

ANNUAL COMPLIANCE REPORT

Makakilo Quarry, Hawaii

2010

APPENDIX H:

2009 DUST CONTROL MANAGEMENT PLAN

Dust Control Management Plan

Makakilo Quarry, Hawaii

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November 7, 2008



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1.0 INTRODUCTION

Neighbors are often concerned about dust from quarrying operations. Dust is generated by the crusher, rock drills, haul roads, stockpiles, and other quarrying equipment.

1.1 PURPOSE

Dust control prevents wind transport of dust from disturbed soil surfaces onto roadways, drainage ways, and surface waters (County, 2005). Measures for dust control of quarrying construction activities include minimization of soil disturbance, water spraying using water trucks, fogging systems, spray bars.

1.2 CONDITIONS OF USE

Dust control is applied in quarrying construction processes that are subject to surface and air movement of dust where on-site and off-site impacts to roadways, drainage ways, or surface waters are likely (WSDOT). This document serves the purpose of providing a dust control management plan that will minimize dust concerns for quarrying process. Below are all the processes in need of dust control along with how to mitigate unwanted dust-causing activities.

2.0 DUST CONTROL FOR BLASTING OPERATIONS

Blasting is the process in which explosives are used to break up a rock formation for the purpose of extracting and processing materials from a naturally occurring environment.

2.1 *PREPARING QUARRY BENCHES FOR DRILLING*

The first step in blasting requires preparing the bench for drilling equipment to access the drilling locations safely and efficiently. This is achieved by using a “CAT D10R dozer” to level the bench to the required elevation by a process known as “Striking the Bench”. Soils are pushed along the edge of the bench closer to the upper face of the bench to reach the required elevation with hard surface conditions suitable for drilling. For tight locations where a “CAT D10R dozer” isn’t able to reach, a “Hitachi 1200 Excavator” is used in the same manner mentioned above.

After the bench has been stroked a “CAT 980F Loader” or any other available loader unloads a 3”-4” thick rock scalplings layer to assist the driller with initializing drilling.

The dust control management plan is to initially spray the bench with water using a “CAT 9000 gallon” water truck before the “CAT D10R” strikes the bench. Afterwards, the water truck completes 4 (10-minute cycles)/day throughout the process of striking the bench. Additional cycles are completed as needed and requested by the dozer operator or on-duty foreman.

2.2 *DRILLING*

An “IR 720” drill is used to drill 4”-5” diameter blasting holes. The drill operator levels the drill at the required location and initializes drilling. The drilling process creates a hole anywhere from 12’ -80’.

The dust control management plan is to have a 60 gallon water tank equipped on the drill rig. Compressed air sprays the water through the drilling bit while drilling so that dust is controlled and minimized. An additional 250 gallon water tank on a mobile trailer coupled with a pump provides additional water to the 60 gallon tank if needed.

2.3 *LOADING AND BLASTING*

Finally, the blasting holes are loaded with a kine pack attached to a down line and filled with the proper amount of ANFO (ammonium nitrate/fuel oil) determined by the powder person. The proper amount of rock stemmings

are used to fill the remainder of the hole to provide vertical load forcing the blast in the desired horizontal direction.

The dust control management plan is to assess wind conditions and trades as best as possible through gained field experience of wind patterns and speeds. If all conditions are suitable and approved by the powder person, two major dust control systems for blasting are used; a Shooter System and a Water truck System. These 2 major systems are used individually or simultaneously depending on the conditions at blasting time to maximize the control of dust.

1. Shooter system.

The Shooter system consists of a “4-nosel jet system connected to a Backhoe”, a “Peterbilt Electric Generator” truck, and “Peterbilt 4000 gallon” water truck with a pump. The system is assembled on the blasting site by aligning the Backhoe in the required direction considering wind direction and speed, point of entry, and method of blasting (i.e. Center pull blasting method requires that the Backhoe is directed to cover the top of the blasting area in addition to the area where the materials will be ejected to). The water tank and generator are then assembled behind the Backhoe and away from the blasting site to provide water continuously to the Backhoe.

The powder person in charge will verify that the area is clear and ready to proceed with the blast. He will then start the Shooter System will start operating for 10-15 seconds before initiating the blast so that the air is enriched with water particles to suppress the dust. The blast takes place, and after completion, the Shooter System will continue to operate for 1-2 minutes suppressing dust particles it encounters.

2. The other measure taken to control dust while blasting is using the “CAT 9000 gallon” water truck which is equipped with long range water jets (Ranges from 75’ to 125’ depending on wind direction) The water truck will setup in such a manner that the water jets are directed towards the blasting area.

The water truck jets will start operating 10-15 seconds before initiating the blast so that the air is enriched with water particles to suppress the dust. The blast takes place, and after completion, the water truck will continue to operate for 1-2 minutes suppressing dust particles it encounters.

3.0 DUST CONTROL FOR LOADING AND HAULING OPERATIONS

The dust control management plan for loading and hauling operations include spraying water using a “CAT 9000 gallon” water truck onto the material before loading. These haul routes are sprayed 9-11 (3-5 minute cycles)/day. Additional cycles are completed as needed and requested by the equipment operator or on-duty foreman.

4.0 DUST CONTROL FOR STOCKPILES

Stockpiles are formed either by the accumulation of material off a conveyor belt, or from unloading materials off of different types of equipment. These stockpiles, more than often, are left in open-spaces, uncovered, and susceptible to wind activities.

The dust control management plan for stockpiles is to maintain a wet surface so that dust does not escape. This is done using front cannon jets on the “CAT 9000 gallon” water truck that are capable of reaching high stockpile elevations. Stockpiles are sprayed 8-10 (3-5 minute cycles)/day. Additional cycles are completed as needed and requested by the equipment operator or on-duty foreman.

5.0 DUST CONTROL FOR ROADWAYS

Makakilo Quarry encompasses different roadways that can be categorized as follows:

- Paved Roadways: roadways that are either asphalt or concrete paved.
- Unpaved Roads (Major): dirt roadways that are used by different types of equipment and vehicles frequently.
- Unpaved Roads (Minor): dirt roadways that are used by different types of equipment and vehicles less frequent.

Due to the size of machinery and number of trucks hauling materials, dust on these roadways must be controlled.

The dust control management plan is to maintain these roadways wet with water as follows:

- Paved Roadways: are washed with water, 1-2 (30 minute cycles)/day using a “CAT 9000 gallon” water truck, or 1 (60 minutes cycles)/day using a “Peterbilt 4000 gallon” water truck. Additional cycles are completed as requested by the equipment operator or the foreman on-duty.
- Unpaved Roads (Major): are washed with water, 8-10 (5 minute cycles)/day using a “CAT 9000 gallon” water truck. Additional cycles are completed as requested by the equipment operator or the foreman on-duty.
- Unpaved Roads (Minor): are washed with water, 8-10 (3 minute cycles)/day using a “CAT 9000 gallon” water truck. Additional cycles are completed as requested by the equipment operator or the foreman on-duty.

6.0 DUST CONTROL FOR QUARRYING PLANTS AND CONVEYORS

Makakilo Quarry’s permanent are equipped with a network of conveyor belts for transferring materials from one location to the other. With the moving of materials, dust can escape into the surrounding environment.

The dust control management plan for conveying activities include:

- Fogging systems that are attached to the sides of the conveyor belts generating a mist-like cloud of water that suppresses the dust before it’s picked up by wind.
- Automatic and manual spray bars are attached to the end of the conveyor systems where materials are ejected off to create stockpiles. These spray bars are attached to the ejecting end of the conveyor belt and are initiated (automatically or manually) with the placement of materials on a conveyor belt, suppressing air dust particles resulting from this conveying activity.

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