

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: **092014-006**

Project Number: 2014-05-083
Installation Number: 093-0009

Parent Company: The Doe Run Resources Corporation, d/b/a
The Doe Run Company

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

Installation Name: The 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:

Installation of two 225 ton refining kettles each with a 6 MMBtu/hr propane burner, a 100 ton refining kettle with a 6 MMBtu/hr propane burner, and a 20 ton liquation kettle with a 3 MMBtu/hr propane burner and modification of an existing 70 ton kettle to increase capacity to 100 tons with a 6 MMBtu/hr propane burner. 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.

SEP 23 2014

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "Kyma L. Moore".

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

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 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 start up 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 Regional Office within 15 days after the actual start up 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.

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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."

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

1. Lead Emission Limitations
 - A. EP-105 ERP Baghouse shall meet the process vent standards for new sources in §63.543(b).
 - B. EP-105 ERP Baghouse shall have an airflow rate less than or equal to 60,000 dscfm.
2. Permanent Total Enclosure Requirements
 - A. The Buick Resource Recycling Facility, LLC shall operate the two 225 ton, two 100 ton, and one 20 ton ERP kettles in a permanent total enclosure that is maintained at negative pressure at all times and vented to a baghouse as required by §63.544(a). The permanent total enclosure shall meet the requirements of §63.544(c).
 - B. The Buick Resource Recycling Facility, LLC shall ensure proper operation of the permanent total enclosure by complying with the monitoring requirements of §63.548(k).
3. Material Transfer Requirements

The Buick Resource Recycling Facility, LLC shall collect and transport all lead bearing dust (i.e. lead bearing material which is a dust) within closed conveyor systems or in sealed, leak-proof containers unless the collection and transport activities are contained within a permanent total enclosure. All other lead bearing material shall be contained and covered for transport outside of a permanent total enclosure in a manner that prevents spillage or dust formation. Lead ingot product is exempt from the requirement to be covered for transport.
4. Baghouse Requirements
 - A. The Buick Resource Recycling Facility, LLC shall vent emissions from the two 225 ton, two 100 ton, and one 20 ton ERP Kettles to EP-105 ERP Baghouse.

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SPECIAL CONDITIONS:

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

- B. The Buick Resource Recycling Facility, LLC shall ensure proper operation of the baghouse by complying with the monitoring requirements of §63.548(a) through (f).
 - C. The Buick Resource Recycling Facility, LLC shall install, calibrate, maintain, and operate a CEMS for measuring lead emissions as required by §63.548(l) and (m) within 180 days of promulgation by the EPA of performance specifications for lead CEMS.
5. Record Keeping and Reporting Requirements
- A. The Buick Resource Recycling Facility, LLC shall retain records as required by §63.550(c)(1) through (3), (c)(6) through (12), (e)(3) through (6), (e)(10), and (e)(11).
 - B. The Buick Resource Recycling Facility, LLC 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.
6. Performance Testing
- A. Buick Resource Recycling Facility, LLC shall conduct performance testing according to the requirements of §63.547 to demonstrate compliance with the lead emission limitation in Special Condition 1.A.
 - B. These tests shall be performed within 60 days after achieving startup of the ERP kettles, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with the Proposed Test Plan and as outlined in Special Condition 6.A.
 - C. Testing shall be performed at the permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum capacity (225 tons x 2 + 100 tons x 2 + 20 tons = 670 tons). If it is impractical to test at the permitted capacity, the emission sources may be tested at less than the maximum capacity; however, subsequent usage shall be limited to 110 percent of the tested capacity.

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SPECIAL CONDITIONS:

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

- D. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan shall be approved by the Director prior to conducting the required emission testing.
- E. Two copies of a written report of the performance test results shall be submitted to the Director within 60 days of completion of any required testing. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.
- F. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations. The test report shall include the airflow rate (dscfm) during the test, the amount of lead contained in the ERP Kettles during the test (tons), and the lead production rate (tph) during the test. Buick Resource Recycling Facility, LLC shall amend this permit if airflow rate (dscfm) during the test exceeds the airflow rate limitations of Special Condition 1.B.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2014-05-083
Installation ID Number: 093-0009
Permit Number:

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

Complete: June 23, 2014

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

Iron County, S14, T34N, R2W

REVIEW SUMMARY

- The Doe Run Company has applied for authority to install two 225 ton refining kettles each with a 6 MMBtu/hr propane burner, a 100 ton refining kettle with a 6 MMBtu/hr propane burner, and a 20 ton liquation kettle with a 3 MMBtu/hr propane burner and modification of an existing 70 ton kettle to increase capacity to 100 tons with a 6 MMBtu/hr propane burner at their Buick Resource Recycling Facility, LLC in Boss, MO.
- HAP emissions are expected from the proposed equipment. Lead is the primary pollutant of concern; however, other heavy metals found as impurities in the lead will also be emitted. The new emissions sources are subject to MACT X. EPA has completed a Risk and Technology Review (RTR) of MACT X; therefore, the installation is not required to perform an air quality analysis for HAP.
- 40 CFR Part 60, Subpart L – *Standards of Performance for Secondary Lead Smelters* is applicable to the EP-105 ERP Baghouse as the modified and new ERP refining kettles are considered pot furnaces and have a charging capacity in excess of 550 pounds. §60.122(b) limits opacity emissions discharged to the atmosphere to less than ten percent.
- 40 CFR Part 63, Subpart X – *National Emission Standards for Hazardous Air Pollutants From Secondary Lead Smelting* is applicable to EP-105 ERP Baghouse. Construction of these sources will occur after May 19, 2011; therefore, they must comply with the new source standards.
- 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* is not applicable to EP-105 ERP Baghouse. §63.7491(e) exempts refining kettles covered by MACT X.

- A baghouse is being used to control emissions from the two 225 ton, two 100 ton, and one 20 ton ERP Kettles.
- 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 below de minimis levels. A permit was required as potential NO_x emissions exceed the insignificance level of 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 since potential emissions of the application are below de minimis levels.
- Emissions testing is required for the equipment.
- The installation shall submit a new initial Part 70 operating permit application within one year of equipment startup.
- 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 are 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 permits have been issued to Buick Resource Recycling Facility, LLC by 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	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

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

Buick Resource Recycling Facility, LLC has been issued several NOVs over the past five years; however, none are applicable to the equipment being permitted.

PROJECT DESCRIPTION

The Doe Run Company has applied for authority to install two 225 ton refining kettles each with a 6 MMBtu/hr propane burner, a 100 ton refining kettle with a 6 MMBtu/hr propane burner, and a 20 ton liquation kettle with a 3 MMBtu/hr propane burner and to modify an existing 70 ton kettle to increase its capacity to 100 tons with a 6 MMBtu/hr propane burner at The Buick Resource Recycling Facility, LLC in Boss, MO. These new and modified kettles will be referred to as Enhanced Refinery Procedure (ERP) kettles. The ERP kettles will further refine lead bearing material that has already been processed by the installation's existing refining kettles. Total lead production from Buick Resource Recycling Facility is still limited to 175,000 tons per year by 10 CSR 10-6.120(3)(B)2. The lead produced by the new ERP kettles shall be included in the 175,000 tons per year limit. As this is a batch process, it is difficult to determine a maximum hourly production rate. Instead the installation is required to perform testing within 90 to 100 percent of maximum capacity (i.e. 603 tons to 670 tons contained within the ERP kettles). After leaving the ERP kettles, the lead will be cast by existing casting machines. As there is no increase in primary refining capacity or casting capacity, this project is not considered a debottleneck of the refinery operations. If it is later determined that this project does debottleneck refinery operations, Buick Resource Recycling Facility, LLC may be subject to enforcement action.

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, Sections 1.5 "Liquefied Petroleum Gas Combustion" (July 2008) and 12.11 "Secondary Lead Processing" (October 1986) and 40 CFR Part 98 – *Mandatory Greenhouse Gas Reporting*.

AP-42 Table 12.11-2 lists a single emission factor of 0.03 pounds particulates per ton of lead produced from kettle refining. To be conservative, all particulates were considered to be 2.5 μm or smaller. HAP emissions were calculated using data from the SPECIATE 3.2 profile 2040530 for secondary lead – melting pot stack.

AP-42 Table 12.11-4 provides emission factors for fugitive emissions from kettle refining. Footnote "a" states that fugitive emissions were estimated to be five percent of uncontrolled stack emissions. MACT X requires the ERP Kettles be installed within a permanent total enclosure. To be conservative, fugitive emissions were evaluated for this project; however, due to the MACT X requirement only two percent of emissions were calculated as fugitive rather than the five percent of AP-42 Table 12.11-4 footnote "a".

The lead limits in MACT X are in units of grains per dry standard cubic feet of process vent gas and are affected by airflow. In order to ensure that the project remains de minimis for lead, the installation has been limited to the airflow rate proposed within the permit application.

The following table 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 upon existing actual emissions. Existing actual emissions were taken from the installation's 2013 EIQ. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8,760 hours per year).

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/D	N/A	2.95	N/A
PM ₁₀	15.0	N/D	41.72	3.60	N/A
PM _{2.5}	10.0	N/D	37.26	3.60	N/A
SO _x	40.0	Major	2,962.06	0.01	N/A
NO _x	40.0	Major	210.39	16.80	N/A
VOC	40.0	N/D	9.98	1.03	N/A
CO	100.0	Major	17,982.13	9.69	N/A
GHG (CO ₂ e)	75,000	Major	N/A	16,508.84	N/A
HAPs	25.0	N/D	12.36	0.22	N/A
Lead	0.60	N/D	13.70	0.22	N/A

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 pollutant are conditioned below de minimis levels. A permit was required as potential NO_x emissions exceed the insignificance level of 10 CSR 10-6.061(3)(A)3.A.

APPLICABLE REQUIREMENTS

Buick Resource Recycling Facility, LLC shall comply with the following requirements applicable to the ERP kettles. The Missouri Air Conservation Laws and Regulations should be consulted for specific recordkeeping, 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 10-6.065 *Operating Permits*
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 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*

SPECIFIC REQUIREMENTS

- 10 CSR 10-6.070 *New Source Performance Regulations*
 - 40 CFR Part 60, Subpart L – *Standards of Performance for Secondary Lead Smelters*
- 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*
- 10 CSR 10-6.120 *Restriction of Emissions of Lead From Specific Lead Smelter-Refinery Installations*
- 10 CSR 10-6.260 *Restriction of Emission of Sulfur Compounds* is applicable to EP-105 ERP Baghouse. Based upon a SO_x emission rate of 0.002 lb/hr and an airflow rate of 60,000 dscfm; potential SO_x emissions are 0.004 ppmv far below the 500 ppmv emission limitation for new sources.

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.

Alana L. Rugen, P.E.
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 30, 2014, received May 30, 2014, designating The Doe Run Company as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- U.S. EPA database SPECIATE.

APPENDIX A

Abbreviations and Acronyms

%percent	m/s meters per second
°Fdegrees Fahrenheit	Mgal 1,000 gallons
acfmactual cubic feet per minute	MW megawatt
BACT Best Available Control Technology	MHDR maximum hourly design rate
BMPs Best Management Practices	MMBtu ... Million British thermal units
Btu British thermal unit	MMCF million cubic feet
CAM Compliance Assurance Monitoring	MSDS Material Safety Data Sheet
CAS Chemical Abstracts Service	NAAQS .. National Ambient Air Quality Standards
CEMS Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR Code of Federal Regulations	NOV Notice of Violation
CO carbon monoxide	NO_x nitrogen oxides
CO₂ carbon dioxide	NSPS New Source Performance Standards
CO_{2e} carbon dioxide equivalent	NSR New Source Review
COMS Continuous Opacity Monitoring System	PM particulate matter
CSR Code of State Regulations	PM_{2.5} particulate matter less than 2.5 microns in aerodynamic diameter
dscf dry standard cubic feet	PM₁₀ particulate matter less than 10 microns in aerodynamic diameter
EIQ Emission Inventory Questionnaire	ppm parts per million
EP Emission Point	PSD Prevention of Significant Deterioration
EPA Environmental Protection Agency	PTE potential to emit
EU Emission Unit	RACT Reasonable Available Control Technology
fps feet per second	RAL Risk Assessment Level
ft feet	SCC Source Classification Code
GACT Generally Available Control Technology	scfm standard cubic feet per minute
GHG Greenhouse Gas	SIC Standard Industrial Classification
gpm gallons per minute	SIP State Implementation Plan
gr grains	SMAL Screening Model Action Levels
GWP Global Warming Potential	SO_x sulfur oxides
HAP Hazardous Air Pollutant	SO₂ sulfur dioxide
hr hour	tph tons per hour
hp horsepower	tpy tons per year
lb pound	VMT vehicle miles traveled
lbs/hr pounds per hour	VOC Volatile Organic Compound
MACT Maximum Achievable Control Technology	
µg/m³ micrograms per cubic meter	

Mr. James M. Lanzafame
Sr. Env. Technical Engineer
Buick Resource Recycling Facility, LLC
18954 Highway KK
Boss, MO 65440

RE: New Source Review Permit - Project Number: 2014-05-083

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 Part 70 initial 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 have any questions regarding this permit, please do not hesitate to contact Alana Rugen, 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:arl

Enclosures

c: Southeast Regional Office
PAMS File: 2014-05-083

Permit Number: