



February 3, 2017

Kristi Chamley
Croell, Inc. - Hardin Batch Plant
P.O. Box 470
Hardin, MT

Dear Ms. Chamley:

Montana Air Quality Permit #5167-00 is deemed final as of 2/3/2017, by the Department of Environmental Quality (Department). This permit is for a concrete batch plant. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

A handwritten signature in black ink that reads "Julie A. Merkel".

Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

A handwritten signature in black ink that reads "Loni Patterson".

Loni Patterson
Environmental Engineer
Air Quality Bureau
(406) 444-1452

JM:LP
Enclosures

Montana Department of Environmental Quality
Air, Energy, and Mining Division

Montana Air Quality Permit #5167-00

Croell, Inc.
Hardin Batch Plant
P.O. Box 470
Hardin, MT 59034

February 3, 2017



MONTANA AIR QUALITY PERMIT

Issued To: Croell, Inc.
Hardin Batch Plant
PO Box 470
Hardin, MT 59034

MAQP: # 5167-00
Application Complete: 12/12/2016
Preliminary Determination Issued: 1/3/2017
Department's Decision Issued: 1/19/2017
Permit Final: 2/3/2017
AFS #: 003-0038

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Croell, Inc. (Croell), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Permitted Equipment

Croell is proposing to operate a cement/concrete truck mix plant and associated equipment with the maximum operating capacity 60 cubic yards per hour (cy/hr). The facility will use a fabric baghouse to control particulate matter emissions.

B. Plant Location

The concrete batch plant is located just west of Hardin in the $\frac{1}{4}$ SW of $\frac{1}{4}$ SE Section 22, Township 1 South, Range 33 East in Big Horn County, Montana.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Croell shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).
2. Croell shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).
3. Croell shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.2 (ARM 17.8.749 and ARM 17.8.752).
4. The maximum rated capacity of the concrete plant shall not exceed 60 cy/hr (ARM 17.8.749).

5. The maximum rated capacity of the material conveyor shall not exceed 125 tons per hour (ARM 17.8.749).
6. Croell shall install, operate, and maintain a fabric filter dust collector on every cement and cement supplement silo ventilation opening (ARM 17.8.752).
7. Croell shall install, operate and maintain a rubber boot load-out spout to control particulate emissions on every product loadout opening where cementitious and aggregate materials are transferred for mixing (ARM 17.8.752).
8. If the permitted equipment is used in conjunction with any other equipment owned or operated by Croell, at the same site, production shall be limited to correspond with an emission level that does not exceed 250 tons during any rolling 12-month period. Any calculations used to establish production levels shall be approved by the Department (ARM 17.8.749)

B. Emissions Monitoring

1. Croell shall inspect the fabric filter dust collector and its vents, which are used for controlling emissions from the silo and weigh hopper, every 6 months of operation to ensure that each collector is operating at the optimum efficiency. Records of inspections, repairs and maintenance shall be kept for a minimum of 5 years (ARM 17.8.749).

C. Testing Requirements

1. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
2. The Department of Environmental Quality (Department) may require further testing (ARM 17.8.105).

D. Operational Reporting Requirements

1. Croell, Inc. shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Croell, Inc. shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include *the addition of a new emissions unit*, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).
3. All records compiled in accordance with this permit must be maintained by Croell, Inc. as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request. These records may be stored at a location other than the plant site upon approval by the Department (ARM 17.8.749).

SECTION III: General Conditions

- A. Inspection – Croell shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment such as Continuous Emission Monitoring Systems (CEMS) or Continuous Emission Rate Monitoring Systems (CERMS), or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Croell fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Croell of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq.*, MCA.
- E. Appeals – Any person or persons jointly or severally adversely affected by the Department’s decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department’s decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department’s decision on the application is final 16 days after the Department’s decision is made.

- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Croell may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit Analysis
 Croell, Inc.
 Hardin Batch Plant
 MAQP #5167-00

I. Introduction/Process Description

Croell Inc. (Croell) owns and operates a truck mix concrete batch plant capable of 60 cubic yards per hour (cy/hr), utilizing the grid to power equipment. The particulate matter emissions from the storage silos are controlled with a fabric filter baghouse. The facility is located in the SW ¼ of the SE ¼ of Section 22, Township 1 South and Range 33 East in Big Horn County, and is known as the Hardin Batch Plant.

A. Permitted Equipment

Croell proposes to operate a concrete batch plant which includes, but is not limited to:

- 125 ton per hour (TPH) material conveyor
- two 60 cy/hr cement/fly ash silos
- fabric filter baghouse
- rubber boot load-out spout
- associated equipment

B. Source Description

The concrete batch plant is used to mix concrete for transfer into redi-mix trucks. Aggregate material is fed into the feed conveyor via front loader. Sand and gravel is mixed with cement from the silo and water in the plant process. Fly ash is added when needed. The material is loaded into mixer truck for transport.

The facility is located at ¼ SW of ¼ SE of Section 22, Township 1 South, Range 33 East in Big Horn County.

C. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
Internal review.	Analysis Section I.A	Typo “Croell proposes to operate a portable”- remove the word <i>portable</i> .	Typo corrected.
Internal review.	Section II.B	Add in compliance demonstration for fabric filter.	Section II.B- Emission Monitoring Added.
Internal review	Section II.A	Add in a condition to use rubber boot load-out spout to control particulate matter.	Section II.A.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (Department). Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

Croell shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone

6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀

Croell must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.
2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Croell shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.
4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.
6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.
7. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is not an NSPS affected source because it does not meet the definition of any NSPS subpart defined in 40 CFR Part 60.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Croell submitted the appropriate permit application fee for the current permit action.
2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year of any pollutant. Croell has a PTE greater than 25 tons per year of particulate matter (PM); therefore, an air quality permit is required.
3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.
4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.
5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Croell submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a

newspaper of general circulation in the area affected by the application for a permit. Croell submitted an affidavit of publication of public notice for the 10/20/2016 issue of the *Big Horn County News*, a newspaper of general circulation in the Town of Hardin in Big Horn County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.
8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.
9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Croell of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase

meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications-Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a major stationary source because this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant (excluding fugitive emissions) and, therefore, does not require a New Source Review (NSR) analysis.

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
 - a. PTE > 100 tons/year of any pollutant;
 - b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ nonattainment area.
2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #5167-00 for Croell, the following conclusions were made:
 - a. The facility's PTE is less than 100 tons/year for any pollutant.

- b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.
- c. This source is not located in a serious PM₁₀ nonattainment area.
- d. This facility is not subject to any current NSPS.
- e. This facility is not subject to any current NESHAP.
- f. This source is not a Title IV affected source, or a solid waste combustion unit.
- g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Croell will be a minor source of emissions as defined under Title V.

III. BACT Determination

A BACT determination is required for each new or modified source. Croell shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

A. Particulate Emissions

Croell has proposed the use of a fabric filter baghouse to capture the particulate matter from the loading and storage of product in the silos. The efficiency of capture of particulate matter for the fabric filter baghouse is expected to be 99.9%. Because Croell has proposed a particulate matter emissions control technology that is considered to be the best performing for these types of applications, no other technologies were contemplated. Croell shall use a rubber boot loud-out spout to control particulate emissions from the cement loud-out opening.

The Department determined that this equipment that is required to be operated to ensure compliance with the general opacity rule of 20% opacity, constitutes BACT for this source. The control options selected contain control equipment and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

B. Fugitive Emissions

Two types of emission controls are readily available and used for dust suppression of fugitive emissions that result from the operation of equipment and associated activities. These two control methods are water and chemical dust suppressant. Both suppressants could be used from dust control for the area surrounding the concrete plant and for emissions from the handling of aggregate materials. However, in view of the fact that water is more readily available, more cost effective, is equally effective as chemical dust suppressant, while presenting less potential environmental quality degradation, water has been identified as the most appropriate method of pollution control of particulate emissions. In addition, water suppression has been required of recently permitted similar sources. However, Croell has the option to use chemical dust suppressant to assist in controlling particulate emissions.

The Department determined that using water spray, water, and/or chemical dust suppressant to maintain compliance with the opacity requirements and reasonable precaution limitation constitutes BACT for the operation for the additional equipment.

The control options selected contain control equipment and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

IV. Emission Inventory

Emission Source	tons/year						
	PM	PM ₁₀	PM _{2.5}	NO _x	CO	VOC	SO ₂
125 TPH - Material Transfer- Conveyor	1.64	0.60	0.01	--	--	--	--
Bulk Loading	0.03	0.03	0.01	--	--	--	--
Haul Roads / Vehicle Traffic	6.11	1.68	0.22	--	--	--	--
Hardin Batch Plant 60 yd ³ /hr	24.72	7.70	3.71	--	--	--	--
Total Emissions	32.50	10.01	7.66	0.00	0.00	0.00	0.00

** CO = carbon monoxide
 (fil) = filterable
 HAPs = hazardous air pollutants
 hp = horsepower
 lb = pound
 N/A = not applicable
 ND = no data available
 NO_x = oxides of nitrogen
 PM = particulate matter

PM₁₀ = particulate matter with an aerodynamic diameter of 10 microns or less
 PM_{2.5} = particulate matter with an aerodynamic diameter of 2.5 microns or less
 SO₂ = sulfur dioxide
 TPH = tons per hour
 TPY = tons per year
 VOC = volatile organic compounds
 yr = year

Footnotes:

- Inventory reflects maximum allowable emissions for all pollutants based on maximum production and year-round operation (8,760 hours). The facility did not take limits on production or hours of operation.
- Values in table reflect "controlled" cells from subsequent worksheets.
- Total PM₁₀ emissions are 10.04 TPY, determined by the sum of PM₁₀(fil) + PM(cond)
- Total PM_{2.5} emissions are 7.66 TPY, determined by the sum of PM_{2.5}(fil) + PM(cond)
- Total Particulate Matter emissions are 32.53 TPY, determined by the sum of PM(fil) + PM(cond)

Hardin Batch Plant 60 yd³/hr			
	PM	PM₁₀	PM_{2.5}
Aggregate delivery to ground storage (3-05-011-21)	0.841	0.407	0.13
Sand delivery to ground storage (3-05-011-22)	0.197	0.092	0.03
Aggregate transfer to conveyor (3-05-011-23)	0.841	0.407	0.13
Sand transfer to conveyor (3-05-011-24)	0.197	0.092	0.03
Aggregate transfer to elevated storage (3-05-011-04)	0.841	0.407	0.13
Sand transfer to elevated storage (3-05-011-05)	0.197	0.092	0.03
Cement delivery to silo (3-05-011-07)	0.000	0.000	0.00
Cement supplement delivery to silo (3-05-011-17)	0.000	0.000	0.00
Weigh hopper loading (3-05-011-08)	1.038	0.499	0.16
Truck Mix Loading (3-05-011-10)	20.567	5.703	3.09
TOTAL	24.719	7.700	3.708
Aggregate delivery to ground storage (3-05-011-21)			
Maximum Process Rate = 60 yd ³ /hr (Application information)			60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr			8,760 hrs/yr
PM Emissions:			
<i>Based on AP-42</i>			
Emission Factor = 0.0064 lb/yd ³			0.0064 lb/yd ³
Control Efficiency = 50%			50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0064 lb/yd ³) * (ton/2000 lb) =			1.68 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0064 lb/yd ³) * (ton/2000 lb) * (1 - 50/100) =			0.84 ton/yr
PM₁₀ Emissions:			
<i>Based on AP-42</i>			
Emission Factor = 0.0031 lb/yd ³			0.0031 lb/yd ³
Control Efficiency = 50%			50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0031 lb/yd ³) * (ton/2000 lb) =			0.81 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0031 lb/yd ³) * (ton/2000 lb) * (1 - 50/100) =			0.41 ton/yr
Sand delivery to ground storage (3-05-011-22)			
Maximum Process Rate = 60 yd ³ /hr (Application information)			60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr			8,760 hrs/yr
PM Emissions:			
<i>Based on AP-42</i>			
Emission Factor = 0.0015 lb/yd ³			0.0015 lb/yd ³
Control Efficiency = 50%			50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0015 lb/yd ³) * (ton/2000 lb) =			0.39 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0015 lb/yd ³) * (ton/2000 lb) * (1 - 50/100) =			0.20 ton/yr
PM₁₀ Emissions:			
<i>Based on AP-42</i>			
Emission Factor = 0.0007 lb/yd ³			0.0007 lb/yd ³
Control Efficiency = 50%			50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0007 lb/yd ³) * (ton/2000 lb) =			0.18 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0007 lb/yd ³) * (ton/2000 lb) * (1 - 50/100) =			0.09 ton/yr
Aggregate transfer to conveyor (3-05-011-23)			
Maximum Process Rate = 60 yd ³ /hr (Application information)			60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr			8,760 hrs/yr
PM Emissions:			
<i>Based on AP-42</i>			
Emission Factor = 0.0064 lb/yd ³			0.0064 lb/yd ³
Control Efficiency = 50%			50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0064 lb/yd ³) * (ton/2000 lb) =			1.68 ton/yr

Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0064 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.84	ton/yr
PM₁₀ Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0031 lb/yd ³	0.0031	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0031 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	0.81	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0031 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.41	ton/yr
Sand transfer to conveyor (3-05-011-24)		
Maximum Process Rate = 60 yd ³ /hr (Application information)	60	yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760	hrs/yr
PM Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0015 lb/yd ³	0.0015	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0015 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	0.39	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0015 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.20	ton/yr
PM₁₀ Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0007 lb/yd ³	0.0007	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0007 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	0.18	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0007 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.09	ton/yr
Aggregate transfer to elevated storage (3-05-011-04)		
Maximum Process Rate = 60 yd ³ /hr (Application information)	60	yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760	hrs/yr
PM Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0064 lb/yd ³	0.0064	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0064 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	1.68	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0064 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.84	ton/yr
PM₁₀ Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0031 lb/yd ³	0.0031	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0031 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	0.81	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0031 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.41	ton/yr
Sand transfer to elevated storage (3-05-011-05)		
Maximum Process Rate = 60 yd ³ /hr (Application information)	60	yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760	hrs/yr
PM Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0015 lb/yd ³	0.0015	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0015 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	0.39	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0015 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.20	ton/yr
PM₁₀ Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.0007 lb/yd ³	0.0007	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0007 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	0.18	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0007 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	0.09	ton/yr

Cement delivery to silo (3-05-011-07)	
Maximum Process Rate = 60 yd ³ /hr (Application information)	60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760 hrs/yr
PM Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 0.0002 lb/yd ³	0.0002 lb/yd ³
Control Efficiency = 99.9% filter fabric dust collector	99.9 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0002 lb/yd ³) * (ton/2000 lb) =	0.05 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0002 lb/yd ³) * (ton/2000 lb) * (1 - 99.9/100) =	0.00 ton/yr
PM₁₀ Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 0.0001 lb/yd ³	0.0001 lb/yd ³
Control Efficiency = 99.9%	99.9 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0001 lb/yd ³) * (ton/2000 lb) =	0.03 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0001 lb/yd ³) * (ton/2000 lb) * (1 - 99.9/100) =	0.00 ton/yr
Cement supplement delivery to silo (3-05-011-17)	
Maximum Process Rate = 60 yd ³ /hr (Application information)	60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760 hrs/yr
PM Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 0.0003 lb/yd ³	0.0003 lb/yd ³
Control Efficiency = 99.9% filter fabric dust collector	99.9 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0003 lb/yd ³) * (ton/2000 lb) =	0.08 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0003 lb/yd ³) * (ton/2000 lb) * (1 - 99.9/100) =	0.00 ton/yr
PM₁₀ Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 0.0002 lb/yd ³	0.0002 lb/yd ³
Control Efficiency = 99.9%	99.9 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0002 lb/yd ³) * (ton/2000 lb) =	0.05 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0002 lb/yd ³) * (ton/2000 lb) * (1 - 99.9/100) =	0.00 ton/yr
Weigh hopper loading (3-05-011-08)	
Maximum Process Rate = 60 yd ³ /hr (Application information)	60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760 hrs/yr
PM Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 0.0079 lb/yd ³	0.0079 lb/yd ³
Control Efficiency = 50%	50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0079 lb/yd ³) * (ton/2000 lb) =	2.08 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0079 lb/yd ³) * (ton/2000 lb) * (1 - 50/100) =	1.04 ton/yr
PM₁₀ Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 0.0038 lb/yd ³	0.0038 lb/yd ³
Control Efficiency = 50%	50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0038 lb/yd ³) * (ton/2000 lb) =	1.00 ton/yr
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.0038 lb/yd ³) * (ton/2000 lb) * (1 - 50/100) =	0.50 ton/yr
Truck Mix Loading (3-05-011-10)	
Maximum Process Rate = 60 yd ³ /hr (Application information)	60 yd ³ /hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760 hrs/yr
PM Emissions:	
<i>Based on AP-42</i>	
Emission Factor = 1.118 lb/ton	1.118 lb/ton
Convert to lb/yd ³ from lb/ton: (1.1180 lb/ton) * 0.14 =	0.15652 lb/yd ³
Control Efficiency = 50%	50 %
Calculation: (60 yd ³ /hr) * (8760 hrs/yr) * (0.15652 lb/yd ³) * (ton/2000 lb) =	41.13 ton/yr

Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.15652 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	20.57	ton/yr
PM₁₀ Emissions:		
<i>Based on AP-42</i>		
Emission Factor = 0.31 lb/ton	0.31	lb/ton
Convert to lb/yd ³ from lb/ton: $(0.3100 \text{ lb}/\text{ton}) * 0.14 =$	0.0434	lb/yd ³
Control Efficiency = 50%	50	%
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0434 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) =$	11.41	ton/yr
Calculation: $(60 \text{ yd}^3/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0434 \text{ lb}/\text{yd}^3) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) =$	5.70	ton/yr

<u>CONTROLLED</u>	Arsenic	Beryllium	Cadmium	Lead	Manganese	Nickel	Total Phosphorus	Selenium
Concrete Batch Plant	6.9987E-05	7.17E-06	8.8E-06	5.35E-06	0.000459	0.000135	0.002477	2.21E-06

Conveyor Transfer Point (SCC 3-05-020-06)

Maximum Process Rate = 125 ton/hr (Company Information)	125	ton/hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760	hrs/yr
Number of Transfers = 2 transfer (Company Information)	2	transfer

Total PM Emissions:

Emission Factor = 0.003 lb/ton (0.0030 uncontrolled, 0.00014 controlled, AP 42, Table 11.19.2-2, 8/04)	0.003	lb/ton
Control Efficiency = 50%	50	%
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.003 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (2 \text{ transfer}) = 3.29 \text{ ton}/\text{yr}$	3.29	ton/yr
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.003 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (2 \text{ transfer}) * (1 - 50/100) = 1.64 \text{ ton}/\text{yr}$	1.64	ton/yr

Total PM₁₀ Emissions:

Emission Factor = 0.0011 lb/ton (0.00110 uncontrolled, 0.000046 controlled, AP 42, Table 11.19.2-2, 8/04)	0.0011	lb/ton
Control Efficiency = 50%	50	%
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0011 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (2 \text{ transfer}) = 1.20 \text{ ton}/\text{yr}$	1.20	ton/yr
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0011 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (2 \text{ transfer}) * (1 - 50/100) = 0.60 \text{ ton}/\text{yr}$	0.60	ton/yr

Filterable PM_{2.5} Emissions:

Emission Factor = 0.000013 lb/ton (0.000013 controlled, AP 42, Table 11.19.2-2, 8/04)	0.0000	
Control Efficiency = 0% (built into emission factor)	13	lb/ton
	0	%
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.000013 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (2 \text{ transfer}) = 0.01 \text{ ton}/\text{yr}$	0.01	ton/yr
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.000013 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (2 \text{ transfer}) * (1 - 0/100) = 0.01 \text{ ton}/\text{yr}$	0.01	ton/yr

Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32)

Maximum Process Rate = 125 ton/hr (Application information)	125	ton/hr
Maximum Hours of Operation = 8,760 hrs/yr	8,760	hrs/yr

PM Emissions:

<i>Based on AP-42</i>		
Emission Factor = 0.0001 lb/ton (Truck Unloading, AP 42, Table 11.19.2-2,8/04)	0.0001	lb/ton
Control Efficiency = 50%	50	%
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0001 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) = 0.05 \text{ ton}/\text{yr}$	0.05	ton/yr
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0001 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) = 0.03 \text{ ton}/\text{yr}$	0.03	ton/yr

PM₁₀ Emissions:

<i>Based on AP-42</i>		
Emission Factor = 0.0001 lb/ton (Truck Unloading, AP 42, Table 11.19.2-2, 8/04)	0.0001	lb/ton
Control Efficiency = 50%	50	%
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0001 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) = 0.05 \text{ ton}/\text{yr}$	0.05	ton/yr
Calculation: $(125 \text{ ton}/\text{hr}) * (8760 \text{ hrs}/\text{yr}) * (0.0001 \text{ lb}/\text{ton}) * (\text{ton}/2000 \text{ lb}) * (1 - 50/100) = 0.03 \text{ ton}/\text{yr}$	0.03	ton/yr

Filterable PM_{2.5} Emissions:

Emission Factor = 0.000013 lb/ton (0.000013 controlled, AP 42, Table 11.19.2-2, 8/04)	0.000013	lb/ton
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Control Efficiency = 0% (built into emission factor)	0 %
Calculation: $(125 \text{ ton/hr}) * (8760 \text{ hrs/yr}) * (0.000013 \text{ lb/ton}) * (\text{ton}/2000 \text{ lb}) = 0.01 \text{ ton/yr}$	0.01 ton/yr
Calculation: $(125 \text{ ton/hr}) * (8760 \text{ hrs/yr}) * (0.000013 \text{ lb/ton}) * (\text{ton}/2000 \text{ lb}) * (1 - 0/100) = 0.01 \text{ ton/yr}$	0.01 ton/yr

Haul Roads

Vehicle Miles Traveled (VMT) per Day = 7 VMT/day (Estimate)	7 VMT/day
VMT per hour = $(7 \text{ VMT/day}) * (\text{day}/24 \text{ hrs}) = 0.29 \text{ VMT/hr}$	0.29 VMT/hr
Hours of Operation = 8,760 hrs/yr	8,760 hrs/yr

PM Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = $k * (s / 12)^a * (W / 3)^b = 9.56 \text{ lb/VMT}$ 9.56 lb/VMT

Where: k = constant = 4.9 lbs/VMT (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06) 4.9 lbs/VMT

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06) 7.1 %

W = mean vehicle weight = 30 tons 30 tons

a = constant = 0.7 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06) 0.7

b = constant = 0.45 (Value for PM30/TSP, AP 42, Table 13.2.2-2, 11/06) 0.45

Control Efficiency = 50% (Water spray or chemical dust suppressant) 50 %

Calculation: $(8760 \text{ hrs/yr}) * (0.29 \text{ VMT/hr}) * (9.56 \text{ lb/VMT}) * (\text{ton}/2000 \text{ lb}) = 12.22 \text{ tons/yr}$ (Uncontrolled Emissions) **12.22** tons/yr

Calculation: $(8760 \text{ hrs/yr}) * (0.29 \text{ VMT/hr}) * (9.56 \text{ lb/VMT}) * (\text{ton}/2000 \text{ lb}) * (1-50/100) = 6.11 \text{ tons/yr}$ (Apply 50% control efficiency) **6.11** tons/yr

PM10 Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = $k * (s / 12)^a * (W / 3)^b = 2.64 \text{ lb/VMT}$ 2.64 lb/VMT

Where: k = constant = 1.5 lbs/VMT (Value for PM10, AP 42, Table 13.2.2-2, 11/06) 1.5 lbs/VMT

s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06) 7.1 %

W = mean vehicle weight = 30 tons 30 tons

a = constant = 0.9 (Value for PM10, AP 42, Table 13.2.2-2, 11/06) 0.9

b = constant = 0.45 (Value for PM10, AP 42, Table 13.2.2-2, 11/06) 0.45

Control Efficiency = 50% (Water spray or chemical dust suppressant) 50 %

Calculation: $(8760 \text{ hrs/yr}) * (0.29 \text{ VMT/hr}) * (2.64 \text{ lb/VMT}) * (\text{ton}/2000 \text{ lb}) = 3.37 \text{ tons/yr}$ (Uncontrolled Emissions) **3.37** tons/yr

Calculation: $(8760 \text{ hrs/yr}) * (0.29 \text{ VMT/hr}) * (2.64 \text{ lb/VMT}) * (\text{ton}/2000 \text{ lb}) * (1-50/100) = 1.68 \text{ tons/yr}$ (Apply 50% control efficiency) **1.68** tons/yr

PM_{2.5} Emissions:

Predictive equation for emission factor for unpaved roads at industrial sites provided per AP 42, Ch. 13.2.2, 11/06.

Emission Factor = $k * (s / 12)^a * (W / 3)^b = 0.34 \text{ lb/VMT}$	0.34	lb/VMT
Where: k = constant = 0.15 lbs/VMT (Value for PM _{2.5} , AP 42, Table 13.2.2-2, 11/06)	0.15	lbs/VMT
s = surface silt content = 7.1 % (Mean value, sand/gravel processing, material storage area, AP 42, Table 13.2.2-1, 11/06)	7.1	%
W = mean vehicle weight = 54 tons (1994 average loaded/unloaded or a 40 ton truck)	54	tons
a = constant = 0.9 (Value for PM _{2.5} , AP 42, Table 13.2.2-2, 11/06)	0.9	
b = constant = 0.45 (Value for PM _{2.5} , AP 42, Table 13.2.2-2, 11/06)	0.45	
Control Efficiency = 50% (Water spray or chemical dust suppressant)	50	%
Calculation: $(8760 \text{ hrs/yr}) * (0.29 \text{ VMT/hr}) * (0.34 \text{ lb/VMT}) * (\text{ton}/2000 \text{ lb}) = 0.44 \text{ tons/yr}$ (Uncontrolled Emissions)	0.44	tons/yr
Calculation: $(8760 \text{ hrs/yr}) * (0.29 \text{ VMT/hr}) * (0.34 \text{ lb/VMT}) * (\text{ton}/2000 \text{ lb}) * (1-50/100) = 0.22 \text{ tons/yr}$ (Apply 50% control efficiency)	0.22	tons/yr

V. Existing Air Quality

This permit is for a facility in Big Horn County, Montana. Big Horn county has been designated unclassified/attainment with all ambient air quality standards.

VI. Ambient Air Impact Analysis

Based on the information provided and the conditions established in MAQP #5167-00, the Department determined that the impact from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air, Energy & Mining Division
Air Quality Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Croell, Inc.
Hardin Batch Plant
PO Box 470
Hardin, MT 59034

Montana Air Quality Permit number (MAQP): 5167-00

Preliminary Determination Issued: 1/3/2017

Department Decision Issued: 1/19/2017

Permit Final: 2/3/2017

1. *Legal Description of Site:* The concrete batch plant will be located in the SW $\frac{1}{4}$ of SE $\frac{1}{4}$ of Section 22, Township 1 South, Range 33 East in Big Horn County, Montana. It is just west of the town of Hardin, MT. The facility is next to open land used for agriculture.
2. *Description of Project:* Croell proposed operate a concrete batch plat that produces and sells concrete for construction and transportation projects.
3. *Objectives of Project:* The project object is to generate profit for the company by producing concrete to the local area near the site.
4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the “no-action” alternative. The no action alternative would mean that the permit would not be issued to allow Croell to operate the proposed concrete batch plant near the community of Hardin. If the project is not developed, the community may need to get transportation and construction materials from a different source and perhaps, further away. This would be harder on the environment and will not add to the Hardin local economy like this project would. Therefore, the “no-action” alternative was eliminated from further consideration. Other alternatives considered were discussed in the BACT analysis, Section III in the permit.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in MAQP #5167-00.

As required under the Sage Grouse Executive Order, the proposed project information was submitted to, and reviewed by the Montana Sage Grouse Oversight Team (MSGOT). The results of the MSGOT review were submitted to the Department with application materials for the proposed project. Reference Section 7.H for details.

6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS:
The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

Terrestrial and aquatic life and habitats may be affected by this project. It should be noted that the concrete batch plant would be operating in an existing site that has been historically used for the same production of concrete.

As required under the Sage Grouse Executive Order, the proposed project information was submitted to, and reviewed by the Montana Sage Grouse Oversight Team (MSGOT). The results of the MSGOT review were submitted to the Department with application materials for the proposed project. Reference Section 7.H for details.

B. Water Quality, Quantity and Distribution

Water would be used for dust suppression on the surrounding roadways and areas of operation and within the operation. The application filled out by the source indicates that the facility would obtain a storm water discharge permit.

C. Geology and Soil Quality, Stability and Moisture

The Department is not aware of any fragile, erosive, susceptible to compaction, or unstable geology or soil near the project site. The project will be using sand and gravel from nearby. There are no special reclamation considerations known. It should be noted that the Sage Grouse Program does recommending normal reclamation standards.

D. Vegetation Cover, Quantity, and Quality

As this is an existing site, no new vegetation cover, quantity and quality would be altered.

E. Aesthetics

The proposed project is located on an existing site; no aesthetics would be altered due to this permitting action.

F. Air Quality

MAQP 5167-00 would contain conditions limiting the allowable emissions from the facility. The amount of allowable emissions generated from the plant below those levels which the Department would require more rigorous air quality impact analysis be conducted. The facility would be in an unclassified/attainment area for all regulated pollutants.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The Department contacted the Montana Natural Heritage Program (MNHP) in an effort to identify species of concern that may be found in the area where the initial proposed crushing/screening facility will occur. Search results have concluded there

are six animal species of concern in the area. Area, in this case, would be defined by the township and range of the propose site, with an additional one mile buffer. The known species of concern is the Great Blue Heron, Preble's Shrew, Merriam's Shrew, Black-tailed Prairie Dog, Plains Hog-nosed Snake, and the Western Milkshake. Effects of operating the proposed project in this area would be mitigated since the area is already disturbed and the project is small, temporary, and operates on an intermittent basis. Therefore, the Department determined that any effects upon these species would likely be minor and short-lived.

As required under the Sage Grouse Executive Order, the proposed project information was submitted to, and reviewed by the Montana Sage Grouse Habitat Conservation Program. The results of the review were submitted to the Department with application materials for the proposed project. Reference Section 7.H for details.

H. Sage Grouse Executive Order

The Department recognizes that the site location is within Designated Sage Grouse General Habitat Area as defined by Executive Order No. 12-2015. As the application for this project was received after the Executive Order effective date of 1/1/2016, this project is subject to review under the Executive Order. As required under the Executive Order, the proposed project was reviewed by the Montana Sage Grouse Habitat Conservation Program (program) and that information was submitted by the applicant with their application materials. Recommendations by the program are as follows:

Reclamation should re-establish native grasses, forbs and shrubs to achieve cover, species composition, and life form diversity commensurate with the surrounding plant community or desired ecological condition to benefit sage grouse and replace or enhance sage grouse habitat.

Weed management is required within General Habitat for sage grouse. Reclamation of disturbed areas must include control of noxious weeds and invasive plant species, including cheatgrass and Japanese brome.

I. Demands on Environmental Resource of Water, Air and Energy

Water use is required for dust suppression of particulate emission being generated at the site. There would be deliveries of cement, fly ash and aggregate from the surrounding area to mix and create the concrete. Air resources would be protected through the MAQP operating conditions. The source will be utilizing energy from the grid that is already regulated under the owners of those who supply energy to the grid.

J. Historical and Archaeological Sites

The Department contacted the Montana History Society State Historical Prevention Office (SHPO) in an effort to identify any historical and/or archaeological sites that may be present in the proposed area of construction and operation. There are three sites of historical or archaeological significance present: a historic irrigation system,

vehicular/foot bridge and homestead/farmstead. No structures would be expected to be removed or altered as a result of the issuance of MAQP #5167-00; no impacts to known historically significant sites would be expected. It should be noted that the State Historical Preservation Office maintains the position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, they would recommend that they be recorded and a determination of their eligibility be made. As long as there would be no disturbance or alteration to structures over fifty years of age, SHPO states there is a low likelihood cultural properties will be impacted.

K. Cumulative and Secondary Impacts

The operation of the proposed project would not likely contribute to the cumulative and secondary impacts as historically there was an existing concrete batch plant. Theoretically, the resources used and disturbed will remain constant.

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The operation of the proposed project would not be expected to cause any disruption to the social structures and mores in the area because the source would be a minor industrial source on the edge of Hardin, MT. The permitting action would not affect the social structures and mores.

B. Cultural Uniqueness and Diversity

The impact to cultural uniqueness and diversity of these areas would be minor from the proposed equipment because the site will be located in an area that is an existing concrete batch plant site now owned by Croell. The existing land use will continue under new ownership. There is no effect on the cultural uniqueness and diversity.

C. Local and State Tax Base and Tax Revenue

The proposed project would have little, if any impact on the local and state tax base and tax revenue. The facility would be a minor industrial source of emissions and would have seasonal intermittent operations. Thus, only minor impacts to the local and state tax base and revenue would be expected from the employees and facility production. The impacts to local tax base and revenue would be expected to be minor as the source would be portable and the money generated for taxes would be widespread.

D. Agricultural or Industrial Production

The proposed project is an existing operation recently purchased by Croell. There would be no effect on agriculture or industrial production.

E. Human Health

MAQP 5167-00 incorporates conditions to ensure compliance with all applicable air quality rules and standards. The rules and standards are designed to protect human health. The proposed project is an already existing concrete batch plant recently purchased by Croell. There are no impacts to human health due to this permitting action.

F. Access to and Quality of Recreational and Wilderness Activities

Based on the information received from Croell, no recreational activities or wilderness areas are near the proposed project site. No access to the public is available on the land privately owned by Croell where the proposed project would be located. No impacts to the access to and quality of the recreational and wilderness activities would be expected.

G. Quantity and Distribution of Employment

The proposed operation employs 3 full time employees. There is potential to increase if the production demand increases.

H. Distribution of Population

No individuals would be expected to permanently relocate to this area as a result of this permit action. The proposed project would not impact the normal population distribution in the initial area of operation or any future operating site.

I. Demands for Government Services

Minor increases would be seen in traffic on existing roadways in the area while the concrete batch plant operates. In addition, government services would be required for acquiring the appropriate permits from government agencies. Demands for government services would increase.

J. Industrial and Commercial Activity

The operation of the concrete batch plant would keep the industrial and commercial activity the same for the area as this is an existing operation that has been recently purchased by Croell.

K. Locally Adopted Environmental Plans and Goals

As required under the Sage Grouse Executive Order, the proposed project information was submitted to, and reviewed by the Montana Sage Grouse Habitat Conservation Program. The results of the review were submitted to the Department with application materials for the proposed project. Reference Section 7.H for details. This permitting action would comply with state and local regulations in regards to environmental plans and goals.

L. Cumulative and Secondary Impacts

The operations of the proposed project would impact the economy of the surrounding area by providing construction materials to the nearby area. Socially this project would not have cumulative or secondary impacts to the nearby communities.

Recommendation: No Environmental Impact Statement (EIS) is required.

The current permitting action is for the construction and operation of concrete batch plant 5167-00 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program – Montana Sage Grouse Conservation Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Quality Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

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