

22nd November 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 18th October 2012.

The trigger is as follows:

- 18th October 2012 - $254\mu\text{g}/\text{m}^3$ 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

Date	18/10/2012
HiVol - Office ($\mu\text{g}/\text{m}^3$)	51
HiVol - Northern Boundary ($\mu\text{g}/\text{m}^3$)	254
BAM - Office ($\mu\text{g}/\text{m}^3$)	26.8
BAM – Southern Boundary ($\mu\text{g}/\text{m}^3$)	15.9
Daily Rainfall (mm)	8.8
Daily Average Wind Speed (m/s)	5.045
Daily Average Wind Direction (degrees)	250.795
Sprinklers Operational? (yes/no)	yes
Video Monitors Operational (yes/no)	yes
BAM Text Alarm Received (yes/no)	yes

Investigation of the Trigger:

- The daily average wind speed on the day of the trigger was relatively strong being recorded at 5.045m/s. The average daily wind speed over the month was recorded as 3.521m/s.
- The daily average wind direction was recorded as slightly more WSW (251°) than the average SW (218°) for the rest of the month.
- 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/m³. 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. One text was received during the day on this date from the BAM monitor located at Office. The water truck was used to dampen the haul road and site entrance/exit and no further text messages 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. Photos were taken prior to the filter being prepared for laboratory analysis as per our standard procedures. Attached are two of the photos taken of the filter when it was removed on 19th October 2012.

Cause of Trigger:

During the investigation of this trigger and the preparation of this report another filter from the Northern Boundary HiVol was reported as having visible saw dust present on it similar to the filter that is the subject of this report. This second filter was removed on 14th November 2012 and was sampled on the 13th November 2012. A review of our Daily Dust Monitoring Log details that on the 13th 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.

On the date of the exceedance that is the subject of this investigation (18th October 2012) the activity detailed above at the neighbouring property was not recorded. 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 considered that due to the type of activities undertaken at the adjacent property (wooden furniture factory) and the consistency between the two filters and the presence of fine saw dust on the filters the cause of the exceedance on the 18th October 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.

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 18th October 2012 was clearly fine saw dust.

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 action are required from Winstone Aggregates.

Closing:

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

The filter from 18th October 2012 has been returned following analysis by Hills Laboratories and is available at Three Kings Quarry for inspection. Please contact the undersigned to arrange a suitable time to view the filter if deemed necessary.

It is noted that this report is likely to be one of two for a similar incident is expected to have occurred on 13th November 2012. The filter from this date is still being processed by Hills Laboratories with the result expected in early December.

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

Yours faithfully



Elyse LaFace

Environmental Coordinator

Photos of Northern Boundary filter upon collection on 19th October 2012

