



Missouri Department of dnr.mo.gov

**NATURAL RESOURCES**

Michael L. Parson, Governor

Carol S. Comer, Director

JAN 07 2020

Ms. April Brennan  
EHS Manager  
NorthStar Battery Company - Plant #1  
4000 East Continental Way  
Springfield, Missouri 65803

RE: New Source Review Permit - Project Number: 2019-07-029

Dear Ms. Brennan:

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 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 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](http://www.oa.mo.gov/ahc).



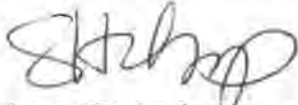
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Ms. April Brennan  
Page Two

If you have any questions regarding this permit, please do not hesitate to contact Russell Osborne, 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



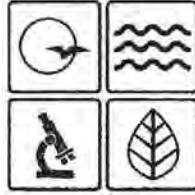
Susan Heckenkamp  
New Source Review Unit Chief

SH:roa

Enclosures

c: Southwest Regional Office  
PAMS File: 2019-07-029

Permit Number: **01 2 0 2 0 - 0 0 2**



**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: **012020-002** Project Number: 2019-07-029  
Installation Number: 077-0234

Parent Company: NorthStar Battery Company - Plant #1

Parent Company Address: 4000 East Continental Way, Springfield, Missouri 65803

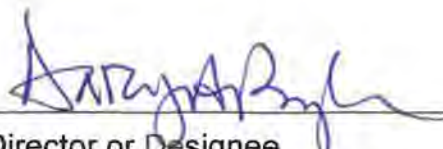
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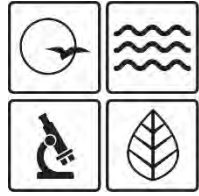
Location Information: Greene County, S3, T29N, R21W

Application for Authority to Construct was made for:  
Installation of a vented maintenance table (EU-1o) to be routed through Baghouse #1 (EP-1). 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  
**JAN 07 2020**

\_\_\_\_\_  
Effective Date



**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES

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

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Director or Designee  
Department of Natural Resources

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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."*

NorthStar Battery Company - Plant #1  
Greene County, S3, T29N, R21W

1. **Superseding Condition**  
The conditions of this permit supersede Special Condition 2 found in Construction Permit 122016-001 previously issued by the Missouri Air Pollution Control Program.
  
2. **Lead Emission Limitations**  
NorthStar Battery Company - Plant #1 shall comply with the emissions of Lead Compounds (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 in accordance with NSPS KK. NorthStar Battery Company Plant #1 shall also adhere to the lead emission limitations at §60.372.

**SPECIAL CONDITIONS:**

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

**Table 1: Controlled Emission Points**

Emission Point	Emission Unit	Description	Control Device(s)	Stack Height (ft)	Stack Inside Diameter (ft)	Stack Gas Exit Velocity (ft/s)	Stack Gas Exit Temp. (°F)	Lead Emission Limit (lb/hr)
1	1a	44,000 lb Pre-Stage Lead Pot	Baghouse #2	36.00	6.00	55.80	93.00	2.50E-02
	1b	20,000 lb Chill Cast						
	1c	Pasting						
	1d	Pasting Take-off						
	1g	Compression Station	Baghouse #1					
	1h	Cast-on Strap (Electric Leadpot)						
	1i	Short Check (Repair Station)						
	1j	Heat Seal						
	1k	Chem Lab						
	1m	Post Burner						
	1n	Paste Mixing Area						
1o	Maintenance Table							
3	3a	Auto Stacking (8)	Baghouse #3	35.01	4.00	58.08	90.00	2.32E-02
	3b	Remelt Pot (Electric)						
	3c	QA Teardown						
	3d	Die Cleaning						
	10	Central Vacuum System #2						
4	4	Lead Oxide Load/Unload Dock	Baghouse #4	13.68	1.69	111.43	79.00	3.22E-03
	5a	Lead Oxide Silo #1	HEPA Filter #1 and Baghouse #4					
	5b	Lead Oxide Silo #2	HEPA Filter #2 and Baghouse #4					
	5c	Lead Oxide Silo #3	HEPA Filter #3 and Baghouse #4					
	5d	Lead Oxide Silo #4	HEPA Filter #4 and Baghouse #4					
6	6	Central Vacuum System #1	Baghouse #6	30.38	0.50	101.87	155.63	2.10E-04
7a	7a	Paste Mixing #4	Wet Scrubber #1	33.17	1.15	47.57	82.77	4.40E-04
7b	7b	Paste Mixing #3	Wet Scrubber #2	33.01	1.15	51.00	68.03	4.40E-04
7c	7c	Paste Mixing #2	Wet Scrubber #3 and HEPA Filter	40.00	1.42	30.72	Ambient	3.42E-05
7d	7d	Paste Mixing #1	Wet Scrubber #4 and HEPA Filter	40.00	1.42	27.13	Ambient	3.42E-05

Frequency and methods of testing will be done in accordance with NSPS KK

**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)	Lead Emission Limit (lb/hr)
9a	9a	Curing/Drying Oven #1	31.76	1.17	15.09	99.00	3.75E-04
9b	9b	Curing/Drying Oven #18	32.91	1.17	14.47	130.33	3.75E-04
9c	9c	Curing/Drying Oven #17	33.33	1.17	13.95	153.67	3.75E-04
9d	9d	Curing/Drying Oven #16	33.17	1.17	21.11	160.33	3.75E-04
9e	9e	Curing/Drying Oven #15	32.84	1.17	22.49	164.00	3.75E-04
9f	9f	Curing/Drying Oven #14	33.23	1.17	14.76	161.00	3.75E-04
9g	9g	Curing/Drying Oven #13	33.17	1.17	19.39	162.67	3.75E-04
9h	9h	Curing/Drying Oven #12	33.23	1.17	10.84	159.00	3.75E-04
9i	9i	Curing/Drying Oven #7	31.92	1.17	17.96	152.67	3.75E-04
9j	9j	Curing/Drying Oven #8	31.92	1.17	11.47	152.67	3.75E-04
9k	9k	Curing/Drying Oven #9	31.43	1.17	14.49	161.67	3.75E-04
9l	9l	Curing/Drying Oven #10	31.50	1.17	18.90	164.67	3.75E-04
9m	9m	Curing/Drying Oven #11	31.59	1.17	13.74	140.33	3.75E-04
9n	9n	Curing/Drying Oven #5	31.00	1.17	18.24	156.00	3.75E-04
9o	9o	Curing/Drying Oven #4	31.76	1.17	15.18	159.33	3.75E-04
9p	9p	Curing/Drying Oven #3	31.66	1.17	15.13	163.00	3.75E-04
9q	9q	Curing/Drying Oven #2	32.25	1.17	15.56	160.33	3.75E-04
9r	9r	Curing/Drying Oven #25	30.31	1.17	23.24	151.67	3.75E-04
9s	9s	Curing/Drying Oven #20	30.74	1.17	9.68	158.00	3.75E-04
9t	9t	Curing/Drying Oven #19	31.33	1.17	18.92	153.00	3.75E-04
9u	9u	Curing/Drying Oven #6	29.43	1.17	16.35	148.33	3.75E-04
9v	9v	Curing/Drying Oven #21	30.91	1.17	24.84	138.33	3.75E-04
9w	9w	Curing/Drying Oven #22	30.91	1.17	21.84	159.67	3.75E-04
9x	9x	Curing/Drying Oven #23	30.84	1.17	10.62	121.00	3.75E-04
9y	9y	Curing/Drying Oven #24	31.00	1.17	11.24	154.00	3.75E-04

*Frequency and methods of testing will be done in accordance with NSPS KK*

3. NorthStar Battery Company - Plant #1 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 #1 – Installation of a Vented Maintenance Table to be Routed Through Baghouse #1" (September 2019). 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.
4. Control Device Requirement – Baghouse
  - A. NorthStar Battery Company - Plant #1 shall control lead emissions from Maintenance Table (EU-1o) using Baghouse #1(EP-1) as specified in the permit application.
  - B. The baghouse shall be operated and maintained in accordance with the manufacturer's specifications. Each control device 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:

- C. Replacement filters for the baghouses 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).
  - D. NorthStar Battery Company - Plant #1 shall monitor and record the operating pressure drop across each control device at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  - E. NorthStar Battery Company - Plant #1 shall maintain a copy of the manufacturer's performance warranty for each control device on site.
  - F. NorthStar Battery Company - Plant #1 shall maintain an operating and maintenance log for each control device 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.
5. Record Keeping and Reporting Requirements  
NorthStar Battery Company Plant - #1 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.

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

Project Number: 2019-07-029  
Installation ID Number: 077-0234  
Permit Number:

Installation Address:

NorthStar Battery Company - Plant #1  
4000 East Continental Way  
Springfield, Missouri 65803

Parent Company:

NorthStar Battery Company - Plant #1  
4000 East Continental Way  
Springfield, Missouri 65803

Greene County, S3, T29N, R21W

REVIEW SUMMARY

- NorthStar Battery Company - Plant #1 has applied for authority to install a vented maintenance table (EU-1o) to be routed through Baghouse #1 (EP-1).
- The application was deemed complete on August 27, 2019.
- HAP emissions are expected from the proposed equipment. Lead emissions are expected to increase from Baghouse #1 (EP-1).
- 40 CFR Part 60, Subpart KK – *Standards of Performance for Lead-Acid Battery Manufacturing Plants* is applicable to the vented maintenance table (EU-1o).
- 40 CFR Part 63, Subpart P – *National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources* is applicable to the vented maintenance table (EU-1o).
- Baghouse #1(EP-1) is being used to control the lead compounds and particulate (PM, PM<sub>10</sub>, PM<sub>2.5</sub>) emissions from the vented maintenance table (EU-1o).
- 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.
- The lead compounds from the maintenance table are now being routed to Baghouse #1. Therefore, increasing the emissions and requiring a permit.
- This installation is located in Greene County, an attainment/unclassifiable 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.
- No Operating Permit is required for this installation.
- Ambient air quality modeling was performed to determine the ambient impact of lead.
- 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.
- 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 and there is no support relationship between the two plants. Plant #1 was designed as a 600,000 batteries per year plant and began construction under Permit 1100-221D. An expansion occurred in 2013 under Permit 082013-001 increasing battery production to 780,000 batteries per year.

Each battery produced at the facility is manufactured from lead alloy ingots and lead oxide. The lead oxide used in the manufacturing process is shipped to the facility by truck. In order to minimize the escape of fugitive lead emissions during receipt, the lead oxide receiving area is enclosed and equipped with doors that are not open during the transfer of material from the trucks to the lead oxide silos. Additionally, the receiving trucks are pressurized to minimize emissions during the transfer of the material to the silos. Similar measures are performed during the receipt of the sulfuric acid.

In the initial production process, the lead alloy ingots are fed to a large pot where the raw material is melted, cooled and spun onto a spool. The spool is uncoiled and fed through a high speed press, which punches a grid into the lead sheet, and then recoils the sheet. The lead scrap that results from the punch press is recycled and fed back into the system.

After the punching process, the lead sheet is continuously fed to the pasting area. In the pasting area mixers will combine the lead oxide with sulfuric acid and water to form a lead paste. The paste is pressed onto the grid sheet and covered with a thin sheet of paper on the top and bottom. The large, coiled sheet is cut into individual sizes and prepared for drying in the cure ovens. The wet plates remain in the drying ovens for a period of 24-48 hours. It is critical that the plates are completely dry prior to assembly.

Once dry, the plates are taken off the oven racks and placed into a robotic machine with a vacuum system in order to create a stack of positive and negative plates, referred to as a “cell pack”. The cell packs are then compressed and transferred to the robotic cast-on-strap work cell.

In the robotic cast-on-strap work cell area, the compressed packs are fluxed and tinned. Additionally, a lead strap cast is applied that connects the positive and negative plates to one another. The cell packs are removed from the compression fixtures, placed into a plastic battery case, and tested prior to being sent to the terminal seal station where the batteries are covered and sealed.

After a few quality assurance checks, the nearly completed batteries have a sulfuric acid resistant epoxy injected into a cavity in the battery lid which further attaches the lid to the battery and acts as a secondary seal against terminal seal leaks. The batteries move to an acid filler station where the battery is filled with the appropriate amount of acid. To minimize heat buildup, the acid filled batteries are transferred on a slow moving conveyor with a chilled water bath. The water also acts to remove any residual lead that may reside on the exterior of the battery pack. In the final production process, the batteries are connected to rectifiers and fully charged prior to shipment to customers.

The installation is an existing minor source of lead. The lead emission points are listed in Tables 1 and 2.

The following New Source Review permits have been issued to NorthStar Battery Company - Plant #1 from the Air Pollution Control Program.

Table 3: Permit History

Permit Number	Description
1100-221D	EX2000012026: Lead-acid Battery Plant Construction
082013-001	2013-01-060: Increasing Battery Production
082013-001A/B/C	Amendments
012016-002	2015-11-032: Post Burner
072016-011	2016-05-047: Relocate Equipment
072016-011A/B	Amendments
122016-001	2016-10-009: Move Equipment

## PROJECT DESCRIPTION

NorthStar Battery Company - Plant #1 has applied for the authority to construct a vented maintenance table (EU-1o) to be routed through Baghouse #1 (EP-1). The maintenance table was in operation but was not connected to the baghouses prior to issuance of this permit. The venting and routing of emissions from the maintenance table to Baghouse #1 is to reduce the workers potential exposure to lead particulates.

Modeling was performed on Baghouse #1 with parameters changing from the previous modeling report for Baghouse #1, *Ambient Air Quality Impact Analysis (AAQIA) for NorthStar Battery Company, LLC-Plant #1-Post Burner Project*, being the proposed increase in flow rate of 3,000 scfm and the resulting change in exit temperature from the

increase in flow rate. Additionally, Baghouse #3 (EP-3) and Baghouse #4 (EP-4) stack parameters were updated with stack test results of June 2017 and April 2017, respectively.

### 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 previously conducted stack test results. The potential emissions of the maintenance table are not explicit as it is dependent upon the frequency of malfunction by the process equipment or operator. Lead compound emissions are not created by the maintenance table, rather, the emissions are re-entrained from other process material and equipment and routed through Baghouse #1(EP-1). In order to accurately represent the project, the Air Pollution Control Program used the allowable emissions increase per §60.372(b), as basis for calculation of the project potential to emit.

Per §60.372(a)(6) the allowable emissions from other lead emitting operations is 0.000437 gr/dscf. The flow rate for the vented maintenance table hood is 3,000 scfm. Annually this would attribute to lead emissions of 0.049 tons. However, since multiple streams are routed to Baghouse #1 the equivalent standard for the total exhaust stream from Baghouse #1 was calculated to be 0.000321 gr/dscf per §60.372(b). Previously, in NSR Permit 122016-001, the stream equivalent standard for Baghouse #1 was found to be 0.000305gr/dscf. The allowable project emissions increase is 0.000016 gr/dscf due to the increased flowrate to Baghouse #1.

Lead compounds are particulate HAPs. Particle size distributing for storage battery production can be found in AP-42, Appendix B-1, 12.15. To conservatively estimate particulate emissions of this project, the largest ratio of PM<sub>2.5</sub> to PM for storage battery production processes was used.

The following table provides an emissions summary for this project. Existing potential emissions were taken from NSR Permit 122016-001. Existing actual emissions were taken from the installation's 2018 EIQ. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours). Although, the actual usage of the maintenance table is less than one hour per day.

Table 4: Emissions Summary (tpy)

Pollutant	Regulatory <i>De Minimis</i> /SMAL Levels	Existing Potential Emissions	Existing Actual Emissions (2018 EIQ)	Potential Emissions of the Project	New Installation Potential
PM	25.0	5.95	N/R	0.020	5.97
PM <sub>10</sub>	15.0	5.60	2.48	0.020	5.62
PM <sub>2.5</sub>	10.0	5.60	2.45	0.019	5.619
SO <sub>x</sub>	40.0	0.08	0.01	N/A	0.08
NO <sub>x</sub>	40.0	12.90	2.57	N/A	12.90
VOC	40.0	0.71	0.14	N/A	0.71
CO	100.0	10.84	2.16	N/A	10.84
HAPs	10.0/25.0	0.49	0.03	0.020	0.51

Pollutant	Regulatory <i>De Minimis</i> /SMAL Levels	Existing Potential Emissions	Existing Actual Emissions (2018 EIQ)	Potential Emissions of the Project	New Installation Potential
Lead Compounds (20-11-1)	0.6/0.01	0.25	0.03	0.020	0.27
Hexane (110-54-3)	10.0	0.23	N/R	N/A	0.23

N/A = Not Applicable; N/R = Not Reported

### 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 below de minimis levels. Lead emissions for the project exceed the HAP SMAL value. Therefore, a construction permit is required.

### APPLICABLE REQUIREMENTS

NorthStar Battery Company - Plant #1 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. For a complete list of applicable requirements for your installation, please consult your operating permit.

### GENERAL REQUIREMENTS

- *Operating Permits*, 10 CSR 10-6.065
- *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 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*
  - *–Standards of Performance for Lead-Acid Battery Manufacturing Plant, 40 CFR Part 60, Subpart KK is applicable to the vented maintenance Table (EU-1o). The vented maintenance table meets the definition of other lead-emitting operation at §60.371(e) and is required to meet a lead limit of 0.000437 gr/dscf by §60.372(a)(6). As multiple lead-emitting facilities are being vented to Baghouse #1 (EP-1), NorthStar Battery Company - Plant #1 will comply with the equivalent standard for the total exhaust stream from EP-1 which was calculated according to §60.372(b) to be 0.000321 gr/dscf.*
- *MACT Regulations, 10 CSR 10-6.075*
  - *National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing, 40 CFR Part 63, Subpart P P P P P P is applicable to the vented maintenance table (EU-1o) at §63.11421(b) as other lead-emitting operation. Baghouse #1 is being used to control lead emissions from the vented maintenance table and are required to comply with §63.11423(b)(2). Compliance is required upon start-up per §63.11422(c)*

## OTHER DETERMINATIONS

- 10 CSR 10-6.400, *Restriction of Emission of Particulate Matter From Industrial Processes*, is not applicable to the vented maintenance table (1o) as Special Condition 4 requires emissions from the vented maintenance table to be routed to Baghouse #1. The baghouse achieves greater than 90% particulate control; therefore the vented maintenance table is exempt from this regulation per 10 CSR 10-6.400(1)(B)15.

## 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 19191. The modeling submitted by the facility relied upon an outdated version of the AERMOD system, Version 18081. Staff from the department's Air Pollution Control Program updated the facility AERMOD executable to reflect the most recent version. Modeling was required as project potential lead emissions exceed the lead SMAL of 0.01 tons per year. The results of the modeling analysis are summarized in Table 5. The installation is limited to the lead emission rates that were input into the modeling per Special Condition 2.

Table 5: Modeling Analysis Summary

Pollutant	Modeled Impact	RAL ( $\mu\text{g}/\text{m}^3$ )	Time Period
Lead Compounds (20-11-1)	0.5710	2	8 Hour
Lead Compounds (20-11-1)	0.3313	0.357	24 Hour
Lead Compounds (20-11-1)	0.0888	0.7	Annual

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 July 12, 2019, received July 23, 2019, designating NorthStar Battery Company - Plant #1 as the owner and operator of the installation.



## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> ..... percent	<b>Mgal</b> ..... 1,000 gallons
<b>°F</b> ..... degrees Fahrenheit	<b>MW</b> ..... megawatt
<b>acfm</b> ..... actual cubic feet per minute	<b>MHDR</b> ..... maximum hourly design rate
<b>BACT</b> ..... Best Available Control Technology	<b>MMBtu</b> .... Million British thermal units
<b>BMPs</b> ..... Best Management Practices	<b>MMCF</b> ..... million cubic feet
<b>Btu</b> ..... British thermal unit	<b>MSDS</b> ..... Material Safety Data Sheet
<b>CAM</b> ..... Compliance Assurance Monitoring	<b>NAAQS</b> .... National Ambient Air Quality Standards
<b>CAS</b> ..... Chemical Abstracts Service	<b>NESHAPs</b> National Emissions Standards for Hazardous Air Pollutants
<b>CEMS</b> ..... Continuous Emission Monitor System	<b>NO<sub>x</sub></b> .....nitrogen oxides
<b>CFR</b> ..... Code of Federal Regulations	<b>NSPS</b> ..... New Source Performance Standards
<b>CO</b> ..... carbon monoxide	<b>NSR</b> ..... New Source Review
<b>CO<sub>2</sub></b> ..... carbon dioxide	<b>PM</b> .....particulate matter
<b>CO<sub>2e</sub></b> ..... carbon dioxide equivalent	<b>PM<sub>2.5</sub></b> ..... particulate matter less than 2.5 microns in aerodynamic diameter
<b>COMS</b> ..... Continuous Opacity Monitoring System	<b>PM<sub>10</sub></b> ..... particulate matter less than 10 microns in aerodynamic diameter
<b>CSR</b> ..... Code of State Regulations	<b>ppm</b> ..... parts per million
<b>dscf</b> ..... dry standard cubic feet	<b>PSD</b> ..... Prevention of Significant Deterioration
<b>EIQ</b> ..... Emission Inventory Questionnaire	<b>PTE</b> ..... potential to emit
<b>EP</b> ..... Emission Point	<b>RACT</b> ..... Reasonable Available Control Technology
<b>EPA</b> ..... Environmental Protection Agency	<b>RAL</b> ..... Risk Assessment Level
<b>EU</b> ..... Emission Unit	<b>SCC</b> ..... Source Classification Code
<b>fps</b> ..... feet per second	<b>scfm</b> ..... standard cubic feet per minute
<b>ft</b> ..... feet	<b>SDS</b> ..... Safety Data Sheet
<b>GACT</b> ..... Generally Available Control Technology	<b>SIC</b> ..... Standard Industrial Classification
<b>GHG</b> ..... Greenhouse Gas	<b>SIP</b> ..... State Implementation Plan
<b>gpm</b> ..... gallons per minute	<b>SMAL</b> ..... Screening Model Action Levels
<b>gr</b> ..... grains	<b>SO<sub>x</sub></b> ..... sulfur oxides
<b>GWP</b> ..... Global Warming Potential	<b>SO<sub>2</sub></b> ..... sulfur dioxide
<b>HAP</b> ..... Hazardous Air Pollutant	<b>SSM</b> ..... Startup, Shutdown & Malfunction
<b>hr</b> ..... hour	<b>tph</b> ..... tons per hour
<b>hp</b> ..... horsepower	<b>tpy</b> ..... tons per year
<b>lb</b> ..... pound	<b>VMT</b> ..... vehicle miles traveled
<b>lbs/hr</b> ..... pounds per hour	<b>VOC</b> ..... Volatile Organic Compound
<b>MACT</b> ..... Maximum Achievable Control Technology	
<b>µg/m<sup>3</sup></b> ..... micrograms per cubic meter	
<b>m/s</b> ..... meters per second	