

7<sup>th</sup> December 2012

The Manager – Air Quality  
 Auckland Council  
 Private Bag 92 300  
 Auckland 1142

Dear Sir / Madam

**Re: Investigation of Total Suspended Particulate Trigger at Three Kings Quarry**

With regard to condition 20 of the Three Kings Quarry Air Discharge Consent (Permit Number 21875), this is to confirm that a result greater than  $80\mu\text{g}/\text{m}^3$  as a 24 hour average was recorded by one of the HiVol samplers on the 13<sup>th</sup> November 2012.

The trigger is as follows:

- 13<sup>th</sup> November 2012 -  $2169\mu\text{g}/\text{m}^3$  at the monitor located at the Northern Boundary of the site.

As required by condition 21 of the Air Discharge Permit, an investigation has been undertaken. This letter details the results and conclusions of the investigation.

Air quality monitoring at Three Kings Quarry consists of:

- Two Lear Siegler Flow Set HiVol (HiVol) samplers. These units are located at the Office and the Northern Boundary.
- Two Beta Attenuation Monitors (BAM) units. These units are located at the Office and the Southern Boundary.
- A meteorological monitoring station located at the site offices that records wind speed, wind direction and rainfall on a continuous basis.
- Video cameras that monitor the site from the north and south.
- Visual inspections of air quality carried out by site staff.
- Recording of dust suppression equipment use and malfunctions.

All relevant air quality monitoring results collected on the day of the trigger have been summarised in Table 1.

**Table 1: Air Quality Monitoring Results**

<b>Date</b>	13/11/2012
<b>HiVol - Office (<math>\mu\text{g}/\text{m}^3</math>)</b>	39
<b>HiVol - Northern Boundary (<math>\mu\text{g}/\text{m}^3</math>)</b>	2169
<b>BAM - Office (<math>\mu\text{g}/\text{m}^3</math>)</b>	15.8
<b>BAM – Southern Boundary (<math>\mu\text{g}/\text{m}^3</math>)</b>	9.1
<b>Daily Rainfall (mm)</b>	0
<b>Daily Average Wind Speed (m/s)</b>	2.619
<b>Daily Average Wind Direction (degrees)</b>	195.170
<b>Sprinklers Operational? (yes/no)</b>	yes
<b>Video Monitors Operational (yes/no)</b>	yes
<b>BAM Text Alarm Received (yes/no)</b>	no

#### Investigation of the Trigger:

- The daily average wind speed on the day of the trigger was of no real significance being recorded at 2.619m/s. While the average daily wind speed over the month was recorded as 3.176m/s.
- The daily average wind direction again was of no real significance being recorded at 195° while the average for the rest of the month was 203°.
- The sprinkler system and water cart were operational on the day of the exceedance.
- The HiVol monitor located at the Northern Boundary was the only unit showing levels above the trigger value of 80µg/m<sup>3</sup>. The HiVol unit located at the Office Block and both BAM Monitors did not show elevated results.
- The BAM monitors are set to send out text messages to the Site Manager and Environmental Coordinator at levels which provide an early warning of potential dust issues if action is not taken. No texts were received on this date.
- Video monitors of the site were reviewed and there was no evidence of excess dust being generated along the haul roads, within the quarry or fill areas or off of any stockpiles on this date.
- When the filter from the Northern Boundary HiVol was collected it was noted that there was concentrated amounts of fine saw dust visibly present on the filter. A photos were taken prior to the filter being prepared for laboratory analysis as per our standard procedures. Attached is a photo taken of the filter when it was removed on 14<sup>th</sup> November 2012.

#### Cause of Trigger:

A review of our Daily Dust Monitoring Log details that on the 13<sup>th</sup> November 2012 one of the site personnel reported that as he drove along the haul road into the quarry pit he saw gusts of a light dust at the site boundary in the vicinity of the Northern Boundary HiVol originating from the adjacent property. It was also noted that as he drove by he could hear power tools such as a sand blaster operating on the adjacent property.

Video footage of the quarry was reviewed for this date. The location of the cameras and the resolution in the area of concern made it difficult to identify any type of dust being generated at the neighbouring property. However, it is consider that due to the type of activities undertaken at the adjacent property (wooden furniture factory) and the presence of fine saw dust on the filters the cause of the exceedance can be linked to the activities of the neighbouring property. This is supported by the fact that the activities undertaken at our site do not generate fine saw dust. Also, when the filter from the Northern Boundary HiVol was collect on 14<sup>th</sup> November 2012 freshly sanded wooden tables were visible on a balcony of the adjacent property (a photo of this is available on request).

It is noted that the wind direction would suggest that the effects of activities on a property adjacent to the Northern Boundary HiVol would be in the opposite direction of the quarry. However, because of the close proximity of the neighbouring site, the sheltered location of the activity and the nature of the activity it is (in this case) considered appropriate that the Northern Boundary HiVol could be subject to influence from activities at the adjacent property. Again, this is supported by the fact that fine saw dust generating activities are not undertaken at the quarry and are at the adjacent property. Also, that the material present on the filter that has caused the elevated result recorded on 13<sup>th</sup> November 2012 was clearly fine saw dust.

Furthermore, on 27<sup>th</sup> November 2012 site staff again reported that gusts of dust were visible in the vicinity of the Northern Boundary HiVol originating from the adjacent property and a sand blaster could be heard. At the timing of this report the matter was investigated further and video

footage of a person sandblasting a picnic table on the adjacent property directly below the Northern Boundary HiVol is available on request.

**Environmental Effect:**

As the exceedance has been determined to be from a source outside of the quarry and its control the ability to control the effect is limited.

**Corrective Actions:**

As the cause of the exceedance has been determine to be from a source outside of the quarry and its control no further actions are required from Winstone Aggregates.

However, following the 27<sup>th</sup> November 2012 incident the neighbouring property was contacted to explain our site monitoring. We also noted the effects the activity they were undertaking was having on the results of this monitoring. They indicated, during this discussion, that this was not part of their normal activities and that the work would be completed on this date. It was also detailed that the work as a result of an issue with some imported stock.

**Closing:**

No complaints to date have been received as a result of this exceedance.

The filter from 13<sup>th</sup> November 2012 has been requested to be returned following the analysis completed by Hills Laboratories. The filter should be available at Three Kings Quarry for inspection shortly. Please contact the undersigned to arrange a suitable time to view the filter if deemed necessary.

It is noted that this report is the second of what will likely be three reports for similar incidents. The filter from the 27<sup>th</sup> November 2012 is still being processed by Hills Laboratories with the results expected in early January.

If there are any further queries or comments on this investigation please do not hesitate to contact me on 027 504 3624 or at [elyse.laface@winstoneaggregates.co.nz](mailto:elyse.laface@winstoneaggregates.co.nz)

Yours faithfully



Elyse LaFace

**Environmental Coordinator**

Photo of Northern Boundary filter upon collection on 14<sup>th</sup> November 2012

