

**Alaska Department of Environmental Conservation  
Air Permits Program**

**TECHNICAL ANALYSIS REPORT**

for

**Air Quality Control  
Minor General Permit 9**

for

**Rock Crushers**

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## INTRODUCTION

This permit is intended for rock crushers that are required to have a permit because they are classified as needing a minor permit under 18 AAC 50.502(b)(3) (i.e. they have a rated capacity of at least five tons per hour).

Rock crushers sometimes break down the oversize material to be fed into the process for asphalt plants, or to recycle asphalt pavement. An applicant must apply for a Minor General Permit 3 or a General Permit 3 for Asphalt Plants to operate the asphalt plant.

Note that the Department deleted the Coastal Management provisions in condition 23 of the prior GP9 because it is solely ACMP related and cites Aleutians West CRSA enforceable policies that are no longer in effect. On January 22 through February 2, 2009, the Department conducted a 10-day ACMP project scope request to solicit applicable enforceable policies from all Coastal District Coordinators in Alaska with enforceable policies for ACMP Consistency Review.

On February 2, 2009, the Department received a response from one coastal district: the Aleutians West Coastal District. The permit writer sent these to the Department's Deputy Commissioner on the same day. On February 4, 2009, the Department sent a request to the Aleutians West CRSA asking them to describe the activities that are part of this project and are the subject of the specific enforceable policies. They provided this information on February 6, 2009. On February 13, 2009, the Deputy Commissioner determined that the scope of the project potentially includes activities subject to the following local district enforceable policies: Aleutians West CRSA (D, G-1, H (including H-1 and H-2), I (including I-1 and I-2), and K-1.

On April 1 through April 30, 2009, the Department conducted a 30-day ACMP public comment review for ACMP Consistency Review Packet for the Aleutians West CRSA. The Department will not issue this minor general permit for applicants operating in or relocating to the Aleutians West CRSA until the Department completes this final consistency determination.

The Department deleted the 40 C.F.R. 60, Subpart OOO and Subpart Kb provisions in conditions 15 – 19 in the prior GP9 because the department does not have authority under 18 AAC 50 to include federal standards in minor permits. The Department deleted the Annual Compliance Certification Requirements in the prior GP9 since GP9 was issued as a Title V permit, which includes this requirement while the new MG9 is issued as a minor permit, which does not include this requirement. The Department included all other conditions in the prior GP9 in this minor permit.

The Department included a public comment period from 17 February – 19 March 2009 for this permit, as required by 18 AAC 50.542(d). The Department did not receive any comments.

## Excluded Facilities

A stationary source is excluded from using this general minor permit if the following applies.

- ▶ The non-metallic mineral processing plant has **emission points with mechanically induced air flow**, such as a fan forcing emission to a stack or control device.

The modeling characterized the rock crusher as a fugitive emission source. The emissions associated with a mechanically induced airflow design would be released from a stack, which could be of various heights, orientations, exit velocities, and various downwash potential. With such a wide range of options (in addition to potential emissions controls – such as cyclones or baghouses), the Department was unable to easily develop a general approach for assessment. Therefore, the Department is unable to include rock crushers with mechanically induced air flow in this minor general permit. However, this minor general permit does allow rock crushers to be enclosed in a building or other structure.

- ▶ The stationary source contains open burning

Open burning has substantive particulate matter emissions and ambient impacts, which were not included in the modeling analysis. The Department did not include exclusions associated with asbestos demolition or renovation; and servicing of refrigeration equipment containing Class I or Class II substances, in this permit. These were included in the GP9 to avoid Title-V requirements, which are not applicable in this minor permit.

- ▶ The stationary source emits more than 100 tons per year of a regulated air pollutant (i.e. is subject to Title V permitting requirements).

The stationary source includes diesel or groups of diesels engine emission units that drive the crusher with a cumulative rating of the engines exceeding 1,100 horsepower. However, the Permittee may exceed 1,100 hp if they get either a combined Minor/Operating General Permit or obtain an ORL under either 18 AAC 50.225 or 18 AAC 50.508(5) to limit the stationary source wide NO<sub>x</sub> emissions to less than 100 tons per rolling 12-month period. If a compression ignition (diesel) engine drives the crusher and it will be in one location for less than 12 consecutive months, as defined in 40 CFR 89.2, then the emissions from this engine will not count towards permit applicability.

However, if there is a general permit for the activities listed above, the stationary source may operate under both permits.

## TECHNICAL ANALYSIS FOR THE PERMIT CONDITIONS

### Conditions 1 – 7 - Visible Emissions Standard Requirements

**Applicability:** Under 18 AAC 50.544(b), for a minor permit classified under 18 AAC 502(b), the Department will include terms and conditions as necessary to ensure the proposed stationary source will meet the requirements of AS 46.14 and 18 AAC 50. This includes terms and conditions for

- installation, use and maintenance of monitoring equipment;
- sampling emissions according to the methods prescribed by the Department, and at locations, intervals and by procedure specified by the Department;
- providing source test reports, monitoring data, emissions data, and information from analyses of any test samples;
- keeping records; and
- making periodic reports on process operations and emissions.

Under 18 AAC 50.055(a)(1) all industrial processes and fuel burning equipment may not reduce visibility through the exhaust effluent by more than 20 percent. Rock crushers are industrial processes and diesel engines are fuel-burning equipment. Condition 1 requires the Permittee to comply with the visible emission standard for rock crushers and diesel engines including fugitive emissions from rock crushers. Conditions 2 – 4 and 5 – 7 address the visible emissions (VE) monitoring, recordkeeping, and reporting (MR&R) for rock crushers and (liquid-fired) diesel engines, respectively. The dust control plan, condition 24.2, also addresses VE MR&R for fugitive emissions.

**Factual basis:** The visible emission monitoring, recordkeeping and reporting (MR&R) requirements for the Rock Crusher are different from those for diesel engines because rock crushers may produce visible emissions without smoke, which is typically associated with incomplete combustion. In the case of rock crushers, visible emissions may also result from loose particulate from aggregate handling and storage piles.

Thus, the MR&R requirements for diesel engines includes the Method 9 and the Smoke/no Smoke plans which are standard permit conditions required under 18 AAC 50.346(c). MR&R requirements for the rock crushers deviate from those under 18 AAC 50.346(c) by excluding the possibility to monitor visible emissions using the Smoke/no Smoke plan because particulate matter emissions from the aggregate are not considered “smoke.”

The visible emissions standard applies to stationary diesel engines and does not apply to nonroad engines. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

**Conditions 2 – 4** were adopted from Standard Permit Condition IX – Visible Emissions and Particulate Matter Monitoring Plan for Liquid-Fired Sources. The conditions were modified to reflect the mobility of rock crushers and the seasonal nature of their operations. The condition requires VE readings after startup from periods of shut down and after relocating the crusher. The conditions were further modified to exclude the Smoke/No Smoke plan since the emissions from the rock crusher include particulate matter from the aggregate during the handling and storage process and not a product of combustion. Condition 3.1a was added to provide emission points capable of producing fugitive

## MG9 – Rock Crusher Minor General Permit

emissions since will be different for each rock crusher operation and can even vary by location. Condition 3.1b(ii) was added to provide a reference to the operating level during the Method 9 observations.

**Conditions 5 - 7** MR&R conditions for diesel engines are standard conditions adopted into regulation pursuant to AS 46.14.010(e).

The frequency of monitoring of visible emissions in condition 5.1 was changed from the Standard Operating Condition to reflect the seasonal nature of rock crusher operation. Not requiring the first VE reading for six months could allow the diesel engine to operate without a VE reading for the year. The condition was also changed to reflect that a diesel generator at a rock crusher does not operate on a continuous basis. The new requirement to conduct the first VE reading for the diesel engine within 15 days attempts to ensure the engine's visible emissions are recorded during the operational period of rock crushing. The Department realizes that there is a potential for the rock crusher to operate less than 15 days, but believes this requirement will protect the public.

Reoccurring monitoring for the diesel engine is kept at once per month as rock crushers generally do not operate long enough to warrant the need for reduced monitoring. This also helps to alleviate missing VE readings by keeping the monitoring requirement simple.

The Smoke/No Smoke requirement in condition 5.2 was revised from the Standard Permit Condition to clarify the requirement that **anytime** smoke is observed they are to begin Method 9 observations or take corrective action to alleviate the smoke.

### **Liquid-Fired Fuel Burning Equipment:**

Monitoring – The visible emissions may be observed by either Method-9 or the Smoke/No Smoke plans as detailed in condition 5.2. Corrective actions such as maintenance procedures and either more frequent or less frequent testing may be required depending on the results of the observations.

Recordkeeping - The Permittee is required to record the results of all visible emission observations and record any actions taken to reduce visible emissions.

Reporting - The Permittee is required to report: 1) emissions in excess of the State visible emissions standard and 2) deviations from permit conditions. The Permittee is required to include copies of the results of all visible emission observations with the stationary source operating report.

### **Gas-Fired Fuel Burning Equipment:**

Monitoring, Recordkeeping, and Reporting – The monitoring of gas fired sources for visible emissions is waived, i.e. no source testing will be required. The Department has found that natural gas fired equipment inherently has negligible VE emissions. However, the Department can request a source test for VE emissions from any smoking equipment.

## **Conditions 8 – 11 - Particulate Matter (PM) Standard**

**Applicability:** Under 18 AAC 50.544(b), for a minor permit classified under 18 AAC 502(b), the Department will include terms and conditions as necessary to ensure the proposed stationary source will meet the requirements of AS 46.14 and 18 AAC 50. This includes terms and conditions for

- installation, use and maintenance of monitoring equipment;

## MG9 – Rock Crusher Minor General Permit

- sampling emissions according to the methods prescribed by the Department, and at locations, intervals and by procedure specified by the Department;
- providing source test reports, monitoring data, emissions data, and information from analyses of any test samples;
- keeping records; and
- making periodic reports on process operations and emissions.

Under 18 AAC 50.055(b)(1) industrial processes and fuel burning equipment may not emit particulate matter exceeding 0.05 grains per cubic foot of exhaust gas corrected to standard conditions. Rock crushers are industrial processes and diesel engines are fuel-burning equipment. Condition 8 requires the Permittee to comply with the particulate matter standard for diesel engines and fugitive emissions from rock crushers. This permit does not include MR&R to demonstrate compliance with this particulate matter standard for fugitive emissions since Reference Method 5 of 40 C.F.R. 60, which is used to determine compliance with this standard, is not applicable to fugitive emissions. Conditions 9 - 11 establish MR&R requirements to demonstrate compliance with the PM standard for (liquid-fired) diesel engines.

**Factual basis:** The particulate matter standard applies to stationary diesel engines and does not apply to nonroad engines. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

### **Liquid-Fired Fuel Burning Equipment:**

For liquid-fired units the MR&R conditions are Standard Operating Permit Condition IX under 18 AAC 50.346(c), adopted into regulation pursuant to AS 46.14.010(e).

### **Gas-Fired Fuel Burning Equipment:**

Although periodic PM monitoring of gas-fired units is waived, the Department has the discretion to request a source test for PM emissions from any fuel burning equipment under 18 AAC 50.220(a) and 18 AAC 50.345(k).

## **Conditions 12 – 16 - Sulfur Compound Emissions Standard Requirements**

**Applicability:** Under 18 AAC 50.544(b), for a minor permit classified under 18 AAC 50.502(b), the Department will include terms and conditions as necessary to ensure the proposed stationary source will meet the requirements of AS 46.14 and 18 AAC 50. This includes terms and conditions for

- installation, use and maintenance of monitoring equipment;
- sampling emissions according to the methods prescribed by the Department, and at locations, intervals and by procedure specified by the Department;
- providing source test reports, monitoring data, emissions data, and information from analyses of any test samples;
- keeping records; and
- making periodic reports on process operations and emissions.

Under 18 AAC 50.055(c) industrial processes and fuel burning equipment may not emit sulfur-compound emissions exceeding 500 parts per million (ppm) averaged over a period of three hours. The diesel engines are fuel-burning equipment; the rock crushers are industrial processes, but do not produce any sulfur-compound emissions. Condition 12 requires the Permittee to comply with this standard for diesel engines. Conditions 13 – 16 establish MR&R requirements to demonstrate compliance with this standard for (liquid and gas-fired) diesel engines.

**Factual Basis:** The sulfur-compound emissions standard applies to stationary diesel engines and does not apply to nonroad engines. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

**Liquid-Fired Fuel Burning Equipment:**

For liquid-fired fuel burning equipment the MR&R conditions are Standard Operating Permit Conditions XI and XII under 18 AAC 50.346(c), adopted into regulation pursuant to AS 46.14.010(e).

**Gas-Fired Fuel Burning Equipment:**

Fuel gas sulfur is measured as hydrogen sulfide (H<sub>2</sub>S) concentration in ppm by volume (ppmv). The Department performed calculations<sup>9</sup> that show that fuel gas containing no more than 4,000 ppm of H<sub>2</sub>S will comply with this emission standard at stoichiometric (or zero excess air) combustion conditions. Given the case that excess air is normally greater than zero, the value of 4,000 ppm is conservative.

Equations to calculate the exhaust gas SO<sub>2</sub> concentrations resulting from the combustion of fuel gas were not included in this permit. Fuel gas with an H<sub>2</sub>S concentration of even 10 percent of 4,000 ppm is currently not available in Alaska and is not projected to be available in the foreseeable future.

In any case, the Permittee is required to record the fuel gas H<sub>2</sub>S concentration of the fuel gas. The Permittee is required to report as excess emissions whenever the fuel combusted causes sulfur compound emissions to exceed the standards in this condition. The Permittee is required to include copies of the records mentioned in the previous paragraph with the stationary source operating report.

**Condition 17 - Ambient Air Quality Protection – General Requirements**

**Applicability:** This condition applies to all rock crushers unless a stricter condition exists in this permit, State Statutes, or Federal Guidelines. 18 AAC 50.010 establishes the ambient air quality standards in the State of Alaska. The Permittee is required to comply with these requirements.

**Factual Basis:** The Department incorporated the same setback distance requirements as previously established in the 2003 General Permit for Rock Crushers (GP9). The

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<sup>9</sup> See ADEC Air Permits Web Site at <http://www.dec.state.ak.us/air/ap/docs/sulfgas.pdf>, under "Stoichiometric Mass Balance Calculations of Exhaust Gas SO<sub>2</sub> Concentration."

Department established the distances based on a generic air quality modeling (see Attachment 2) analysis it conducted to address public complaints regarding alleged impacts.<sup>10</sup> The Department used the U.S. Environmental Protection Agency's (EPA's) ISCST3 dispersion modeling software to conduct the air dispersion modeling in 2003. The Department also created a screening meteorological data set, in order to make the analysis applicable for the entire State.

The Department established the setback distance requirement in condition 17.1 in order to protect the 24 hour PM-10 ambient air quality standards. The Department established the setback distance restriction in condition 17.2 to protect the PSD increment for PM-10. The requirement for a dust control plan in condition 24.2 for operations within 2,000 feet of the nearest off site inhabited structure is based on predicted 24 hour impacts of the ambient standard for PM-10.

As previously noted in the 2003 GP9, the setback distance requirements are based on the best information available to the Department. They do not guarantee that an operation cannot violate the ambient air quality standards or increments, or create a public air quality nuisance. Therefore, the Department included a note that if the operation results in complaints, the complaints are subject to investigation. The note lists some of the possible outcomes of the investigation.

#### **Condition 18 – Pollution Control Equipment Breakdown Reporting**

**Applicability:** This condition applies to all emission units at the stationary source to help ensure compliance with 18 AAC 50.544(b)(2), for a minor permit classified under 18 AAC 502(b). This carries over condition 26.3 of the prior 2003 GP9.

**Factual Basis:** Because of public complaints, the Department included these conditions to better insure compliance with the conditions of this permit. Permittees will better assure compliance and minimize compliance by ensuring that the emission units are well maintained and pollution control equipment, if used, functions properly. This is an extension of Good Air Pollution Control Practices, condition 23.

#### **Condition 19 – Relocation and Reporting Site Selection**

**Applicability:** This relocation condition applies to all Rock Crushers because Alaska Statute (AS) 46.14.210 authorizes the Department to issue a general permit that is applicable to more than one stationary source similar in emission unit structure. The permit also contains siting requirements that limit the rock crusher from operating within specified distances to occupied structures, and has monitoring requirements based upon startups at new locations.

This site selection condition applies to all Rock Crushers because 18 AAC 50.110 prohibits pollution that is injurious to human health or welfare, animal or plant life or property, or which would unreasonably interferes with the enjoyment of life or property. This condition applies unless a stricter condition exists in this permit, State Statutes, or Federal Guidelines.

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<sup>10</sup> It is important to note that most rock crushers operating under the general permits did so without public complaints to the department.

**Factual Basis:** Because of public complaints, the Department conducted air dispersion modeling to predict the impacts of Rock Crushers on ambient air. Sources modeled were the stack emissions and fugitive dust emissions modeled as volume sources. Sources modeled were the stack emissions (as horizontal or vertical point sources), and fugitive dust emissions, modeled as volume sources. See Attachment 2 for a description of modeling performed. The new locations must comply with the distance requirements in conditions 17.1 – 17.2, give adequate consideration to the siting issues described in condition 17.3 and provide a dust control plan per condition 24.2 if within 2,000 feet of the nearest off site inhabited structure.

This location requirement is based on the best information available to the Department. It does not guarantee that an operation cannot violate ambient standards or cause violations against the prohibition of air pollution if the equipment is not properly run, or fugitive emissions are not controlled. Therefore, the condition also advises the Permittee that if the operation results in complaints, the complaints will be investigated. The condition lists some of the possible outcomes of the investigation.

#### **Conditions 20 - Administration Fees**

**Applicability:** This condition requires the Permittee, owner, or operator to pay administration fees as set out in regulation. Paying administration fees is required as part of obtaining and holding a permit with the department or as a fee for a department action.

**Factual Basis:** The owner or operator of a stationary source who is required to apply for a permit under AS 46.14.130 shall pay to the department all assessed permit administration fees. The regulations in 18 AAC 50.400-405 specify the amount, payment period, and the frequency of fees applicable to a permit action.

#### **Conditions 21 and 22 - Emission Fees**

**Applicability:** The regulations require all permits to include due dates for the payment of fees and any method the Permittee may use to re-compute assessable emissions. This is Standard Permit Condition I under 18 AAC 50.346(b)(1), adopted into regulation pursuant to AS 46.14.010(e).

**Factual Basis:** These standard conditions require the Permittee to pay fees in accordance with the Department's billing regulations. The billing regulations set the due dates for payment of fees based on the billing date.

The default assessable emissions are emissions of each air pollutant authorized by the permit (AS 46.14.250(h)(1)(A)). Air pollutant means any regulated air pollutant and any hazardous air pollutant. Therefore, assessable emissions under AS 46.14.250(h)(1)(A) means the **potential** to emit any air pollutant identified in the permit, including those not specifically limited by the permit. For example, hydrogen chloride (HCl) emissions from an incinerator are assessable emissions because they are a hazardous air pollutant, even if there is currently no emission limit on HCl for that class of incinerator.

The conditions also describe how the Permittee may calculate **actual** annual assessable emissions based on previous actual annual emissions. According to AS 46.14.250(h)(1)(B), assessable emissions are based on each air pollutant. Therefore,

fees based on actual emissions must also be paid on any pollutant emitted whether or not the permit contains any limitation of that pollutant.

This standard condition specifies that, unless otherwise approved by the department, calculations of assessable emission based on actual emissions use the most recent previous calendar year's emissions. Since each current year's assessable emission are based on the previous year, the department will not give refunds or make additional billings at the end of the current year if the estimated emissions and current year actual emissions do not match. The Permittee will normally pay for actual emissions - just with a one-year time lag.

Projected actual emissions may differ from the previous year's actual emissions if there is a change at the stationary source, such as changes in equipment or an emission rate from existing equipment.

The emission factors in the Rock Crusher Emission Calculation Guide are taken from US EPA publication AP-42 *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition* as adopted by reference in 18 AAC 50.035.

The Permittee may use other emission factors as outlined in Rock Crusher Emission Calculation Guide and Standard Permit Condition I provided those emission factors have been approved by the Department.

If the Permittee does not choose to annually calculate assessable emissions, emissions fees will be based on "potential to emit" (PTE).

The address to submit Emission Fee Estimates was changed from the Standard Permit Condition. This address was changed to reflect the processing center for Emission Fee Estimates.

### Condition 23 - Good Air Pollution Control Practices

**Applicability:** This condition ensures compliance with the applicable requirements under 18 AAC 50.346(b)(5) *Standard Operating Permit Condition VI - Good Air Pollution Control Practices* and applies to all emission units, **except** those subject to federal emission standards. Also, under 18 AAC 50.544(b)(2), for a minor permit classified under 18 AAC 502(b), the Department will include a condition requiring the owner to

- perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;
- keep records of any maintenance that would have a significant effect on emissions (the records may be kept in an electronic format); and
- keep a copy of either the manufacturer's or the operator's maintenance procedures.

**Factual basis:** The condition requires the Permittee to comply with good air pollution control practices for all emission units. The permit contains the provision exactly as required by regulation. This is the same as 18 AAC 50.346(b)(5) and requires that all permits issued by the State of Alaska contain the provisions of Standard Operating Permit Condition VI – Good Air Pollution Control Practices unless more specific requirements adequately meet the requirements.

### **Condition 24 – Reasonable Precautions to Prevent Fugitive Dust**

**Applicability:** This condition expands the requirements under 18 AAC 50.346(c) *Standard Operating Permit Condition X – Reasonable Precautions to Prevent Fugitive Dust* to provide a condition that more adequately meets these requirements given the significant sources of fugitive dust that may be generated by the Stationary Source. This condition applies to all Rock Crushers.

**Factual Basis:** The condition requires the Permittee to comply with 18 AAC 50.045(d), and take reasonable action to prevent particulate matter (PM) from being emitted into the ambient air. 18 AAC 50.045(d) requires an operator to take reasonable precautions to prevent fugitive dust when handling bulk materials. The condition lists examples of reasonable precautions.

This condition requires the Permittee to use reasonable precautions when handling, storing or transporting bulk materials or engineering in an industrial activity in accordance with the applicable requirement in 18 AAC 50.045(d). Bulk material handling requirements apply to the Permittee because the Permittee will engage in bulk material handling, transporting, or storing; or will engage in industrial activity at the stationary source.

If the Rock Crusher is to be located within 2,000 feet of a business, residence or other inhabited structure, the Permittee under this minor general permit must implement the plan under condition 24.2 or get the Department’s approval to implement a different plan. The plan must be specific to any location named in the application.

The “2,000 feet” distance requirement came from a circa-2003 dispersion modeling analysis conducted in support of the 2003 previous General Permit (GP9) for Rock Crushers. Modeling predicted that during dry conditions, if precautions are not taken to control emissions from fugitive sources, the 24-hour PM-10 ambient air quality standard could be violated up to 2,000 feet away.

### **Conditions 25 and 26 - Air Pollution Prohibited**

**Applicability:** This condition ensures compliance with the applicable requirement in 18 AAC 50.110. The condition prohibits the Permittee from causing any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property. Air Pollution Prohibited requirements apply to the stationary source because the Rock Crusher will have emissions and because activities at or associated with the stationary source may result in complaints from the public. The Department adopted this Standard Permit Condition II into 18 AAC 50.346(a) pursuant to AS 46.14.010(e).

**Factual Basis:** While the other permit conditions and emissions limitation should ensure compliance with this condition, unforeseen emission impacts can cause violations of this standard. These violations would go undetected except for complaints from affected persons. Therefore, to monitor compliance, the Permittee must monitor and respond to complaints.

Public complaints are normally an indication that a violation of 18 AAC 50.110 occurred. The Permittee is required to investigate and report any complaints. The Permittee must keep records of the date, time, and nature of all complaints received and summary of the

investigation and corrective actions undertaken for these complaints and to submit copies of these records upon request of the Department.

**Condition 27 - Requested Source Tests**

**Applicability:** Applies because this is a standard condition to be included in all permits.

**Factual Basis:** This condition ensures compliance with the applicable requirement in 18 AAC 50.220(a) and applies because this is a standard condition to be included in all operating permits under 18 AAC 50.345(k). Monitoring consists of conducting the requested source test.

**Conditions 28 - 30 - Operating Conditions, Reference Test Methods, Excess Air Requirements**

**Applicability:** Applies because these are standard conditions to be included in all permits.

**Factual Basis:** These conditions supplement the specific monitoring requirements stated elsewhere in this permit. Compliance monitoring with conditions 28 – 30 consist of the test reports required by condition 35.

**Condition 31 - Test Exemption**

**Applicability:** This condition ensures compliance with the applicable requirement in 18 AAC 50.345(a) and applies when the source exhaust is observed for visible emissions.

**Factual Basis:** The requirements for test plans, notifications and reports do not apply to visible emissions observations by smoke readers, except in connection with required particulate matter testing.

**Conditions 32 – 35 - Test Deadline Extension, Test Plans, Notifications and Reports**

**Applicability:** These conditions ensure compliance with the applicable requirement in 18 AAC 50.345(l) – (o) and applies because the Permittee is required to conduct source test by this permit.

**Factual Basis:** Standard conditions 18 AAC 50.345(l) - (o) are incorporated through these conditions. These standard conditions supplement specific monitoring requirements stated elsewhere in this permit. The source test itself monitors compliance with these conditions.

**Condition 36 - Recordkeeping Requirements**

**Applicability:** Applies because the Permittee is required by the permit to keep records to demonstrate compliance with the terms and conditions of the permit and regulations.

**Factual Basis:** The condition restates the regulatory requirements for recordkeeping and supplements the recordkeeping defined for specific conditions in the permit. The records being kept provide an evidence of compliance with this requirement.

### **Condition 37 - Information Requests**

**Applicability:** This condition requires the Permittee to submit requested information to the Department. This is a standard condition from 18 AAC 50.345(i) of the State approved operating permit program effective November 30, 2001.

**Factual Basis:** This condition requires the Permittee to submit information requested by the Department. Monitoring consists of receipt of the requested information.

### **Condition 38 - Submittals**

**Applicability:** This condition applies because the Permittee is required to send reports to the Department.

**Factual Basis:** This condition lists the Department's appropriate address for reports and written notices. Receipt of the submittal at the correct Department office is sufficient monitoring for this condition. This condition supplements the standard reporting and notification requirements of this permit.

### **Condition 39 - Certification**

**Applicability:** This condition requires the Permittee to comply with the certification requirement in 18 AAC 50.205 and applies to all Permittees. This standard condition is required in all operating permits under 18 AAC 50.345(j).

**Factual Basis:** This condition requires the Permittee to certify all reports submitted to the Department. To ease the certification burden on the Permittee, the condition allows the excess emission reports to be **certified** with the operating report, even though it must still be **submitted** more frequently than the operating report. This condition supplements the reporting requirements of this permit.

### **Condition 40 - Excess Emission and Permit Deviation Reports**

**Applicability:** This condition requires the Permittee to comply with the applicable requirement in 18 AAC 50.235(a)(2) and 18 AAC 50.240. The Department adopted this condition from Standard Permit Condition III under 18 AAC 50.346(b)(2) pursuant to AS 46.14.010(e). The Department copied **Section 10, ADEC Notification Form** Standard Permit Condition IV under 18 AAC 50.346(b)(3).

**Factual Basis:** This condition satisfies two State regulations related to excess emissions - the technology-based emission standard regulation and the excess emission regulation. Although there are some differences between the regulations, the condition satisfies the requirements of each regulation. The Permittee is required to notify the Department when emissions or operations deviate from the requirements of the permit.

### **Condition 41 - Operating Reports**

**Applicability:** This condition ensures compliance with the applicable requirement in 18 AAC 50.346(b)(6) and applies to all permits. The Department copied this condition from Standard Permit Condition VII. No format is specified.

**Factual Basis:** The condition restates the requirements for reports listed in regulation. The condition supplements the specific reporting requirements elsewhere in the permit. The reports themselves provide monitoring for compliance with this condition.

## MG9 – Rock Crusher Minor General Permit

This condition allows the Permittee to submit one of the required two copies of the report electronically in lieu of paper. This meets the requirements of 18 AAC 50 and Department needs, provided the electronic version is compatible with ADEC software, as the Department can more efficiently distribute the electronic copy to staff in other locations.

During the transition period from the previous 2003 GP9 General Permit (if applicable), the Permittee may provide one report accounting for each permit term or condition and the effective permit at that time. The Permittee may chose to provide two reports: the first report accounting for reporting elements of permit terms and conditions from the end date of the previous operating report until the date of expiration of the old permit, and a second operating report accounting for reporting elements of terms and conditions in effect from the effective date of the renewal permit until the end of the reporting period.

### **Condition 42 - Nonroad Engines**

**Applicability:** Nonroad engines are not subject to the standards approved under the State Implementation Plan for the air pollution control for stationary sources. Furthermore, 18 AAC 50.100 states that the potential to emit from nonroad engines do not count towards classification of a stationary source or modification under AS 46.14.130.

**Factual Basis:** This condition requires the Permittee to keep records of location and specifications of nonroad engines at any location where they operate. A nonroad engine has the meaning given in 40 C.F.R. 89.2. An engine will not be considered a nonroad engine if it remains at or will remain at a location for more than 12 consecutive months. An engine used at a single specific location for 12 months or longer ceased to be a nonroad engine when it was placed in that location.

### **Conditions 43 – 49– Terms to Make Permit Enforceable**

**Applicability:** These are standard conditions required under 18 AAC 50.345(a) - (c)(2) and (d) – (h) for all minor permits.

**Factual Basis:** These are standard condition for compliance required for all minor permits.

## Attachment 1 Emission Reporting and Emission Fee Estimate

Submit the following information to the Department no later than March 31<sup>st</sup> of each year at:

ADEC Air Permits Program  
610 University Avenue  
Fairbanks, AK 99709- 3643

Or

FAX to (907) 451-2187

Or

Email to: [DEC.AQ.Airreports@alaska.gov](mailto:DEC.AQ.Airreports@alaska.gov)  
(If emailed, the report must be signed and certified in accordance with 18 AAC 50.345(j).)

Or

Submit emissions online at the following website:  
<https://myalaska.state.ak.us/deca/air/airtoolsweb/>

Stationary Source Name \_\_\_\_\_

Permit Number \_\_\_\_\_ Date: \_\_\_\_\_

Emission Fee Estimate for \_\_\_\_\_  
(State fiscal year)

**Table 1 Total Emissions & Assessable Emission Fee Estimate**

Pollutant	Rock Crusher	Diesel Generator	Assessable Emissions
NO <sub>x</sub>			
CO			
SO <sub>2</sub>			
PM-10			
VOC			

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

## **Attachment 2 Rock Crusher Dispersion Modeling Summary**

### **Alaska Department of Environmental Conservation Dispersion Modeling Summary For Rock Crushers**

Prepared by  
Bill Walker  
April 24, 2003

This summary is to support the renewal of general air quality operating permits for rock crushers. The department specifically requests comment on the assumptions used to characterize these facilities, and on how we should use the information produced by the modeling analysis.

### **Background**

On April 14, 1998 the department issued a general permit for transportable or stationary rock crushers. The first round permits were not supported by dispersion modeling.

During the life of that permit, the department has received complaints about emissions from rock crushing operations. The complaints involve the potential for adverse impacts on human health and welfare.<sup>11</sup>

The department is issuing the renewal permits under the authority of AS 46.14.210, but not AS 46.14.215. However, because of public health concerns that arose during the life of the original permits, I have done dispersion modeling as provided by 18 AAC 50.201. This modeling serves as the basis for proposed permit conditions.

#### **Model and Methods Used**

For this modeling analysis I used ISCST3. This allowed sources to be distributed over a three dimensional space. Emissions are modeled as volume sources based on photographs of a rock crushing operation. I took emission rates from AP-42 for crushers, screens, conveyors and diesel engines.

#### **Meteorological Data**

The meteorological data set was a screening data set similar to the one used in SCREEN3. It was applied to ISCST3 by Pat Hanrahan of the State of Oregon Department of Environmental Quality. The model predicted one hour ambient concentrations. To get 24 hour concentrations, I multiplied the results by 0.4. This is consistent with EPA guidelines.

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<sup>11</sup> It is important to note that most plants operating under the general permits did so without public complaints to the Department.

### **Background Concentrations**

Background concentrations had to be applied statewide. I used the highest concentrations measured at Healy. The location of the Healy monitoring site intended to gather background concentrations, not to measure impacts from the Healy power plants. The background concentration was:

- PM-10 24 hour – 31  $\mu\text{g}/\text{m}^3$ .

### **Receptors**

Receptors were placed using a polar grid from a few meters from the center of the operation to a maximum of 2000 meters. Receptors were modeled assuming flat terrain, and terrain heights of 10, 15, and 20 meters.

### **Downwash**

I used one downwash structure based on one of the crusher operation photographs. It approximates a crusher and screen mounted on a trailer bed. The dimensions are 40 feet long by 12 feet high by 8 feet wide.

### **PM-10**

I modeled crushers, screens, and conveyors as one volume source 120 feet square, and 5 meters tall (estimated from crushing operation photographs).

Emission factors came from EPA's AP-42, Table 11.19.2-2 for crushed stone processing operations. Activity rates were based on 127 tons per hour (tph), as follows:<sup>12</sup>

- 127 tph in initial crusher
- 127 tph in initial screen
- ½ to second crusher and second screen
- ½ of that to tertiary crusher and recycle back to second screen

I used two other volume sources, one for unpaved road dust from loader operation, and the other from AP-42 13.2.4 for drop operations from the final processing to the storage piles.

Again from crusher operation photograph, I assumed the use of two 500 hp diesel engines (modeled as point sources). I selected 500 hp from the power requirement for a Pioneer cone crusher similar to the Spokane crusher in the photograph.

Emission factors were all based on 24 hours of operation per day, but I used a scaling factor to adjust results to 12 hours per day.

I did best and worst case modeling. The best case assumed that road dust is controlled well enough to be minimal. I used EPA's emission factors for controlled sources or factors calculated based on high moisture content. For the worst case option, I used emission factors for uncontrolled sources, or factors calculated assuming high road surface silt content and low moisture. Emission factors for diesel engines did not change.

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<sup>12</sup> 127 tons per hour was the same activity rate used for modeling asphalt plant. It is based on 150 tons per hour of hot mix asphalt.

## MG9 – Rock Crusher Minor General Permit

With best case assumptions, modeling predicted compliance with the 24 hour PM-10 standard at 130 meters from the center of the operation and beyond [rounded to 400 feet from the edge of the operation], and with the increment at 350 meters and beyond [rounded to 1000 feet].

The worst case assumptions for fugitive emissions predicted that the ambient standard could be violated at a much greater distance from the crushing operation [700 meters – rounded to 2000 feet from the edge of the operation]. There is no set of limitations or practices to control fugitive dust that the permit could impose that would be both reasonable and effective in all cases. Therefore, the permit uses results from worst case modeling for requiring a dust control plan. If a crushing operation is within the 2000 feet of a residence or other occupied structure, the application must contain a site specific dust control plan, and the operator must comply with that plan.

Modeling at elevated terrain heights did not change any of these distances.

[Filesnames: crushrco.bst, crushrun.bst]