



United States Environmental Protection Agency
General Air Quality Permit for New or Modified Minor Sources of Air
Pollution in Indian Country
<http://www.epa.gov/air/tribal/tribalnsr.html>

Request for Coverage under the General Air Quality Permit for New or Modified Minor Source Stone Quarrying, Crushing, and Screening Facilities in Indian Country

Last Modified: March 23, 2015
 Version 1.0

Prior to construction or modification, complete this application and submit it to your reviewing authority. A list of reviewing authorities, their area of coverage, and contact information can be found in Attachment D to the General Air Quality Permit for Minor Source Stone Quarrying, Crushing, and Screening Facilities or visit: <http://www.epa.gov/air/tribal/tribalnsr.html>.

For questions regarding this application please contact your reviewing authority.

For instructions on completing this application please see the document "Instructions for Requesting Coverage under the General Air Quality Permit for New or Modified Minor Source Stone Quarrying, Crushing, and Screening Facilities in Indian Country."

Section 1: Contact Information

1. Business Name: GRANITE CONSTRUCTION INC	2. Date: 7/11/2016
3. Site Address(es): 244-B RODEO TRAIL, OKANOGAN, WA 98840	4. County(ies): OKANOGAN
5. Name of Operator at Site(s) (if different from owner): DeAtley CRUSHING	6. Phone of Operator or Contact at Site(s) (if different from owner): 208 743 6550
7. Owner: GRANITE CONSTRUCTION INC.	8. Telephone Number of Owner: 509 930 4863
9. Owner's Mailing Address: 80 POND ROAD YAKIMA, WA 98901	10. Send all correspondence regarding this application to: Company Name: GRANITE CONSTRUCTION c/o: KEVEN SAMUELSON Address: 80 POND ROAD YAKIMA, WA 98901
11. Authorized contact regarding this permit application: Name: KEVEN SAMUELSON Title: ENVIRONMENTAL COORDINATOR Phone: 509 930 4863	Email: Keven.Samuelson@gcinc.com FAX:

Section 2: Facility Information for Requesting Coverage under the General Air Quality Permit for New or Modified Minor Source Stone Quarrying, Crushing and Screening Facilities

12. Please list all of the site locations for which you want approval to locate your stone quarrying, crushing, and screening facility. Include the site name (if any), street address, city, state, and name of the Indian Reservation. If needed, use additional paper. You may seek approval for additional locations in the future.

Site Name	Street Address	City/Town	Area of Indian Country
RODEO TRAIL	249-B RODEO TRAIL, OKANOGAN, WA	OKANOGAN	COWILLE

13. This application is for (check all that apply):

Construction/relocation of a new stone quarrying, crushing, and screening facility in Indian country (please describe the proposed new source).

Add a new location for your stone quarrying, crushing, and screening facility already covered by the General Permit. (Please describe the proposed new location.)

Modification of an existing stone quarrying, crushing, and screening facility. Please describe the modification below. The definition of "modification" can be found at 40 CFR 49.152(d), and in the "Instructions" document.

A stone quarrying, crushing, and screening operation co-located with a hot mix asphalt operation and seeking to limit combined emissions to less than 100 tpy for NSR-regulated pollutants. You must comply with Conditions 16. and 19.e in the General Permit. This option is not available in serious, severe, or extreme ozone nonattainment areas and serious CO nonattainment areas. (Please describe the proposed source.)

Stationary (fixed) stone quarrying, crushing, and screening facility

- Portable stone quarrying, crushing, and screening facility
- Relocation of an existing stone quarrying, crushing, and screening facility

14. North American Industry Classification System/Standard Industrial Classification Code and/or description of the facility:

212311, 212319

15. Will your new or modified facility be located in an ozone nonattainment area? Information on the ozone attainment status of the area where your facility is or will be located can be found at:
<http://www.epa.gov/airquality/greenbook/>.

- Yes No

If you answered 'Yes,' specify the classification of the ozone nonattainment area:

- Marginal Moderate Serious Severe Extreme

16. Will your new or modified facility be located in a particulate matter (PM₁₀/PM_{2.5}) nonattainment area? Information on the attainment status of the area where your facility is or will be located can be found at:
<http://www.epa.gov/airquality/greenbook/>.

- Yes No

If you answered 'Yes,' specify the classification of the PM₁₀/PM_{2.5} nonattainment area:

- Moderate Serious

17. Will the PTE of your new facility or the increase in potential emissions from your modified existing facility be equal to or above the applicable minor NSR thresholds listed below for ANY of the listed pollutants, both in tpy? Emissions from your facility may be calculated using the PTE calculator available online at:
<http://www.epa.gov/air/tribal/tribalnsr.html>. Be sure to include all new or modified emission units at your facility.

Pollutant	Attainment Area	Nonattainment Area
CO	10 tpy	5 tpy
Particulate Matter (PM)	10 tpy	5 tpy
Particulate Matter (PM ₁₀)	5 tpy	1 tpy
Particulate Matter (PM _{2.5})	3 tpy	0.6 tpy
Sulfur Dioxide (SO ₂)	10 tpy	5 tpy
Nitrogen Oxides (NO _x)	10 tpy	5 tpy
Volatile Organic Compounds (VOC)	5 tpy	2 tpy

Yes No

If you answered 'No,' your source is likely exempt from the minor NSR program. Please contact your reviewing authority to confirm that your facility will not need a permit. If you answered 'Yes,' continue on to the next question.

18. If located in an attainment, attainment/unclassifiable or unclassifiable area, will the PTE of your new or modified facility be less than 250 tpy for PM, PM₁₀, PM_{2.5}, VOC, NO_x, CO, and SO₂ each individually? Be sure to include all existing, new, and modified emission units at the facility.

Yes No

If you answered 'No,' your source does not qualify for the General Permit. Please contact your reviewing authority to apply for a site-specific permit. If you answered 'Yes,' continue on to the next question.

19. If located in a nonattainment area, will the PTE of your facility for the particular nonattainment pollutant be less than the NSR major source thresholds below for ALL pollutants? Be sure to include all existing, new, and modified emission units at the facility.

Pollutant	Nonattainment Classification	NSR Major Source Threshold
Ozone	Marginal	100 tpy of VOC or NO _x
	Moderate	100 tpy of VOC or NO _x
	Serious	50 tpy of VOC or NO _x
	Severe	25 tpy of VOC or NO _x
	Extreme	10 tpy of VOC or NO _x
PM ₁₀	Moderate	100 tpy
	Serious	70 tpy
CO	Moderate	100 tpy
	Serious	50 tpy
SO ₂ , NO ₂ , PM _{2.5}	No nonattainment classification	100 tpy

Yes No N/A - Not located in any nonattainment area

If you answered 'No,' your source does not qualify for the General Permit. Please contact reviewing authority to apply for a site-specific permit. If you answered 'Yes' or 'N/A,' continue on to the next question.

20. What is the projected monthly throughput of rock, stone, sand, gravel, and aggregate (in tons) to be processed at your new or modified facility?

10,000 tons per month

21. What is the projected monthly usage of diesel fuel (in gallons) for all stationary combustion sources (e.g., boilers) at your new or modified facility?

8,000 gallons per month

Section 3: Technical Information for Requesting Coverage under the General Air Quality Permit for New or Modified Minor Source Stone Quarrying, Crushing and Screening Facilities

Information regarding the emission units at your facility is required by 40 CFR 49.154 and 40.160. Please provide the information below for all equipment at your facility. For each emissions unit, include supporting documentation for the PTE of the unit with your Request for Coverage. In addition, for existing emissions units, include the most recent actual annual emissions. See 40 CFR 49.154(a)(2). (For more information on how to calculate actual emissions, go to: <http://www.epa.gov/air/tribal/tribalnsrcalculators.html>.) As needed, please include other relevant information with your notification (including any equipment not identified below).

22. Facility Equipment

List all equipment at the site that is or will be owned, leased or operated by the applicant, as well as the maximum rated capacity in tons per hour, Btu, or horsepower. If needed to list all equipment, additional pages may be photocopied and added after this one.

Unit ID #	Type Description					Maximum Rated Capacity Tons per Hour (tph) for Equipment and Btu or Horsepower for engines 28' x 54"	Make/ Model	Date of Construction (mm/dd/yyyy)
	Crusher	Screeners	Internal Combustion Engine	Other Exhaust Unit	Other (please specify)			
001	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	JAW	800 MAX	PIONEER	2013
002	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CONE	600 MAX	JCI 54"	2013
003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ROLLS	250 MAX	55" x 30"	2013
004	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ROLLS	250 MAX	55" x 30"	2013
005	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CONE SCREEN	500	6' x 16 TWIN JCI DECK	2013
006	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ROLL SCREEN	250	6' x 16 TWIN JCI DECK	2013
007	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ROLL SCREEN	250	6' x 16 TWIN JCI DECK	2013
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Unit ID #	Type Description				Maximum Rated Capacity	Make/Model	Date of Construction (mm/dd/yyyy)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Notes:

In the column labeled Unit ID # please give unique identifiers for all of the equipment at the site. You may use an existing facility numbering system or emissions inventory ID #. This unique identifier will differentiate between the different emission units at the facility.

In subsequent sections of this permit application, please use the same Unit ID #'s already provided for the equipment listed here.

It is recommended—but not required—that you include an identifying letter specific to the equipment type, e.g., 'C' for crusher, followed by an identifying number of your choice.

23. **Crushing** (Please use same ID #'s identified above in this permit application)

Unit ID #	Process Rate			Type				Controls		
	tph	Annual hours of operation	tpy (tph x annual hours)	Primary	Secondary	Tertiary	Fines	Average Moisture Content (%)	Controls Used (Please specify)	Efficiency
001	600-800	360	298,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		PRESSURIZED SPRAY ENCLOSE	
002	600	360	216,000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		" "	
003	250	360	90,000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		" "	
004	250	360	90,000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		" "	
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		" "	
Totals:	1,400	1,440	684,000							

24. Screening (Please use same Unit ID #'s identified above in this permit application)

Unit ID #	Process Rate			Type of Screening			Controls		
	tph	Annual hours of operation	tpy (tph x annual hours)	Regular	Fines	Wet Screening*	Average Moisture Content (%)	Controls Used (Please specify)	Efficiency
005	500	360	180,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		SPRAY BAR	
006	1250	360	90,000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		SPRAY BAR	
007	250	360	90,000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		SPRAY BAR	
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Totals:									

* Wet screening refers to screening processes that are accomplished with water as the carrier of the sand/aggregate or where the aggregate is saturated with water.

25. Material Handling – Transferring, Loading, Unloading, Conveyors, and Dropping (Please use same Unit ID #'s identified above in this permit application)

Unit ID #	Description	Maximum Material Transferred (tpy)	Average Moisture Content	Control Technology						
				None	Water Spray	Chemical Additive	Conveyor with 1/2 cover	Conveyor with 3/4 cover	Cover with full cover	
	e.g. truck dump, conveyor drop, truck loading	Per point	%							
HD-325	HAUL TRUCK	250,000	6-7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6-10	CONVEYORS	30" x 40"	250,000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals:										

HAUL TO STOCKPILE WITH KOMATSU HD 325, 40 TON.

26. Internal Combustion Engines (Including emergency generators)

Unit ID #	Unit Description	Maximum Rated Capacity (HP)	Types of Fuel(s) Used ¹	Manufactured Date (mm/dd/yyyy)	Model Year
008	CAT C27	1043	ULTRA LOW SULFUR DIESEL		2009-2015
009	CAT C27	1043	ULTRA LOW SULFUR DIESEL		2009-2015

27. Volatile Liquid Storage Tanks

This section applies to storage tanks used to store liquid materials. Please provide the following information for each storage tank.

Unit ID#	Type of Liquid	Capacity (gallons)	Vapor pressure of liquid (psi)	Is the tank above or underground?	Date of installation (if existing)
N/A					

Section 4: Information on Completing Screening Processes that Have to Be Satisfied to Request Coverage under the General Air Quality Permit for New or Modified Minor Source Stone Quarrying, Crushing and Screening Facilities

28. Threatened or Endangered Species

Have you demonstrated that you meet one of the criteria listed in Appendix A with respect to the protection of any and all species that are federally listed as threatened or endangered under the ESA or of habitat that is federally designated as "critical habitat" under the ESA? If you answer 'No,' you cannot request coverage under this permit.

Yes No

If you answered 'Yes,' then you need to provide the appropriate documentation to the EPA to qualify for coverage under this permit. Please indicate under which criterion in Appendix A you are satisfying this requirement:

A B C D E

29. Historic Properties

Have you completed the screening process in Appendix B to determine if the construction, modification or operation of your new or modified minor source of air pollutants has the potential to cause effects to historic properties (pursuant to the NHPA)? If you answer 'No,' you cannot request coverage under this permit.

Yes No

If you answered 'Yes,' then provide the appropriate documentation to the EPA to qualify for coverage under this permit.

Section 5: Additional Information about the General Air Quality Permit for New or Modified Minor Source Stone Quarrying, Crushing and Screening Facilities

This section provides information on the sizes of sources in terms of emissions that are eligible for the General Permit. The emission limitations and standards in this permit are expected to ensure that source-wide emissions are below the rates shown in the following table:

Pollutant of Concern	Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Nonattainment Areas
CO	19 tpy	19 tpy (moderate and serious areas)
PM ₁₀	63 tpy	63 tpy (moderate areas and serious areas)
PM _{2.5}	63 tpy	63 tpy
NO _x	88 tpy	88 tpy (marginal and moderate ozone areas)
		45 tpy (serious ozone areas)
		22.5 tpy (severe ozone areas)
		9 tpy (extreme ozone areas)
VOC	7 tpy	7 tpy (ozone areas)

For a stone quarrying, crushing and screening operation co-located with a hot mix asphalt operation the emission limitations and standards in Conditions 16. and 19.e of the General Permit are expected to ensure the source-wide emissions are below the rates shown in the following table:

Pollutant of Concern	Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Nonattainment Areas
CO	78 tpy	78 tpy (moderate areas)
		Not applicable (serious areas)

Pollutant of Concern	Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Nonattainment Areas
PM	86 tpy	Not applicable
PM ₁₀	63 tpy	63 tpy (moderate areas)
		63 tpy (serious areas)
PM _{2.5}	30 tpy	30 tpy
SO ₂	18 tpy	18 tpy
NO _x	90 tpy	Not applicable (serious and above ozone areas)
		90 tpy (marginal and moderate ozone areas)
VOC	27 tpy	Not applicable (serious and above ozone areas)
		27 tpy (marginal and moderate ozone areas)

You should contact your reviewing authority if you intend to rely on the emission limitations and standards in this General Permit to prevent having to obtain a Title V permit.

Applicant's Statement (to be signed by the applicant)		
I certify that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.		
Name: <u></u> (Signature)	Name: <u>KEVEN K SAMUELSON</u> (Print or Type)	Date: <u>8/8/16</u>
Title: <u>ENVIRONMENTAL COORDINATOR</u>		

Potential To Emit Calculator for Stone Quarrying, Crushing, and Screening Plants

3/23/2015

This workbook is designed to calculate the potential to emit of a sand, gravel, rock crushing, and screening facility without control devices.

Directions - Enter the facility's information below in the yellow highlighted cells.

For the rock processing operations, input the number of machines in each category that are used in your operations.

For the conveying operations, enter the number of drop points associated with each crushing/screening operation.

For the truck loading and transport offsite, enter the number 1.

For the engines, input the total horsepower rating of all the stationary engines on site.

The potential to emit for the facility will be displayed under the "Output" tab. The criteria pollutant emission rate is calculated depending on the equipment used and the maximum rating of any stationary engines. The effect of any control devices is not considered.

Facility Profile

Rock Processing Equipment	Number of Operations	Maximum Capacity (tons/hr)*	Number of Conveyor Drop Points	Description
Truck Unloading/Grizzly Feeder				Fragmented rock delivered to site and dumped into grizzly or crusher feeder
ID# 001 Primary Crusher (Output is 3 - 12 inches) and Screening	1	800	2	Rock that passes through the primary crusher. This rock is 3 to 12 inches in diameter after this step. Rock is screened, conveyed to a pile, and shipped offsite or conveyed to another processing step.
ID# 002 Secondary Crusher (Output is 1 - 3 inches) and Screening	1	600	2	Rock that passes through the secondary crusher. This rock is 1 to 3 inches in diameter after this step. Rock is screened, conveyed to a pile, and shipped offsite or conveyed to another processing step.
ID# 003, 004 Tertiary Crusher (Output is 3/16 - 1 inches) and Screening	2	500	4	Rock that passes through the tertiary crusher. This rock is 3/16 to 1 inches in diameter after this step. Rock is screened, conveyed to a pile, and shipped offsite or conveyed to another processing step.
Fines Crusher (output is less than 3/16 inches) and Screening				Rock that passes through the fines crusher. This rock is less than 3/16 inches in diameter after this step. Rock is screened, conveyed to a pile, and shipped offsite.
ID# 005, 006, 007 Dry Sand and Gravel Screening**	3	500	3	Dry sand and gravel that passes through the screener. Dry sand and gravel is excavated, screened, classified for size, conveyed to a pile, and shipped offsite.
ID# HD-325 Truck Loading and Transport Offsite	1	300		Rock product that is shipped offsite.

* If the maximum capacity of a piece of equipment is bottlenecked (reduced) by another piece of equipment operating in a 'train', enter the bottlenecked capacity.

** If your sand and gravel screening operation processes saturated material, and uses wet processing methods, enter zero (0) for the inputs in this row.

Power Generation Equipment	Generator/Engine Size (Hp) (total)	Sulfur Content of Diesel Fuel (%)	Description
Stationary Diesel Electrical Generators w/ Rating Less Than or Equal to than 600 Hp			A stationary engine is an engine that is used in a fixed location, or a nonroad (portable) engine that remains in one location for at least a full year.
Stationary Diesel Electrical Generators w/ Rating Greater than 600 Hp	1,093	0.50%	

Storage Piles		Description
Rock Product in Storage Piles (tons)	100,000	Average Amount of Crushed Rock Product Stored in Storage Piles During the Year (tons). Default value is one week's production.
Moisture Content of Storage Piles (%)	0.7%	Moisture content of the storage piles. If operations are controlled with water sprays, include this in your estimate. Default value for uncontrolled operations is 0.7%. Default value for controlled operations is 2%.
Mean Wind Speed (mph)	15.00	Average wind speed at the site.

Potential To Emit Calculator for Stone Quarrying, Crushing, and Screening Plants

3/23/2015

Facility Potential to Emit (PTE) Summary

FOR DETERMINING IF YOU NEED A PERMIT (does not include controls):

Process	Pollutant						
	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Sand, Gravel, Rock Crushing, Screening, Conveying	2319.34	600.54	0.00	-	-	-	-
Storage Piles	2.15	1.02	0.15	-	-	-	-
Engine/Generator	3.35	3.3511	3.35	0.00	114.90	26.33	3.38
Total Potential to Emit (tons/year)	2324.84	604.91	3.50	0.00	114.90	26.33	3.38

FOR DETERMINING PTE IF USING GENERAL PERMIT (includes controls in General Permit):

Process	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Sand, Gravel, Rock Crushing, Screening, Conveying	526.62	25.27	1.04				
Storage Piles	2.15	1.02	0.15	-	-	-	-
Engine/Generator	3.35	3.35	3.35	0.00	114.90	26.33	3.38
Total Potential to Emit (tons/year)	532.11	29.64	4.55	0.00	114.90	26.33	3.38

Maximum Throughputs, Based on Equipment Capacity	
Operation Description	tons/year
Truck Unloading - Fragmented Stone	0
Primary Crushing and Screening	7,008,000
Secondary Crushing and Screening	5,256,000
Tertiary Crushing and Screening	8,760,000
Fines Crushing and Screening	0
Dry Sand and Gravel Screening	13,140,000
Conveyor Transfer Points (total)	98,988,000
Truck Loading - Conveyor, crushed stone	2,628,000

Maximum Fuel Usage, Based on Engine Size		
Operation Description	gal/year	gal/month
Diesel Engine (<= 600 hp)	0	0
Diesel Engine (> 600 hp)	489,110	40,759

Potential To Emit Calculator for Stone Quarrying, Crushing, and Screening Plants

3/23/2015

Emissions from Sand, Gravel, Rock Crushing, and Screening Operations

1. Emission Factors for PM, PM10, and PM2.5

Type of Operation	SCC	Emission Factors (lb/ton)		
		PM ^c	PM10	PM2.5 ^c
Primary Crushing ^a	3-05-020-01	1.4E-03	6.0E-04	
Primary Crushing (controlled) ^a	3-05-020-01	3.0E-04	1.4E-04	
Secondary Crushing ^a	3-05-020-02	2.7E-03	1.2E-03	
Secondary Crushing (controlled) ^a	3-05-020-02	6.0E-04	2.7E-04	
Tertiary Crushing	3-05-030-03	5.4E-03	2.4E-03	
Tertiary Crushing (controlled)	3-05-020-03	1.2E-03	5.4E-04	1.0E-04
Fines Crushing	3-05-020-05	3.9E-02	1.5E-02	
Fines Crushing (controlled)	3-05-020-05	3.0E-03	1.2E-03	7.0E-05
Screening of Primary Crusher Output ^b		6.3E-03	2.2E-03	
Screening of Primary Crusher (controlled) ^b		5.5E-04	1.9E-04	
Screening of Secondary Crusher Output ^b		1.3E-02	4.4E-03	
Screening of Secondary Crusher Output (controlled) ^b		1.1E-03	3.7E-04	
Screening (Tertiary Crushing)	3-05-020-02-03	2.5E-02	8.7E-03	
Screening (Tertiary Crushing) (controlled)	3-05-020-02-03	2.2E-03	7.4E-04	5.0E-05
Fines Screening	3-05-020-21	3.0E-01	7.2E-02	
Fines Screening (controlled)	3-05-020-21	3.6E-03	2.2E-03	
Conveyor Transfer Point	3-05-020-06	3.0E-03	1.1E-03	
Conveyor Transfer Point (controlled)	3-05-020-06	1.4E-04	4.6E-05	1.3E-05
Truck Unloading - Fragmented Stone	3-05-020-31	1.6E-05	1.6E-05	
Truck Loading - Conveyor, crushed stone	3-05-020-32	1.0E-04	1.0E-04	

Emission factors are from AP 42, Chapter 11.19.2, Tables 11.19.2-2 and 11.19.2-4 (1/95), except as noted.

^a AP 42 emission factors for primary crushing and secondary crushing are not available. Emission factors are estimated based on the assumption that emissions are proportional to the relative surface area of the product emerging from the crusher. Secondary crushing emissions are conservatively estimated at 50% of tertiary crushing emissions, and primary crushing emissions are conservatively estimated at 50% of secondary crushing emissions.

^b AP 42 emission factors for screening of rock output from primary crushing are not available. Emission factors are estimated based on the assumption that emissions are proportional to the relative surface area of the product emerging from the crusher. Secondary screening emissions are conservatively estimated at 50% of tertiary crushing emissions, and primary screening emissions are conservatively estimated at 50% of secondary screening emissions.

^c Where there is no data for an emission factor, a blank cell is shown in the emission factor table.

2. Potential to Emit from Rock Crushing and Screening Operations

Purple values are from the inputs page

Blue values are results

Type of Operation	Maximum Throughput (tons/yr)	Emissions (tons/yr) (uncontrolled)			Emissions (tons/yr) (controlled)		
		PM	PM10	PM2.5	PM	PM10	PM2.5
Truck Unloading - Fragmented Stone	0	0.0000	0.0000	0.0000	0.0E+00	0.0E+00	0.0E+00
Primary Crushing	7,008,000	4.7304	2.1024	0.0000	1.1E+00	4.7E-01	0.0E+00
Screening of Primary Crusher Output	7,008,000	21.9000	7.6212	0.0000	1.9E+00	6.5E-01	0.0E+00
Conveyor Transfer Point	14,016,000	21.0240	7.7088	0.0000	9.8E-01	3.2E-01	9.1E-02
Secondary Crushing	5,256,000	7.0956	3.1536	0.0000	1.6E+00	7.1E-01	0.0E+00
Screening of Secondary Crusher Output	5,256,000	32.8500	11.4318	0.0000	2.9E+00	9.7E-01	0.0E+00
Conveyor Transfer Point	10,512,000	15.7680	5.7816	0.0000	7.4E-01	2.4E-01	6.8E-02
Tertiary Crushing	8,760,000	23.6520	10.5120	0.0000	5.3E+00	2.4E+00	4.4E-01
Screening of Tertiary Crusher Output	8,760,000	109.5000	38.1060	0.0000	9.6E+00	3.2E+00	2.2E-01
Conveyor Transfer Point	35,040,000	52.5600	19.2720	0.0000	2.5E+00	8.1E-01	2.3E-01
Fines Crushing	0	0.0000	0.0000	0.0000	0.0E+00	0.0E+00	0.0E+00
Fines Screening	0	0.0000	0.0000	0.0000	0.0E+00	0.0E+00	0.0E+00
Conveyor Transfer Point	0	0.0000	0.0000	0.0000	0.0E+00	0.0E+00	0.0E+00
Dry Sand and Gravel Screening	13,140,000	1971.0000	473.0400	0.0000	7.2E+00	1.4E+01	0.0E+00
Dry Sand and Gravel Conveying	39,420,000	59.1300	21.6810	0.0000	4.9E+02	9.1E-01	0.0E+00
Truck Loading - Conveyor, crushed stone	2,628,000	0.1314	0.1314	0.0000	1.3E-01	1.3E-01	0.0E+00
Total		2319.341	600.542	0.000	5.3E+02	2.5E+01	1.0E+00

Methodology

Maximum Throughput (tons/yr) = Number of Operations x Maximum Capacity (tons/hr) x 8,760 hr/yr

Emissions (tons/yr) = Maximum Throughput (tons/yr) x Emission factor (lb/ton) x 1 ton/2,000 lbs

Potential To Emit Calculator for Stone Quarrying, Crushing, and Screening Plants

3/23/2015

Emissions from Storage Piles

100,000 Average Annual Product in Piles (ton/yr)
 0.7 Agg. Moisture (%)
 15.00 Mean Wind Speed (MPH)

Purple values are pulled from the inputs worksheet
 Blue values are results

According to AP42, Chapter 13.2.4 - Aggregate Handling and Storage Piles (updated 11/06), the particulate emission factors for storage piles can be estimated from the following equation:

$$E_f = \frac{k \times 0.0032 \times (U/5)^{1.3}}{(M/2)^{1.4}}$$

where:

Ef = Emission Factor (lbs/ton)
 k = Particle size multipliers =
 U = Mean wind speed (MPH) =
 M = Moisture content (%) =

0.74 for PM, 0.35 for PM₁₀, and 0.053 for PM_{2.5}
 15 MPH (provided by the facility)
 0.7 % (provided by the facility)

Pollutant	Emission Factor (lb/ton)	Potential to Emit (tons/yr)
PM	0.04295	2.147
PM ₁₀	0.02031	1.016
PM _{2.5}	0.00308	0.154

Methodology

Potential to Emit (ton/yr) = Max. Annual Production (ton/yr) x 1/52 x EF (lb/ton) x 1 ton/2000 lb

Assume that storage piles contain one week's production, on average.

Potential To Emit Calculator for Stone Quarrying, Crushing, and Screening Plants

3/23/2015

Emissions from Generator/Engine(s)

Diesel Engine <= 600 Hp: **0** total hp
 Diesel Engine > 600 Hp: **1,093** total hp

Total Engine PTE (ton/yr)

PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
3.35	3.35	3.35	0.00	114.90	26.33	3.38

Engine Type: **Diesel Engine (<= 600 hp)**

Used: **No**

Emission Factor¹ (lbs/hp-hr)
 Potential to Emit (ton/yr)

Pollutant						
PM ²	PM ₁₀	PM _{2.5} ²	SO ₂	NO _x	CO	VOC ³
0.0022	0.0022	0.0022	0.00205	0.031	0.00668	0.00251
0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note:

1. Emission factors are from Chapter 3.3, Table 3.3-1 (updated 10/96).
2. Assume PM and PM_{2.5} emissions are equal to PM₁₀ emissions.
3. Assume TOC (total organic compounds) emissions equal to VOC emissions.

Methodology

Potential to Emit (ton/yr) = total horsepower (hp) x Emission Factor (lb/hp-hr) x 8,760 hr/yr x 1 ton/2000 lb

Engine Type: **Diesel Engine (> 600 hp)**

Used: **Yes**

Sulfur Content: **0.00 %**

Emission Factor¹ (lbs/hp-hr)
 Potential to Emit (ton/yr)

Pollutant						
PM	PM ₁₀	PM _{2.5} ²	SO ₂	NO _x	CO	VOC ³
0.0007	0.0007	0.0007	0	0.024	0.0055	0.000705
3.35	3.35	3.35	0.00	114.90	26.33	3.38

Note:

1. Emission factors are from Chapter 3.4, Tables 3.4-1 and 3.4-2 for Large Stationary Diesel and Dual Fuel Engines (updated 10/96).
2. Assume PM_{2.5} emissions are equal to PM₁₀ emissions.
3. Assume TOC (total organic compounds) emissions equal to VOC emissions.

Methodology

Potential to Emit (ton/yr) = total horsepower (hp) x Emission Factor (lb/hp-hr) x 8,760 hr/yr x 1 ton/2000 lb

Fuel Usage (gal/yr)	489,110
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Methodology:

Fuel Usage (gal/yr) = Total Engine Horsepower (hp) x 8,760 hr/yr x 7,000 Btu/hp-hr x 1 lb fuel/19,300 Btu x 1 gal/7.1 lb