	0.1	R	N	Y
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	V	Y	Y
METHYLENEDIANILINE, [4,4-]	101-77-9	1	V	Y	N
METHYLNAPHTHALENE, [2-]	91-57-6	0.01	V	Y	N
MINERAL FIBERS		0	T	N	Y
NAPHTHALENE	91-20-3	10	V	Y	N
NAPHTHYLAMINE, [ALPHA-]	134-32-7	0.01	V	Y	N
NAPHTHYLAMINE, [BETA-]	91-59-8	0.01	V	Y	N
NICKEL CARBONYL	13463-39-3	0.1	U	N	Y
NICKEL COMPOUNDS		1	U	N	Y
NICKEL REFINERY DUST		0.08	U	N	Y
NICKEL SUBSULFIDE	12035-72-2	0.04	U	N	Y
NITROBENZENE	98-95-3	1		Y	N
NITROBIPHENYL, [4-]	92-93-3	1	V	Y	N
NITROPHENOL, [4-]	100-02-7	5		Y	N
NITROPROPANE, [2-]	79-46-9	1		Y	N
NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001		Y	N
NITROSOMORPHOLINE, [N-]	59-89-2	1		Y	N
NITROSO-N-METHYLUREA, [N-]	684-93-5	0.0002		Y	N
OCTACHLORONAPTHALENE	2234-13-1	0.01	V	Y	N
PARATHION	56-38-2	0.1		Y	Y
PCB [POLYCHLORINATED BIPHENYLS]	1336-36-3	0.009	X	Y	Y
PENTACHLORONITROBENZENE	82-68-8	0.3		Y	N
PENTACHLOROPHENOL	87-86-5	0.7		Y	N
PHENOL	108-95-2	0.1		Y	N
PHENYLENEDIAMINE, [PARA-]	106-50-3	10		Y	N
PHOSGENE	75-44-5	0.1		Y	N
PHOSPHINE	7803-51-2	5		N	N
PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1		N	N
PHTHALIC ANHYDRIDE	85-44-9	5		Y	N
POLYCYLIC ORGANIC MATTER		0.01	V	Y	N
PROPANE SULTONE, [1,3-]	1120-71-4	0.03		Y	Y
PROPIOLACTONE, [BETA-]	57-57-8	0.1		Y	N
PROPIONALDEHYDE	123-38-6	5		Y	N
PROPOXUR [BAYGON]	114-26-1	10		Y	Y
PROPYLENE OXIDE	75-56-9	5		Y	N
PROPYLENEIMINE, [1,2-]	75-55-8	0.003		Y	N
QUINOLINE	91-22-5	0.006		Y	N
QUINONE	106-51-4	5		Y	N
RADIONUCLIDES		Note 1	Y	N	Y
SELENIUM COMPOUNDS		0.1	W	N	Y
STYRENE	100-42-5	1		Y	N
STYRENE OXIDE	96-09-3	1		Y	N
TETRACHLORODIBENZO-P-DIOXIN,[2,3,7,8]	1746-01-6	6E-07	D,V	Y	Y
TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		Y	N
TETRACHLOROETHYLENE	127-18-4	10		N	N
TITANIUM TETRACHLORIDE	7550-45-0	0.1		N	N
TOLUENE	108-88-3	10		Y	N
TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		Y	N
TOLUIDINE, [ORTHO-]	95-53-4	4		Y	N
TOXAPHENE	8001-35-2	0.01		Y	N
TRICHLOROBENZENE, [1,2,4-]	120-82-1	10		Y	N
TRICHLOROETHANE, [1,1,1-]	71-55-6	10		N	N
TRICHLOROETHANE, [1,1,2-]	79-00-5	1		Y	N
TRICHLOROETHYLENE	79-01-6	10		Y	N
TRICHLOROPHENOL, [2,4,5-]	95-95-4	1		Y	N
TRICHLOROPHENOL, [2,4,6-]	88-06-2	6		Y	N
TRIETHYLAMINE	121-44-8	10		Y	N
TRIFLURALIN	1582-09-8	9		Y	Y
TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5		Y	N
URETHANE [ETHYL CARBAMATE]	51-79-6	0.8		Y	N
VINYL ACETATE	108-05-4	1		Y	N
VINYL BROMIDE	593-60-2	0.6		Y	N
VINYL CHLORIDE	75-01-4	0.2		Y	N
XYLENE, [META-]	108-38-3	10	G	Y	N
XYLENES (MIXED ISOMERS)	1330-20-7	10	G	Y	N

Air Pollution Control Program
Table of Hazardous Air Pollutants and Screening Model Action Levels

Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM	Chemical	CAS #	SMAL tons/yr	Group ID	VOC	PM

Legend	
Group ID	
A	Asbestos
B	Cresols/Cresylic Acid (isomers and mixtures)
C	2,4 - D, Salts and Esters
D	Dibenzofurans, Dibenzodioxins
E	4, 6 Dinitro-o-cresol, and Salts
F	Lindane (all isomers)
G	Xylenes (all isomers and mixtures)
H	Antimony Compounds
I	Arsenic Compounds
J	Beryllium Compounds
K	Cadmium Compounds
L	Chromium Compounds
M	Cobalt Compounds
N	Coke Oven Emissions
O	Cyanide Compounds
P	Glycol Ethers
Q	Lead Compounds (except elemental Lead)
R	Manganese Compounds
S	Mercury Compounds
T	Fine Mineral Fibers
U	Nickel Compounds
V	Polycyclic Organic Matter
W	Selenium Compounds
X	Polychlorinated Biphenyls (Aroclors)
Y	Radionuclides
Notes	The SMAL for radionuclides is defined as the effective dose equivalent to 0.3 millirems per year for 7 years exposure associated with a cancer risk of 1 in 1 million

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

MAY 3 1 2019

Mr. Evan Bryant
Area Director
Royal Oak Enterprises, LLC - Ellsinore
P.O. Box 850
West Plains, MO 65775

RE: New Source Review Permit - Project Number: 2019-03-041

Dear Mr. Bryant:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: http://dnr.mo.gov/regions/. The online CAV request can be found at http://dnr.mo.gov/cav/compliance.htm.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Kathy Kolb, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:kkd

Enclosures

c: Southeast Regional Office
PAMS File: 2019-03-041

Permit Number: 052019-009