



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT No. 89300**

I. INTRODUCTION

This Class II permit is for the continued statewide operation of McNeil Brothers, Inc.'s Erie Strayer I portable concrete batch plant. Permit No. 89300 renews and supersedes Permit No. 64153.

A. Company Information

Facility Name: Erie Strayer I Concrete Batch Plant

Mailing Address: 8660 E Hartford Drive, Scottsdale, AZ 85255

Initial Facility Location: Portable, and currently out of state. For permitting and modeling analysis purposes, this facility is assumed to be located at 24004 N. 107th Ave., Peoria, Maricopa County, AZ 85383.

B. Attainment Classification

This portable facility is permitted to operate statewide including in both attainment and nonattainment areas. Maricopa County is a nonattainment area for PM₁₀ and ozone. Pinal County is a nonattainment area for PM₁₀, SO₂, and Pb. Pima County is a nonattainment area for PM₁₀.

II. PROCESS DESCRIPTION

A. Process Description

McNeil Brothers, Inc. operates a portable central mix concrete batch plant capable of producing 4,000 yards per day of stiff concrete for non-form highway construction. The ingredients for the concrete are cement, fly ash, large and small aggregate, sand, and water. The materials are mixed in a closed mixer where all the ingredients are mixed together, and then poured into 10-wheel dump trucks for a short haul to the application site located nearby.

Raw materials of sand, aggregate #57, and aggregate #4 are delivered to the plant site by truck and dropped into a hopper which loads the material onto a stacker, which places the material onto its corresponding storage pile. The cement and cement supplement (fly ash) are delivered to the site via truck, and pneumatic transfer methods used to deliver the material to a storage silo, which contains 2 parts cement to 1 part fly ash. The sand and aggregate are taken from the storage piles via a front-end loader and transferred to a hopper which then transfers the material to elevated storage bins. From there, the sand and aggregate are transferred to a weigh hopper where it is dropped onto a conveyor which delivers it to the drum mixer. The cement and cement supplement are gravity fed into a separate weigh hopper which transfers them into the drum mixer via a fully enclosed tube, where it is combined with the sand and aggregate. The mixer then makes the finished product of concrete.

B. Control Devices

1. Cement and Fly Ash Silo (SL)

The silo is controlled with a baghouse. The baghouse is a pulse-jet baghouse manufactured by C&W, and operates at an efficiency of 99.99%. The model number is CP-2160-4054.

2. Sand and Aggregate Unloading (SAU)

The sand and aggregate unloading hopper is controlled using spray bars with water nozzles.

3. Sand and Aggregate Conveyor Belt Stacker (CB)

The sand and Aggregate conveyor is controlled with spray bars with water nozzles.

4. Sand and Aggregate Hopper (SAH)

The sand and aggregate hopper is controlled using spray bars with nozzles, including the conveyor belts to the elevated storage bins.

5. Elevated Storage Bins with Weigh Hopper (ES and WH)

The transfer of sand and aggregate into the elevated storage is controlled using water application from the spray bars on the conveyor belts. The material carries that moisture content into the elevated storage bin where it stays with it until it transfers out the bottom of the bin through a weigh hopper onto a conveyor belt. The weigh hopper is enclosed at the bottom of the elevated storage bin, and the transfer of material to the mixing drum is controlled with water application and suction from the baghouse via a 12" diameter hose attached above the drop location.

6. Central Mix Loading (CML)

The entrance to the mixing drum is shielded with a metal curtain. The dust created from the material transfer into the mixer is controlled with this curtain, and there is suction from the baghouse at this curtain to control the dust. This is also the location where water is sprayed into the drum, which captures dust as it enters the drum.

7. Haul Roads (HR1 and HR2)

The haul roads are controlled via water application with a water truck.

8. Sand and Aggregate Storage Piles (SP1 and SP2)

The storage piles are controlled via water application. The water is applied with a water truck.

C. Process Flow Diagram

A process flow diagram can be found in Appendix A.

III. LEARNING SITE EVALUATION

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

An analysis was conducted and no impacted learning sites were found within 2.0 miles of the source's assumed location. An ambient air impact modeling analysis was conducted and it was determined that this facility will not have an adverse impact on the community. A detailed discussion of the ambient air impact modeling analysis can be found in Section XI below.

IV. COMPLIANCE HISTORY

A. Physical Inspections and Compliance Certification Review

During the five-year permit term under Permit No. 64153, this facility had one (1) physical inspections and five (5) compliance certification reviews. No deficiencies were noted during the inspections or report reviews.

B. Excess Emissions and Permit Deviation Report Review

This facility has been out of state for the past six (6) years. No excess emissions or permit deviations have been reported.

V. EMISSIONS

This facility has voluntarily accepted the production limit of 4,000 cubic yards of concrete per day. The plant is permitted to operate 24 hours per day and 8,760 hours per year. The uncontrolled and controlled potential-to-emit (PTE) were calculated based on the production limit of 4,000 cubic yards of concrete per day and 24 hours of operation per day with the emission factors from the U.S. EPA's Compilation of Air Pollution Emission Factors (AP-42) Section 11.12 and 13.2.4. The PTE has decreased from previous renewal permit mainly because the voluntarily accepted production limit has decreased from 7,200 cubic yards of concrete per day to 4,000 cubic yards of concrete produced per day. The facility's PTE excluding fugitive emissions is provided in Table 1 below:

Table 1: Potential to Emit (TPY)

Pollutant	Uncontrolled (TPY)			Controlled (TPY)		
	Emissions from (latest permitting action)	Change in Emissions	Emissions	Emissions from (latest permitting action)	Change in Emissions	Emissions
PM ₁₀	288.17	- 126.60	161.57	7.17	- 2.82	4.35
PM _{2.5}	40.98	- 17.96	23.025	1.12	- 0.45	0.67
Pb	3.72E-04	- 1.47E-04	2.26E-04	5.62E-05	- 2.21E-05	3.41E-05
HAPs (total)	9.35E-02	- 3.68E-02	5.67E-02	2.72E-03	- 1.07E-03	1.65E-03

VI. VOLUNTARILY ACCEPTED EMISSION LIMITATIONS AND STANDARDS

The permit contains the following voluntary emission limitations and standards:

A. Concrete Batch Plant

The facility has voluntarily accepted the production limit of 4,000 cubic yards of concrete per day to avoid contributing to the exceedance of the NAAQS for PM₁₀. This limit was incorporated into this renewal Permit No. 89300.

VII. APPLICABLE REGULATIONS

Table 2 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

Table 2: Applicable Regulations

Unit & year	Control Device	Rule	Discussion
Concrete Batch Plant	Baghouse, spray bars and metal curtain	Arizona Administrative Code (A.A.C.) R18-2-604 R18-2-605 R18-2-606 R18-2-607 R18-2-614 R18-2-702.B R18-2-723	Standards of performance for concrete batch plants and fugitive dust sources.
		Maricopa County Rule (M.C.R.) Rule 300 Rule 316 Rule 320	Standards for visible emissions and opacity. Limits for particulate matter emissions from any nonmetallic mining operating or rock product processing plant. Limits for odors and other gaseous air contaminants.

Unit & year	Control Device	Rule	Discussion
		Pima County Code §17.16.040 §17.16.380 Pima County SIP Rule 343	Standards of performance for concrete batch plants. Standards and applicability for opacity limitations.
		Pinal County Code §4-2-040 §4-2-050	Stationary source performance standards for gravel or crushed stone processing plant and concrete batch plants.
Fugitive Dust Sources	Water, Dust Suppressants, and other reasonable precautions	A.A.C. Article 6 R18-2-702	Standards for all fugitive dust sources.
		M.C.R. Rule 300 Rule 316	Visible Emissions standards. Limits for particulate matter emissions from rock product processing plant.
		Pima County Code §17.16.060 §17.16.080 §17.16.090 §17.16.100	Fugitive dust producing activities. Vacant lots and open spaces. Roads and Streets. Material Handling.
		Pinal County Code §4-2	Emissions from existing non-point sources-fugitive dust control.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R18-2-726 R18-2-702.B	Standard for abrasive blasting operations.
		M.C.R. Rule 312	Limits for particulate emissions from abrasive blasting operations.
		Pinal County Code §5-4-140	The facility is subject to Pinal County Code §5.4.140 but regulations were streamlined because A.A.C. R18-2-726 and A.A.C R18-2-702.B are equivalent.
Spray Painting	Enclosures	A.A.C. R18-2-702 R-18-2-727	These standards are applicable to any spray painting operation.
		M.C.R. Rule 315	Limits for particulate matter emissions from spray coating operations.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

VIII. PREVIOUS PERMIT REVISIONS AND CONDITIONS**A. Previous Permit Revisions**

The Permittee has not submitted any permit revision requests during the previous permit term.

B. Changes to Current Renewal

Table 3 addresses the changes made to the sections and conditions from Permit No. 64153:

Table 3: Previous Permit Conditions

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language
Att. "B" Section I		X		Facility Wide Requirements: Revised to represent the most recent template language
Att. "B" Condition I.B.2		X		Operating Limitations: Revised the production limit as per the application
Att. "B" Condition I.D.2	X			Reporting Requirements: Added permit conditions, and deviations from these conditions need to be promptly reported in accordance with Condition XII.B.2 of Attachment "A".
Att. "B" Condition IV.B		X		Move Notice: Revised to reflect the most recent A.A.C. rule language
Att. "C"		X		Additional Conditions for Operations Inside Maricopa County: Revised to reflect the most recent Maricopa County Rule
Att. "D"		X		Additional Conditions for Operations Inside Pima County: Revised to reflect the most recent Pima County Rule
Att. "E"		X		Additional Conditions for Operations Inside Pinal County: Revised to reflect the most recent Pinal County Rule

IX. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

Table 4: Permit No. 89300

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Statewide	Concrete Batch Plant				Maintain records of concrete produced per day	
		Opacity	20%	Conduct monthly visible emissions survey	Maintain logs of all maintenance activities performed on the baghouse	
	Fugitive Dust	PM	40% Opacity	Conduct monthly visible emissions survey	Maintain record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to lower the opacity of any excess emissions.	
	Abrasive Blasting	PM	20% Opacity		Record the date, duration and pollution control measures of any abrasive blasting project.	
	Spray Painting	VOC	20% Opacity		Maintain records of the date, duration, quantity of paint used, any applicable	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			Control 96% of the overspray		MSDS, and pollution control measures of any spray painting project.	
	Demolition/ Renovation	Asbestos			Maintain records of all asbestos related demolition or renovation projects including the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents	
Maricopa County	Concrete Batch Plant	Opacity	Stack 5%	Conduct weekly visible emissions survey	Maintain records of concrete produced per day. Maintain logs of all maintenance activities performed on the baghouse. Keep daily records of hours of operation, the type of batching being performed, the throughput of materials, and amount of water used to control fugitive dust emissions from the process equipment.	
			Fugitive 10%			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	Fugitive Dust	Opacity	20% Opacity	Conduct a weekly visual survey of visible emissions from the fugitive sources.	<p>Keep records of the name of observer, date, time, and result of the visible emissions survey and observation.</p> <p>Maintain all Fugitive Dust Control Technician certifications on-site.</p> <p>Maintain written records of all self-inspections of fugitive dust control measures implemented.</p> <p>Maintain records of all Basic Dust Control Training Class certifications on site.</p>	<p>Submit a Dust Control Plan that includes all the information required in the permit, and submit a revised Dust Control Plan if applicable according to the permit.</p>
	Abrasive Blasting	Opacity	20% (aggregating more than three minutes in any sixty-minute period)	Conduct visible emissions observations with Method 9 and other provisions in the permit.	<p>Keep the records onsite that are applicable to all abrasive blasting operations, and reports, logs, and supporting documentation required.</p> <p>Maintain records of the Operation and Maintenance Plan for each emission control system used to control emissions.</p>	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Pima County	Fugitive Dust	Opacity (point sources)	60% (Cold Diesel Engines the first 10 consecutive minutes after starting up; Loaded Diesel Engines being accelerated under load) 20% (Other sources)	Conduct weekly visible emissions observations by Method 9	Maintain the records of weekly visible emissions observations	
		Opacity (non-point sources)	20% (Eastern Pima County, east of the eastern boundary of the Tohono O'Odham Reservations) 40% (all other areas of Pima County)	Conduct weekly visible emissions observations by Arizona Testing manual, Reference Method 9	Maintain the records of weekly visible emissions observations	
Pinal County	Fugitive Dust	Opacity	20%	Conduct visible emissions observations by Method 9.		

X. ENVIRONMENTAL JUSTICE ANALYSIS

The United States Environmental Protection Agency (EPA) defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income. The goal of evaluating EJ in permitting is to provide an opportunity for meaningful participation in the permitting process for overburdened populations or communities to. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards. This renewal permit does not result in any increases in emissions and will not result in any additional impacts from the time of the initial permitting of the operation.

XI. AMBIENT AIR IMPACT ANALYSIS

McNeil Brothers conducted an AERMOD ambient air impact modeling analysis based on a protocol approved by the ADEQ to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) during the previous renewal permit in 2016. The modeling analysis is a computer simulation that predicts air quality concentrations at selected downwind receptor locations. This renewal permit does not result in any PTE increase so an ambient air impact reanalysis is not required. However, McNeil Brothers and ADEQ conducted an AERMOD modeling analysis to demonstrate compliance with the NAAQS for this renewal permit using the 2018-2020 PM₁₀ and PM_{2.5} background data with the most recent version of AERMOD (V21112). The 2016-2020 Phoenix Sky Harbor Airport meteorological data was also processed with the most recent version of AERMET (V21112).

Although the plant is portable within the State of Arizona and currently out of state, McNeil Brothers selected a site within Maricopa County for the purpose of air quality modeling: 24004 N. 107th Ave., Peoria, AZ 85383. Because ambient PM₁₀ concentrations within Maricopa County are among the highest reported in the state, demonstrating NAAQS compliance within Maricopa County would infer NAAQS compliance for the plant throughout the state of Arizona. The plant will be limited to 4,000 cubic yards per day of concrete production in this renewal permit. Based on the modeling analysis results, it was determined that the issuance of this renewal permit will not interfere with attainment and maintenance of the NAAQS and will not have an adverse impact on the community. Table 5 provides a summary of the modeling results:

Table 5: Modeling Results

Concentration	Modeled Concentration	Background Concentration	Total Concentration	National Ambient Air Quality Standard for PM
PM_{2.5} 24-Hour Maximum	6.3 µg/m ³	17.7 µg/m ³	24.0 µg/m ³	35 µg/m ³
PM_{2.5} Annual Maximum	2.5 µg/m ³	7.0 µg/m ³	9.5 µg/m ³	12 µg/m ³
PM₁₀ 24-Hour Maximum	131 µg/m ³ *	Monthly background concentrations were included in the model	131 µg/m ³	150 µg/m ³

*AERMOD calculates the total modeled daily PM₁₀ with background included.

XII. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AERMOD	AMS/EPA Regulatory Model
AERMET	AERMOD Meteorological Preprocessor
AMS	American Meteorological Society
EPA	Environmental Protection Agency
HAP	Hazardous Air Pollutant
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
Pb	Lead
PM	Particulate Matter
PM ₁₀	Particulate Matter less than 10 µm nominal aerodynamic diameter
PM _{2.5}	Particulate Matter less than 2.5 µm nominal aerodynamic diameter
PTE	Potential to Emit
SO ₂	Sulfur Dioxide Significant Impact Levels
TPY	Tons per Year
VOC	Volatile Organic Compound

Appendix A - Process Flow Diagram

McNeil Brothers Inc. - Erie Strayer 1 Concrete Batch Plant Flow Diagram

