

Statement of Basis

**Permit to Construct No. P-2014.0002
Project ID 61328**

**Knife River Inc.
Boise, Idaho**

Facility ID 777-00051

Final

November 25, 2014

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Permit Writer**



The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
cfm	cubic feet per minute
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
PC	permit condition
PERF	Portable Equipment Relocation Form
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SCL	significant contribution limits
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
VOC	volatile organic compounds
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Knife River Inc. has proposed a modification to the drum-mix asphalt plant. The asphalt plant change is to a counter-flow asphalt drum mixer equipped with a with a bag house, an asphaltic oil storage tank with a heater, and materials transfer equipment. All burners used will be combust natural gas only. Materials transfer equipment at the facility will include front end loaders, feed bins, storage silos, conveyors, stock piles, and haul trucks.

Asphalt is made at the facility as follows. First, stockpiled aggregate is transferred to feed bins. The Applicant has also requested that recycled asphalt pavement (RAP) be used in the aggregate (up to 50% can be allowed). Aggregate is then dispensed from the feed bins onto feeder conveyors, which transfer the aggregate to the asphalt drum mixer. The Applicant has requested that the asphalt drum mixer be fired on natural gas. Next, aggregate travels through the rotating drum mixer, and when dried and heated, it is mixed with hot liquid asphaltic oil. The asphaltic oil is heated by the asphalt tank heater to allow it to flow and be mixed with the hot, dry aggregate. The resulting asphalt is conveyed to hot storage bins until it can be loaded into trucks for transport off-site or transferred to silos for temporary storage prior to transport off-site.

The Applicant has proposed that line power will be used exclusively at the facility. Therefore, no IC engines powering electrical generators were included in the application.

A concrete batch plant is permitted and collocated at the facility site.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

August 21, 1998	PTC 777-0051 Initial permit to Masco
June 13, 2002	PTC 777-00051 replaced Permit issued 8/21/1998 amend to operate in both attainment and non-attainment areas and to add a diesel generator.
June 24, 2005	P-050011 Fuel change to Masco
May 11, 2009	Owner change from Masco to Knife River Inc.
June 11, 2014	P-2014.0002, Modification including change to a counterflow drum, installation of a baghouse, and the selection of burning natural gas only, Permit status (A) upon issuance of this permit.

Application Scope

This PTC is for a minor modification at an existing minor facility.

The asphalt plant will be fed a mixture of crushed fines and aggregates from imported aggregate.

The process begins with materials being fed via front end loader to a compartment bin feeder system and then dispensed in metered proportions to a collecting conveyor. The material will pass over a scalping screen before being conveyed into the drum mixer via a scalping screen.

Inside the drum mixer the aggregates will be heated to specification temperature and then asphaltic oil is added. In some instances up to 50% RAP may be substituted for virgin aggregate.

The mixed asphalt is dispensed to a slat conveyor and then lifted up to a hot storage silo for intermediate storage. Trucks are then loaded by driving under the hot storage silo.

The silo loading process will be enclosed and vented back to the drum via suction induced either through the conveyor or via a separate duct line. The unloading process will be uncontrolled.

Particulate emissions will be controlled by maintaining the moisture content at 1.5% by weight for all ¼ in and smaller aggregate feed materials via water sprays. In addition, all particulate emissions from the asphalt drum mixer will be collected and vented to a high efficiency baghouse with a minimum control efficiency of 99% as proposed by the Applicant.

The asphalt plant will include a hot oil heating system designed to keep asphaltic oil at specification temperature. Heat will be provided via a natural gas external combustion burner. This burner will operate intermittently during 24-hours per day much the way a hot water heater cycles. Typical burner operation during any 24-hour period is less than 8 hours.

The Applicant has not proposed an asphalt production rate throughput limits change.

The Applicant has stated no IC engines will be used at the site for electrical power.

This particular permitting action was to correct a typographical error in Facility-wide Permit Conditions No. 5. The error stated a concrete batch plant did not having the ability to collocate with the HMA plant within the distance of 1,000 feet. Inquiry has indicated when the concrete batch plant was permitted in 2006 the modeling reviewed at the time included the emissions of both HMA plant and the concrete batch plant. The results indicated the emissions were below required limits and the permit was issued at the present locations of both the concrete batch plant and the HMA, thus the correction to Permit Condition No. 5 was required. The 2006 Statement of Basis for the concrete batch plant regarding Permit No. P-060021 section 5.3 states "The facility will be co-located with a hot mix asphalt (HMA) plant at its initial location The facility has demonstrated compliance to DEQ's satisfaction the emissions from this facility(concrete batch plant) and co-located HMA plant will not cause or significantly contribute to a violation of any ambient air quality standards."

The original permitting action regarding the asphalt drum dryer was to remove and replace the parts that have become worn from the use and wear of the process materials.

Application Chronology

February 18, 2014	DEQ received an application.
February 19, 2014	DEQ received the application fee.
March 21, 2014	DEQ determined that the application was complete.
April 21, 2014	DEQ made available the draft permit and statement of basis for peer and regional office review.
May 7, 2014	DEQ made available the draft permit and statement of basis for applicant review. DEQ did not provide a public comment period on the proposed action because emissions were not increased.
July 2, 2014	DEQ received the permit processing fee.
July 7, 2014	DEQ issued the final permit and statement of basis.
July 30, 2014	Request for the correction of the typographical error of regarding Permit Condition No. 5 was received from the facility.

TECHNICAL ANALYSIS

The asphalt production facility utilizes a baghouse for control of particulate matter emissions from the asphalt drum mixer. In addition, the Applicant will maintain the moisture content in ¼" or smaller aggregate material at 1.5% by weight, using water sprays, using shrouds, or will use other emissions controls to minimize PM₁₀ emissions from aggregate handling.

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
Materials Handling	<u>Material Transfer Points:</u> Materials handling Asphalt aggregate transfers Truck unloading of aggregate Aggregate conveyor transfers Aggregate handling	Maintaining the moisture content in ¼" or smaller aggregate material at 1.5% by weight, using water sprays, using shrouds, or other emissions controls	N/A
Hot Mix Asphalt Drum Mixer	<u>Asphalt Drum Mixer:</u> Manufacturer: AESCO Model: GB-350 Type: Counter-flow Manufacture Date: XXXX Max. production: 350 T/hr, 6000 T/day, and 1,431,979 T/yr Fuel(s): Natural gas	<u>Asphalt Drum Mixer Baghouse:</u> Manufacturer: CMI Model: AP-850 Type: Reverse pulse-jet Flow rate: 57252 dscf PM ₁₀ control efficiency: 99%	Exit height: 55 ft Exit diameter: XX ft Exit flow rate: 45,000 acfm Exit temperature: 325 °F
Asphaltic Oil Tank Heater	<u>Asphaltic Oil Tank Heater:</u> Heat input rating: 0.5 MMBtu/hr Fuel(s): Natural gas,	N/A	N/A

Emissions Inventories

All emissions inventories remained the same.

REGULATORY ANALYSIS

All regulatory analysis remained the same.

Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Permit condition 1 establishes the permit to construct scope.

Permit condition, Table 2, provides a description of the purpose of the permit and the regulated sources, the process, and the control devices used at the facility.

Facility-Wide Conditions

As discussed previously, permit condition 3 establishes that the permittee shall take all reasonable precautions to prevent fugitive particulate matter (PM) from becoming airborne and provides examples of the controls in accordance with IDAPA 58.01.01.650-651.

As discussed previously, permit condition 4 establishes that the asphalt plant shall employ efficient fugitive dust controls and provides examples of the controls in accordance with IDAPA 58.01.01.808.01 and 808.02.

Prior Permit condition 5 establishes that the asphalt plant shall not collocate with a rock crushing plant or any other asphalt plant, or a concrete batch plant as requested by the Applicant.

New Permit condition 5 establishes that the asphalt plant shall not collocate with a rock crushing plant or any other asphalt plant.

The phrase "or a concrete batch plant was removed because both the HMA and the concrete batch plant were in prior permitting action permitted at their present locations.

All other permit conditions remained the same.

APPENDIX A – EMISSIONS INVENTORIES

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSIS

No Air analysis was required

APPENDIX C – T-RACT ANALYSIS

No T-RACT ANALYSIS was required

APPENDIX D – PROCESSING FEE

Permit modification where no engineering analysis is required	\$250
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