STATE OF MISSOURI

PERMIT BOOK

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: 072015-013

Project Number: 2013-11-035
Installation Number: 093-0009

Parent Company: The Doe Run Company

Parent Company Address: 1801 Park 270 Drive, St. Louis, MO 63146

Installation Name: Buick Resource Recycling Facility, LLC

Installation Address: 18954 Highway KK, Boss, MO 65440

Location Information: Iron County, S14, T34N, R2W

Application for Authority to Construct was made for:
Modifying all existing propane combustion sources to allow for the combustion of natural gas. This review was conducted in accordance with Section (5) of 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.

Alana L Hess

Prepared by
Alana Hess
New Source Review Unit

Kyra L Moore

Director or Designee
Department of Natural Resources

JUL 22 2015

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. The permittee should notify 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 Department's Air Pollution Control Program of the anticipated date of startup of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' Southeast within 15 days after the actual startup of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' 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 sources(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 at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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 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(12)(A)10. "Conditions required by permitting authority."

Buick Resource Recycling Facility, LLC
Iron County, S14, T34N, R2W

1. Buick Resource Recycling Facility, LLC shall operate and maintain oxygen-fired combustion technology to reduce NO_x emissions from the reverberatory furnace.

2. Buick Resource Recycling Facility, LLC shall maintain an operating and maintenance log for the oxy-fuel combustion technology which shall include the following:
   A. Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
   B. Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2013-11-035
Installation ID Number: 093-0009
Permit Number:

Installation Address:
Buick Resource Recycling Facility, LLC
18954 Highway KK
Boss, MO 65440

Parent Company:
The Doe Run Company
1801 Park 270 Drive
St. Louis, MO 63146

Iron County, S14, T34N, R2W

REVIEW SUMMARY

- Buick Resource Recycling Facility, LLC has applied for authority to modify all existing propane combustion sources to allow for the combustion of natural gas.

- The application was deemed complete on May 1, 2015.

- HAP emissions are expected from the combustion of natural gas. The primary HAP of concern is Hexane (110-54-3).

- 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* applies to EP-33 Changehouse Boiler.

- Oxy-fuel firing is being used to control the NO_x emissions from the combustion of natural gas in the reverberatory furnace which vents to EP-08 Main Stack.

- 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 criteria pollutants are below de minimis levels. A permit is required as emissions exceed the insignificance levels in 10 CSR 10-6.061(3)(A)3.A.

- This installation is located in Iron County, a nonattainment area for the 2008 lead standard and an attainment area for all other criteria pollutants.

- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2 Item #19 – *Secondary Metal Production Plants*. 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 for criteria pollutants since potential emissions of the application are below de minimis levels. Ambient air quality modeling was not performed for any individual HAP since potential emissions of each individual HAP are below the SMALs.

- Emissions testing is not required for the equipment.

- An amendment to Part 70 Operating Permit application, Project 093-0009-027, is required for this installation within one year of commencement of operations.

- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

The Buick Resource Recycling Facility, LLC is a secondary lead recycling plant owned and operated by The Doe Run Resources Corporation d/b/a The Doe Run Company. The installation has never received a Part 70 operating permit and operates under their initial Part 70 operating permit application, Project 093-0009-027.

Approximately, 75 percent or more of the lead recycled at Buick Resource Recycling Facility, LLC comes from automotive and industrial batteries.

Batteries arrive at the installation by truck. They are unloaded and placed onto a conveyor belt or into a battery storage area. Approximately one-third of all batteries that are received still have an electrical charge on them, so the batteries are placed into a stainless steel shredder.

The whole battery is broken in the shredder, and the battery acid (weak sulfuric acid) is drained and collected in storage tanks. The shredded batteries are then placed in a vibrating feeder that feeds a conveyor belt into the hammer mill. The hammer mill pounds the battery into smaller pieces.

Each lead acid battery contains a set of metal grids, lead posts, plastic components, separators, and lead sulfate paste. The lead sulfate paste is removed by washing through sets of screens for further processing. After going through the hammer mill, the battery pieces enter a hydro separator where water separates the heavier elements. All of the lead and metal components sink to the bottom and the floating items are skimmed off and sent to the recycling facilities.

The metallic portions of the batteries including grids, posts, and other metallic constituents are fed to either the reverberatory furnace or the blast furnace. Lead from the furnaces is sent to the refinery building.

In the refinery building softening, alloying, and oxidation of the lead occurs to achieve the desired degree of purity or alloy type. After the lead has been refined to meet customer specifications it is cast.

The following New Source Review permits have been issued to Buick Resource Recycling Facility, LLC from the Air Pollution Control Program:

Table 1: Permit History

Permit Number	Description
0179-018	Minor source permit
0989-003	Major source permit
0792-016	Minor source permit
0493-006	Minor source permit
1093-010	Minor source permit
0693-013	Minor source permit
1093-003	Minor source permit
0989-003	Minor source permit
0989-003A	Amendment
1095-009	Minor source permit
1296-012	Minor source permit
0297-015	Minor source permit
0997-006	Minor source permit
102000-007	Minor source permit
012005-008[1]	PSD – increase production
092006-007	Minor NSR – new multi-hearth rotary furnace
012005-008A	PSD amendment
012010-006	Minor NSR – 34.87 MMBtu/hr propane boiler
012005-008B	No permit required
062011-004	Minor NSR – install afterburner on reverberatory furnace
102011-005	Minor NSR – install 22.5 tph wood processing pallet grinder
012005-008C	PSD amendment
092014-006	Minor NSR – install ERP Kettles
062011-004A	Amendment to re-evaluate NOx emissions from afterburner

Buick Resource Recycling Facility, LLC has been issued several notices of violation over the past five years; however, all of the notices of violation are either not applicable to the permitted equipment or have already been resolved.

PROJECT DESCRIPTION

The Doe Run Company has applied for authority to modify all existing propane combustion equipment at Buick Resource Recycling Facility, LLC to allow for the combustion of natural gas. The Doe Run Company is pursuing this project due to the current low price and availability of natural gas. The installation may revert back to propane in the future if the natural gas and/or propane markets change or as required by other business interests. Emission sources may combust a mixture of natural gas and propane. This project solely allows for the combustion of an additional fuel and does not increase any of the maximum hourly design rates of the emission sources. Table 2 provides a list of equipment affected by this project.

[1] The installation did receive permits prior to PSD Permit 012005-008; however, all provisions of those permits have since been superseded.

Table 2: Equipment Converting to Natural Gas Combustion

Emission Point	Description	MHDR (MMBtu/hr)	Project Status
EP-08	Reverberatory Furnace	42	Modified
	Blast Furnace	2	
	Sweat Furnace #1	7.5	
	Sweat Furnace #2	7.5	
EP-22-28	Dross and Refinery Kettles	74.4	
EP-33	Changehouse Boiler	2.93	
EP-105	225 ton ERP Kettle	6	
	225 ton ERP Kettle	6	
	100 ton ERP Kettle	6	
	20 ton ERP Kettle	3	
	100 ton ERP Kettle	6	

Potential project emissions as shown in Table 4 were calculated according to §52.21(a)(2)(iv)(c) as projected actual emissions minus baseline actual emissions. Potential emissions were substituted for projected actual emissions. Baseline actual emissions were calculated using the past actual average annual propane combustion rate as reported by the installation for the calendar years 2012 and 2013 and emission factors obtained from EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.5 “Liquified Petroleum Gas Combustion” (July 2008).

Table 3: Past Actual Propane Combustion Rate (1,000 gal/yr)

Emission Point	Description	2012	2013	2012 – 2013 Average
EP-08	Reverberatory Furnace	2472	2249	2360.5
	Blast Furnace	706	726	716
	Sweat Furnace #1			
	Sweat Furnace #2			
EP-22-28	Dross and Refinery Kettles	2643	2722	2682.5
EP-33	Changehouse Boiler	125	129	127
EP-105	225 ton ERP Kettle	0	0	0
	225 ton ERP Kettle			
	100 ton ERP Kettle			
	20 ton ERP Kettle			
	100 ton ERP Kettle			
Installation Total:		5946	5826	5886

Table 4: Project Emissions (tpy)

Pollutant	Natural Gas PTE	Propane BAE	Project PTE
CO	58.91	22.07	36.84
NO_x	56.61	38.26	18.35
PM	1.33	0.59	0.74
PM_{10}	5.33	2.06	3.27
$PM_{2.5}$	5.33	2.06	3.27
VOC	3.86	2.94	0.91
SO_x	0.42	N/A	0.42

EMISSIONS/CONTROLS EVALUATION

Potential emissions from the combustion of natural gas were calculated using emission factors obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, "Natural Gas Combustion" (July 1998).

Tables 5 and 6 provides an emissions summary for this project. Existing potential emissions were not available for the installation; however, the installation is known to be an existing major source based on existing actual emissions. Existing actual emissions were taken from the installation's 2014 EIQ. Potential emissions of the application represent the potential of the modified equipment, assuming continuous operation (8,760 hours per year).

Table 5: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Existing Actual Emissions (2014 EIQ)	Potential Emissions of the Application
PM	25.0	N/D	N/A	0.74
PM_{10}	15.0	N/D	25.97	3.27
$PM_{2.5}$	10.0	N/D	22.31	3.27
SO_x	40.0	Major	1,649.34	0.42
NO_x	40.0	Major	129.53	18.35
VOC	40.0	N/D	9.18	0.91
CO	100.0	Major	10,175.25	36.84
Lead	0.6	Major	1.34	0.0004
HAPs	25.0	Major	9.63	1.32

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

Table 6: HAP Emissions Summary (tons per year)

Pollutant	CAS No.	SMAL	Existing Potential Emissions	Existing Actual Emissions (2014 EIQ)	Potential Emissions of the Application
Hexane	110-54-3	10	N/D	N/D	1.26
Formaldehyde	50-00-0	2	N/D	N/D	0.05
Toluene	108-88-3	10	N/D	N/D	0.002
Nickel Compounds	20-14-4	1	N/D	0.03	0.001
Benzene	71-43-2	2	N/D	7.81	0.001
Chromium Compounds	20-06-4	5	N/D	0.004	0.001
1,4-Dichlorobenzene	106-46-7	10	N/D	N/D	0.001
Cadmium Compounds	20-04-2	0.01	N/D	0.17	0.001
Naphthalene	91-20-3	10	N/D	0.81	0.0004
Manganese Compounds	20-12-2	0.8	N/D	0.04	0.0004
Mercury Compounds	20-13-3	0.01	N/D	0.01	0.0003
Arsenic Compounds	20-01-9	0.005	N/D	0.22	0.0002
Polycyclic Organic Matter		0.01	N/D	N/D	0.0001
Cobalt Compounds	20-07-5	0.1	N/D	N/D	0.0001
Selenium Compounds	20-16-6	0.1	N/D	N/D	0.00002
Beryllium Compounds	20-03-1	0.008	N/D	0.001	0.00001

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

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 criteria pollutants are below de minimis levels. A permit is required as emissions exceed the insignificance levels in 10 CSR 10-6.061(3)(A)3.A.

APPLICABLE REQUIREMENTS

Buick Resource Recycling Facility, LLC 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

- 10 CSR 10-6.045 *Open Burning Requirements*
- 10 CSR 10-6.165 *Restriction of Emission of Odors*
- 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*

SPECIFIC REQUIREMENTS

- 10 CSR 10-6.070 *New Source Performance Regulations*
    - 40 CFR Part 60, Subpart L – *Standards of performance for Secondary Lead Smelters* applies to EP-08, EP-22-28, and EP-105.
- 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations*
    - 40 CFR Part 63, Subpart X – *National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting* applies to EP-08, EP-22-28, and EP-105.
    - 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters* applies to EP-33.
    - 10 CSR 10-6.120 *Restriction of Emissions of Lead From Specific Lead Smelter-Refinery Installations* applies to the entire installation.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*, I recommend 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 November 8, 2013, received November 18, 2013, designating The Doe Run Company as the owner and operator of the installation.

APPENDIX A

Abbreviations and Acronyms

% ..... percent
ºF ..... 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
tph..... tons per hour
tpy ..... tons per year
VMT..... vehicle miles traveled
VOC..... Volatile Organic Compound

Mr. James Lanzafame
Environmental and Health Manager
Buick Resource Recycling Facility, LLC
18954 Highway KK
Boss, MO 65440

RE: New Source Review Permit - Project Number: 2013-11-035

Dear Mr. Lanzafame:

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, your new source review permit application, and submittal of a revised operating 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.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to §§621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission 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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, 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 Alana Hess, Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:ahl

Enclosures

c:Southeast Regional Office
PAMS File: 2013-11-035
Permit Number: