

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: 032017-008

Project Number: 2017-01-010
Installation Number: 077-0260

Parent Company: NorthStar Battery Company, LLC

Parent Company Address: 4000 Continental Way, Springfield, MO 65803

Installation Name: NorthStar Battery Company Plant #2

Installation Address: 1320 North Alliance Avenue, Springfield, MO 65802

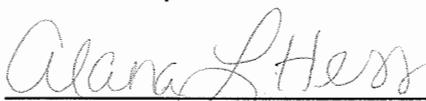
Location Information: Greene County, S7, T29N, R22W

Application for Authority to Construct was made for:

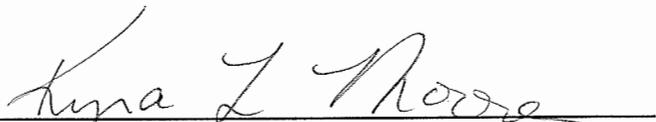
Re-routing the lead oxide bins to Baghouse #4, re-routing the central vacuum system to Baghouse #1, re-route three stackers to Baghouse #2, adding a repair station that will route to Baghouse #1, and adding a stacker that will route to Baghouse #2. This review was conducted in accordance with Section (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.



Prepared by
Alana Hess
New Source Review Unit



Director or Designee
Department of Natural Resources

MAR 17 2017

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 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 these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department's Southwest Regional Office within 15 days after the actual start up of these air contaminant sources.

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 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."

NorthStar Battery Company Plant #2
 Greene County, S7, T29N, R22W

1. Superseding Condition

The conditions of this permit supersede all special conditions found in construction permits 102010-011, 102010-011A, and 082015-017 previously issued by the Air Pollution Control Program.

2. Emission Limitation

A. NorthStar Battery Company Plant #2 shall limit the emissions of Lead Compounds (CAS# 20-11-1) from the emission points listed in Tables 1 and 2 to less than or equal to the rates listed in the tables. NorthStar Battery Company Plant #2 shall also comply with the lead emission standards at §60.372.

Table 1: Controlled Emission Points

Emission Point	Emission Unit	Description	Control Devices	Stack Height (ft)	Stack Inside Diameter (ft)	Stack Gas Exit Velocity (ft/s)	Stack Gas Exit Temp. (°F)	Emission Limit (lb/hr)
1	1a	Pre-Melt Pot	Baghouse #1	37.01	4.25	67.46	83.60	1.40E-02
	1b	Primary Lead Pot						
	1c	Remelt Pot						
	7b	Repair Station						
	7a	Plant Central Vacuum System	Pre-filter Baghouse and Baghouse #1					
3	3d	Compression Station	Baghouse #3	37.01	3.83	48.86	72.60	4.34E-03
	3e	Cast-on Strap						
	3f	Heat Seal						
	3g	Lid Bond Epoxy						
	3i	Post Burner						
	3j	Tinning Station						
	3k	Stuffing Station						

SPECIAL CONDITIONS:

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

Emission Point	Emission Unit	Description	Control Devices	Stack Height (ft)	Stack Inside Diameter (ft)	Stack Gas Exit Velocity (ft/s)	Stack Gas Exit Temp. (°F)	Emission Limit (lb/hr)
2	2a	Pasting	Baghouse #2	37.01	3.83	71.04	71.90	1.36E-02
	2b	Pasting Take Off						
	2c	Auto Stacking						
	3c	Auto Stacking						
	2d	Compression Station						
	2e	Cast-on Strap						
	2f	Heat Seal						
	2g	Lid Bond Epoxy						
	2h	Plasma Welder						
	2j	Tinning Station						
	2k	Stuffing Station						
4	4a	Lead Oxide Unloading	Baghouse #4	37.01	2.23	27.04	71.10	1.95E-03
	4b	Lead Oxide Storage Area						
	5a	Neg. Lead Oxide Silo G-1	Pre-filter, HEPA Filter #1, & Baghouse #4					
	5b	Neg. Lead Oxide Silo G-2	Pre-filter, HEPA Filter #2 & Baghouse #4					
	5c	Pos. Lead Oxide Silo R-4	Pre-filter, HEPA Filter #3, & Baghouse #4					
	5d	Pos. Lead Oxide Silo R-5	Pre-filter, HEPA Filter #4, & Baghouse #4					
6A	6a	Pos. Paste Mixing	Scrubber #1	37.20	1.17	34.46	69.00	2.96E-04
6B	6b	Neg. Paste Mixing	Scrubber #2	37.20	1.17	36.94	110.30	2.96E-04

SPECIAL CONDITIONS:

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

Table 2: Uncontrolled Emission Points

Emission Point	Emission Unit	Description	Stack Height (ft)	Stack Inside Diameter (ft)	Stack Gas Exit Velocity (ft/s)	Stack Gas Exit Temp. (°F)	Emission Limit (lb/hr)
8A	8a	Cure/Dry Oven #1	37.01	1.17	23.44	169.5	3.21E-04
8B	8b	Cure/Dry Oven #2	37.01	1.17	21.84	169.6	3.21E-04
8C	8c	Cure/Dry Oven #3	37.01	1.17	23.47	170.4	3.21E-04
8D	8d	Cure/Dry Oven #4	37.01	1.17	21.36	173.3	3.21E-04
8E	8e	Cure/Dry Oven #5	35.99	1.17	23.70	173.0	3.21E-04
8F	8f	Cure/Dry Oven #6	35.99	1.17	20.35	173.5	3.21E-04
8G	8g	Cure/Dry Oven #7	35.99	1.17	20.31	178.8	3.21E-04
8H	8h	Cure/Dry Oven #8	35.99	1.17	24.65	168.0	3.21E-04
8I	8i	Cure/Dry Oven #9	37.01	1.17	24.51	162.3	3.21E-04
8J	8j	Cure/Dry Oven #10	37.01	1.17	20.49	175.9	3.21E-04

- B. Stack testing previously conducted in January of 2012 on EP-1, EP-2, EP-3, EP-4, EP-6A, EP-6B, EP-8A, EP-8B, EP-8C, EP-8D, EP-8E, EP-8F, EP-8G, EP-8H, and EP-8J may be used to demonstrate compliance with these emission limitations. Stack testing previously conducted in February of 2013 on EP-8I may be used to demonstrate compliance with its emission limitation.
3. Control Device Requirement – Baghouses, Pre-filters, and HEPA Filters
- A. NorthStar Battery Company Plant #2 shall control lead and particulate emissions from EP-1, EP-2, EP-3, and EP-4 using baghouses as specified in the permit application.
- B. NorthStar Battery Company Plant #2 shall control lead and particulate emissions from emission units 5a, 5b, 5c, 5d, and 7a using pre-filters in addition to the baghouses required by Special Condition 2.A as specified in the permit application.
- C. NorthStar Battery Company Plant #2 shall control lead and particulate emissions from emission units 5a, 5b, 5c, and 5d using HEPA filters in addition to the pre-filters and baghouses required by Special Conditions 2.A and 2.B as specified in the permit application.
- D. NorthStar Battery Company Plant #2 shall perform semiannual inspections and maintenance to ensure proper performance of each baghouse, pre-filter, and HEPA filter. This includes inspection of structural and filter integrity. NorthStar Battery Company Plant #2 shall record the results of these inspections.
- E. NorthStar Battery Company Plant #2 shall install, maintain, and operate a pressure drop monitoring device to measure the differential pressure drop across each baghouse and pre-filter during all times when the process is operating. The pressure drop shall be recorded at least once per day. If a

SPECIAL CONDITIONS:

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

pressure drop is observed outside of the normal operational ranges, NorthStar Battery Company Plant #2 shall record the incident and take immediate corrective actions. NorthStar Battery Company Plant #2 shall also record the corrective actions taken. NorthStar Battery Company Plant #2 shall submit a monitoring system performance report in accordance with §63.10(e)(3).

- F. NorthStar Battery Company Plant #2 shall conduct a visible emissions observation at least once per day to verify that no visible emissions are occurring at the discharge point to the atmosphere from EP-1, EP-2, EP-3, and EP-4. If visible emissions are detected, NorthStar Battery Company Plant #2 shall record the incident and conduct an opacity measurement in accordance with §60.374(b)(3). NorthStar Battery Company Plant #2 shall record the results of each opacity measurement. If the measurement exceeds the applicable opacity standard in §60.372(a)(7) or (8), NorthStar Battery Company Plant #2 shall submit this information in an excess emissions report required under §63.10(e)(3).
- G. NorthStar Battery Company Plant #2 shall install, maintain, and operate a pressure drop monitoring device to measure the differential pressure drop across each HEPA filter during all times when the process is operating. The pressure drop shall be recorded at least once per week. If a pressure drop is observed outside of the normal operational ranges, NorthStar Battery Company Plant #2 shall record the incident and take immediate corrective actions. NorthStar Battery Company Plant #2 shall also record the corrective actions taken. NorthStar Battery Company Plant #2 shall submit a monitoring system performance report in accordance with §63.10(e)(3).
- H. These pressure drop monitoring devices shall be located such that Department of Natural Resources' employees may easily observe them.
- I. Replacement filters for the baghouses, pre-filters, and HEPA filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
- J. NorthStar Battery Company Plant #2 shall maintain documentation from the manufacturer indicating the normal operating pressure drop range of the baghouses, pre-filters, and HEPA filters.

SPECIAL CONDITIONS:

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

- K. NorthStar Battery Company Plant #2 shall maintain an operating and maintenance log for the baghouses, pre-filters, and HEPA filters 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.

- 4. Control Device Requirement – Scrubbers
 - A. NorthStar Battery Company Plant #2 shall control emissions from emission units 6a and 6b using scrubbers as specified in the permit application.

 - B. NorthStar Battery Company Plant #2 shall install, calibrate, maintain, and operate monitoring devices that measure and record the pressure drop across each scrubber at least once every 15 minutes. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

 - C. NorthStar Battery Company Plant #2 shall install, calibrate, maintain, and operate monitoring devices that measure and record the liquid flowrate through each scrubber at least once every 15 minutes.

 - D. These monitoring devices shall be located such that Department of Natural Resources' employees may easily observe them.

 - E. The operating pressure drop shall be maintained within the normal operating range specified by the manufacturer. NorthStar Battery Company shall maintain documentation from the manufacturer indicating the normal operating pressure drop range of the scrubbers.

 - F. The operating liquid flowrate shall be maintained within the normal operating range specified by the manufacturer. NorthStar Battery Company shall maintain documentation from the manufacturer indicating the normal operating liquid flowrate range of the scrubbers.

 - G. The permittee shall maintain an operating and maintenance log for the scrubbers 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.

SPECIAL CONDITIONS:

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

5. NorthStar Battery Company Plant #2 shall notify the Air Pollution Control Program before initial startup of any modifications to the facility design that could impact the release parameters or lead emission rates as specified in the Memorandum from the Modeling Unit titled, "Ambient Air Quality Impact Analysis (AAQIA) for Northstar Battery Company, LLC – Plant #2" (January 2017). In the event the Air Pollution Control Program determines that the changes are significant, the permittee shall submit an updated AAQIA to the Air Pollution Control Program that continues to demonstrate compliance with the lead RAL.

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

Project Number: 2017-01-010

Installation ID Number: 077-0260

Permit Number: 032017-008

Installation Address:

NorthStar Battery Company Plant #2
1320 North Alliance Avenue
Springfield, MO 65802

Parent Company:

NorthStar Battery Company, LLC
4000 Continental Way
Springfield, MO 65803

Greene County, S7, T29N, R22W

REVIEW SUMMARY

- NorthStar Battery Company has applied for authority to re-route the lead oxide bins (5a, 5b, 5c, and 5d) to EP-4 Baghouse #4, re-route the central vacuum system (7a) to EP-1 Baghouse #1, re-route three stackers (3c) to EP-2 Baghouse #2, install a repair station (7b) that will route to EP-1 Baghouse #1 and install a new stacker that will route to EP-2 Baghouse #2.
- The application was deemed complete on January 25, 2017
- HAP emissions are expected from the proposed equipment. Lead emissions are expected from each emission source identified in Tables 1 and 2. The installation also emits HAPs from the combustion of natural gas. No new natural gas combustion sources are being installed as part of this project.
- 40 CFR Part 60, Subpart KK – *Standards of Performance for Lead-Acid Battery Manufacturing Plants* is applicable to all of the lead emission units identified in Tables 1 and 2. Table 3 provides an estimate of each emission points NSPS KK lead emission standard based on the air flow rates observed during the most recent stack tests (note: if additional NSPS KK stack testing is conducted in the future, the NSPS KK lead emission standard applicable to each emission point should be re-calculated based on the stack tested Method 12/29 flow rates as required by §60.374(b)(2) and §60.372).

Table 3: Estimated NSPS KK Lead Standards

EP	EU ¹	Facility Type	EU Limit (gr/dscf)	EU Air Flow (cfm)	Total Air Flow ² (cfm)	Estimated EP Limit (gr/dscf)
1	1a	Grid Casting	0.000175	23,518	80,000	0.00068
	1b	Grid Casting	0.000175	6,934		
	1c	Lead Reclaim	0.00197	24,368		
	7a	Other Lead Emitting Operation	0.000437	1,519		
	7b	Three-process Operation	0.000437	1,000		
2	2a	Paste Mixing	0.000437	29,495	60,000	0.000419
	2b	Paste Mixing	0.000437	6,173		
	2c	Three-process Operation	0.000437	6,852		
	3c	Three-process Operation	0.000437	6,560		
	2d	Three-process Operation	0.000437	397		
	2e	Three-process Operation	0.000437	1,268		
	2f	Three-process Operation	0.000437	1,534		
	2g	Three-process Operation	0.000437	1,931		
	2h	Three-process Operation	0.000437	1,800		
	2j	Three-process Operation	0.000437	1,030		
	2k	Three-process Operation	0.000437	445		
3	3d	Three-process Operation	0.000437	516	60,000	0.000063
	3e	Three-process Operation	0.000437	1,448		
	3f	Three-process Operation	0.000437	1,718		
	3g	Three-process Operation	0.000437	2,169		
	3i	Three-process Operation	0.000437	1,280		
	3j	Three-process Operation	0.000437	885		
4	4a	Paste Mixing	0.000437	2,286	10,000	0.000574
	4b	Paste Mixing	0.000437	4,571		
	5a	Paste Mixing	0.000437	1,642		
	5b	Paste Mixing	0.000437	1,426		
	5c	Paste Mixing	0.000437	1,520		
	5d	Paste Mixing	0.000437	1,681		
6A	6a	Paste Mixing	0.000437	2,141	2,141	0.000437
6B	6b	Paste Mixing	0.000437	2,158	2,158	0.000437
8A	8a	Paste Mixing	0.000437	1,231	1,231	0.000437
8B	8b	Paste Mixing	0.000437	1,161	1,161	0.000437
8C	8c	Paste Mixing	0.000437	1,262	1,262	0.000437
8D	8d	Paste Mixing	0.000437	1,088	1,088	0.000437
8E	8e	Paste Mixing	0.000437	1,266	1,266	0.000437
8F	8f	Paste Mixing	0.000437	1,036	1,036	0.000437
8G	8g	Paste Mixing	0.000437	1,038	1,038	0.000437
8H	8h	Paste Mixing	0.000437	1,316	1,316	0.000437
8I	8i	Paste Mixing	0.000437	1,328	1,328	0.000437
8J	8j	Paste Mixing	0.000437	1,092	1,092	0.000437

- 40 CFR Part 63, Subpart PPPPPP – *National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources* is applicable to all of the lead emission units identified in Tables 1 and 2.

¹ See Table 1 or 2 for a description of each emission unit.

² Includes non-lead emitting emission sources which may also be ducted to the control device.

- Baghouses, pre-filters, HEPA filters, and scrubbers are being used to control lead and particulate emissions from the installation. Tables 1 and 2 indicate which control devices are required for each emission unit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of lead are conditioned below the de minimis level by the lead emission limits in Tables 1 and 2.
- This installation is located in Greene County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was performed to determine the ambient impact of the installation's lead emissions.
- Emissions testing is not required for the installation as a part of this permit. Testing may be required as part of other state or federal applicable rules.
- NorthStar Battery Company Plant #2 will remain a basic state installation after the issuance of this permit. NorthStar Battery Company Plant #2 shall include the special conditions of this permit in all subsequent operating permit renewals.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

NorthStar Battery Company, LLC operates two lead acid battery production plants in Springfield, MO. The two plants are considered separate installations as they are not located on one or more contiguous or adjacent properties. NorthStar Battery Company Plant #2 was designed as a 150 battery per hour plant and began construction under Permit 102010-011. Due to a down turn in the economy not all of the permitted equipment was installed. The as-built maximum capacity of the plant is 80 batteries per hour.

Lead is received in the form of solid blocks. These blocks are melted and cast into plates. Lead oxide is combined with the plates by the pasters. The pasted plates are stacked to form the battery cell. The cells are sent to natural gas-fired curing ovens. After curing, the cells are soldered together and placed in cases. The cases are filled with acid and charged.

The installation is an existing minor source for both construction and operating permits.

The following New Source Review permits have been issued to NorthStar Battery Company, LLC – Plant #2 by the Air Pollution Control Program.

Table 4: Permit History

Permit Number	Description
102010-011	Install lead acid battery plant
102010-011A	Amendment to update modeling with as-built parameters
082015-017	Install a post burner

PROJECT DESCRIPTION

NorthStar Battery Company has applied for authority to:

- Re-route the lead oxide bins (5a, 5b, 5c, and 5d) to EP-4 Baghouse #4. The lead oxide bins were previously controlled by pre-filters and HEPA filters prior to being emitted out of their own stacks (EP-5A, EP-5B, EP-5C, and EP-5D). The lead oxide bins will still be controlled by pre-filters and HEPA filters; however, exhaust from the existing HEPA filters will now be routed to Baghouse #4. Baghouse #4 emits to the atmosphere (EP-4).
- Re-route the central vacuum system (7a) to EP-1 Baghouse #1. The central vacuum system was previously controlled by a pre-filter and a baghouse prior to emitting out of its own stack (EP-7). The central vacuum system will still be controlled by a pre-filter and baghouse; however, exhaust from the existing baghouse will now be routed to Baghouse #1. Baghouse #1 emits to the atmosphere (EP-1).
- Re-route three stackers (3c) to EP-2 Baghouse #2. The three stackers (3c) are being moved from their current location in the assembly area approximately 100 feet northwest to be closer to the other stackers (2c). Emissions from the three stackers previously exhausted to Baghouse #3, but will now exhaust to Baghouse #2.
- Install a repair station (7b) that will route to EP-1 Baghouse #1.
- Install a new stacker that will route to EP-2 Baghouse #2.

There will be seven stackers total at the installation after this project. All seven of the stackers will route to EP-2 Baghouse #2. The relocation of the existing stackers and installation of a new stacker are being performed to achieve better stacking and do not increase the maximum capacity of the installation.

EMISSIONS/CONTROLS EVALUATION

PM, PM₁₀, and PM_{2.5} Emissions

PM, PM₁₀, and PM_{2.5} emissions were estimated using the ratio of their emission factors to Pb emission factors in the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 12.15 "Storage Battery Production" (January 1995) and WebFIRE. Where PM_{2.5} emission factors were unavailable it was conservatively assumed that all PM₁₀ was PM_{2.5}. Emission unit 7a was evaluated under process SCC 30400505 "overall process". Emission units 3c and 7b were evaluated under process SCC 30400509 "three-process operation". Emission units 5a, 5b, 5c, 5d, 6a, 6b, and 8a – 8j were evaluated under process SCC 30400507 "paste mixing."

Pb Emissions

The central vacuum system (7a) previously routed to EP-7, but will now route to EP-1.

7a has a stack tested Pb emission rate of 6.3E-05 lb/hr.

The repair station (7b) is a new emission unit with no stack testing results. Emissions were estimated using the estimated air flow rate (1,000 scfm) and the NSPS KK standard for three-process operations (0.000437 gr/dscf).

The three stackers (3c) previously routed to EP-3, but will now route to EP-2. EP-3 had a stack tested Pb emission rate of 4.34E-03 lb/hr (which included 3c, 3d, 3e, 3f, and 3g). Emissions from 3c were conservatively assumed to be 4.34E-03 lb/hr.

The lead oxide bins (5a, 5b, 5c, and 5d) previously routed to EP-5A, EP-5B, EP-5C, and EP-5D, but will now route to EP-4. 5a, 5b, 5c, and 5d had stack tested Pb emission rates of 4.25E-4 lb/hr, 9.58E-5 lb/hr, 1.26E-4 lb/hr, and 1.35E-4 lb/hr, respectively.

The scrubbers (6a and 6b) were previously inaccurately modeled as emitting from one emission point (EP-6). The modeled Pb emission limits for EP-6A and EP-6B are based on the stack tested Pb emission rate from EP-6A of 2.82E-4 lb/hr.

The modeled Pb limits on EP-8A through EP-8J are based on the stack tested Pb emission rate from EP-08B of 3.06E-4 lb/hr.

The following table provides an emissions summary for this project. Existing potential emissions were taken from NSR Permit 082015-017. Existing actual emissions were taken from the installation's 2015 EIQ. Potential emissions of the application represent the increase in potential emissions, assuming continuous operation (8760 hours per year).

Table 5: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2015 EIQ)	Potential Emissions of the Application
PM	25.0	N/D	N/A	0.25
PM ₁₀	15.0	8.65	1.87	0.23
PM _{2.5}	10.0	N/D	1.80	0.23
SO _x	40.0	0.38	0.004	N/A
NO _x	40.0	27.58	0.99	N/A
VOC	40.0	2.12	0.05	N/A
CO	100.0	15.74	0.83	N/A
HAPs	25.0	0.12	0.16 ³	0.05
Lead	0.6 ⁴	0.11	0.16 ³	0.05
Hexane	10.0 ⁵	N/D	N/D	N/A

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

³ 2015 Actual Pb emissions were not 0.16 tons per year. The installation inaccurately used AP-42 emission factors to determine their Pb emissions; however, they should have used their site-specific stack testing results as stack tests are ranked higher than AP-42 in the emission estimation method hierarchy at 10 CSR 10-6.110(3)(B)1.

⁴ The lead SMAL is 0.01 tons per year.

⁵ The hexane SMAL is 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 lead are conditioned below the de minimis level by the lead emission limits in Tables 1 and 2.

APPLICABLE REQUIREMENTS

NorthStar Battery Company Plant #2 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 10-6.065 *Operating Permits*
 - NorthStar Battery Company, LLC – Plant #2 has the potential to emit lead in quantities greater than de minimis but less than major; therefore, the installation is required to maintain a basic state operating permit.
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
 - NorthStar Battery Company, LLC – Plant #2 shall submit a full EIQ for the first full calendar year after start-up of the emission sources affected by this project.
- 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* is applicable to emission points EP-1, EP-2, EP-3, EP-4, EP-6A, EP-6B, and EP-8A through EP-8N.
 - Any emission unit burning only natural gas is exempt from this regulation per 10 CSR 10-6.220(1)(L).
 - Emission units that are contained within and emit only within a build space are exempt from this regulation per 10 CSR 10-6.220(1)(O). This does not include emission units with a collection device vented outside the building space.

SPECIFIC REQUIREMENTS

- 10 CSR 10-6.070 *New Source Performance Regulations*
 - 40 CFR Part 60, Subpart KK – *Standards of Performance for Lead-Acid Battery Manufacturing Plants* is applicable to all of the lead emission units listed in Tables 1 and 2
- 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations*
 - 40 CFR Part 63, Subpart P – *National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources* is applicable to all of the lead emission units listed in Tables 1 and 2.
- 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes* is applicable to the emission units listed in Table 2. The lead emission units listed in Table 1 are exempt per 10 CSR 10-6.400(1)(B)15 as they are required to install, operate, and maintain particulate matter control device systems that control at least 90% of particulate matter emissions.

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed to determine the ambient impact of lead compounds. Modeling was performed using the EPA modeling software AERMOD Version 16216r. Modeling was required as potential lead emissions from the project exceed the lead SMAL of 0.01 tons per year. The results of the modeling analysis are summarized in Table 6. The installation is limited to the lead emission rates that were input into the modeling per Special Condition 2.

Table 6: Ambient Air Quality Impact Analysis Summary

Pollutant	Modeled Impact ($\mu\text{g}/\text{m}^3$)	RAL ($\mu\text{g}/\text{m}^3$)	Time Period
Lead Compounds (20-11-1)	0.7046	2	8-hr
Lead Compounds (20-11-1)	0.3356	0.357	24-hr
Lead Compounds (20-11-1)	0.0794	0.7	Annual

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*, it is recommended that this permit be granted with special conditions.

PERMIT DOCUMENTS

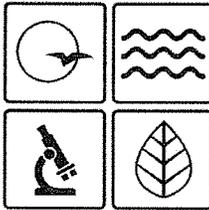
The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated January 3, 2017, received January 4, 2017, designating NorthStar Battery Company, LLC as the owner and operator of the installation.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual 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	NO_x	nitrogen oxides
CO	carbon monoxide	NSPS	New Source Performance Standards
CO₂	carbon dioxide	NSR	New Source Review
CO_{2e}	carbon dioxide equivalent	PM	particulate matter
COMS	Continuous Opacity Monitoring System	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
CSR	Code of State Regulations	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
dscf	dry standard cubic feet	ppm	parts per million
EIQ	Emission Inventory Questionnaire	PSD	Prevention of Significant Deterioration
EP	Emission Point	PTE	potential to emit
EPA	Environmental Protection Agency	RACT	Reasonable Available Control Technology
EU	Emission Unit	RAL	Risk Assessment Level
fps	feet per second	SCC	Source Classification Code
ft	feet	scfm	standard cubic feet per minute
GACT	Generally Available Control Technology	SDS	Safety Data Sheet
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		



Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

MAR 17 2017

Mr. Joe LaBarge, Jr.
General Manager
NorthStar Battery Company, LLC
1320 North Alliance Avenue
Springfield, MO 65802

RE: New Source Review Permit - Project Number: 2017-01-010

Dear Mr. LaBarge:

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 with your basic operating permit 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 §§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, 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.



Mr. Joe LaBarge, Jr.
Page Two

If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, 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:ahj

Enclosures

c: Southwest Regional Office
PAMS File: 2017-01-010

Permit Number: **032017-008**