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# Memorandum

**To:** Todd Powell, Director, Mineral Resources, Energy, Mines and Resources

**From:** Alexco Keno Hill Mining Corp.

**CC:** Keno City Residents

**Date:** July 30, 2022

**Re:** 2022 Q2 Air Quality Monitoring Report

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## INTRODUCTION

This report has been created to summarize air quality monitoring results of Alexco Keno Hill Mining Corp. (AKHM) operations during the second quarter of 2022.

Addressing the potential effects of fugitive dust on community health and well-being is of key importance given the location of the Keno Hill Silver District Mine Operations to Keno City. The main dust sources in the proximity of the village of Keno City include the dry stack tailings facility, mineral processing (crushing) and mine traffic on unpaved roads.

AKHM monitors dust levels around the Keno City area using BGI Omni Ambient Air Quality Samplers. Figure 1 exhibits the locations these samplers were placed to record data on air quality during the period reported. Dust or particulate matter (PM) is divided into different sized fractions for air quality monitoring. AKHM collects for three filter inlet sizes (TSP, PM<sub>10</sub> and PM<sub>2.5</sub>) at each air quality monitoring station which is then sent to an analytical laboratory for gravimetric and metal analysis. Metals analyses by Inductively Coupled Plasma (ICP) mass spectrometry are conducted on the total suspended particulate (TSP) sample.

Particulate air quality monitoring results are compared to the Yukon Ambient Air Quality Standards. There are no ambient air quality standards for metals in Yukon, due to this the Ontario Ministry of Environment Ambient Air Quality Criteria 24-hr average concentrations for metals is used to assess the metals of concern (arsenic, cadmium, iron, manganese, lead, and zinc).

The company also maintains a Dust Disturbance Register to record, track, and address dust disturbance concerns raised by Keno City residents.

## RESULTS

The data used to evaluate air quality during the second quarter of 2022 was collected at three monitoring locations, TSP-1, TSP-2, and TSP-3. The Yukon Ambient Air Quality Standards were exceeded at TSP-1 PM10 on May 17, 2022 recording 134.2 ug/m3, and TSP-2 PM2.5 exceeded on June 16 recording at 40.7 ug/m3 as well as on June 18 recording at 30.4 ug/m3. These exceedances are attributed to multiple wildfires occurring in the area which increased the particulates in the air during the time of sampling. All samples met the Ontario Ambient Air Quality Criteria measuring concentration of metals. The results for the parameters of concern are compared to the Yukon and Ontario thresholds on Table 1.

As well, no complaints were filed or recorded by area residents in the Dust Disturbance Register.

**Table 1: Concentrations Summary for 2022 Q2 (24-hour)**

	TSP	PM10	PM2.5	As	Cd	Fe	Pb	Mn	Zn
<b>Air Quality Criteria (ug/m3)</b>	<b>120</b>	<b>50</b>	<b>27</b>	<b>0.3</b>	<b>0.025</b>	<b>4</b>	<b>0.5</b>	<b>0.4</b>	<b>120</b>
<b>Station</b>	<b>TSP-1</b>								
Average	8.6	14.3	3.9	0.00046	0.00017	0.71	0.00936	0.0483	0.0153
Count	6	12	7	6	6	6	6	6	6
Minimum	2.8	2.8	2.8	0.00035	0.00007	0.34	0.0026	0.02	0.0101
Maximum	17.4	134.2	6.8	0.00099	0.00022	1.17	0.01736	0.0695	0.0229
Geometric Mean	6.3	4.3	3.6	0.00042	0.00016	0.65	0.00721	0.0445	0.0147
Count Exceeding Standard	0	0	0	0	0	0	0	0	0
<b>Station</b>	<b>TSP-2</b>								
Average	4.9	5.6	6.9	0.00144	0.00066	0.152	0.04005	0.013	0.0371
Count	35	43	41	38	38	38	38	38	38
Minimum	2.8	2.8	2.8	0.00035	0.00007	0.049	0.00099	0.001	0.0035
Maximum	20	28.5	40.7	0.00571	0.00639	0.642	0.20556	0.077	0.1389
Geometric Mean	3.8	4.2	4.8	0.00097	0.00042	0.125	0.02306	0.008	0.0272
Count Exceeding Standard	0	0	0	0	0	0	0	0	0
<b>Station</b>	<b>TSP-3</b>								
Average	3.9	3.7	4.7	0.00048	0.00512	0.084	0.00743	0.005	0.0138
Count	36	46	37	36	36	36	36	36	36
Minimum	2.8	2.8	2.8	0.00035	0.00007	0.021	0.00115	0.001	0.0035
Maximum	12.9	10.7	19.2	0.00396	0.17361	0.299	0.06903	0.033	0.0396
Geometric Mean	3.4	3.3	3.8	0.00039	0.00025	0.075	0.00453	0.003	0.0119
Count Exceeding Standard	0	0	0	0	0	0	0	0	0

## CONCLUSION

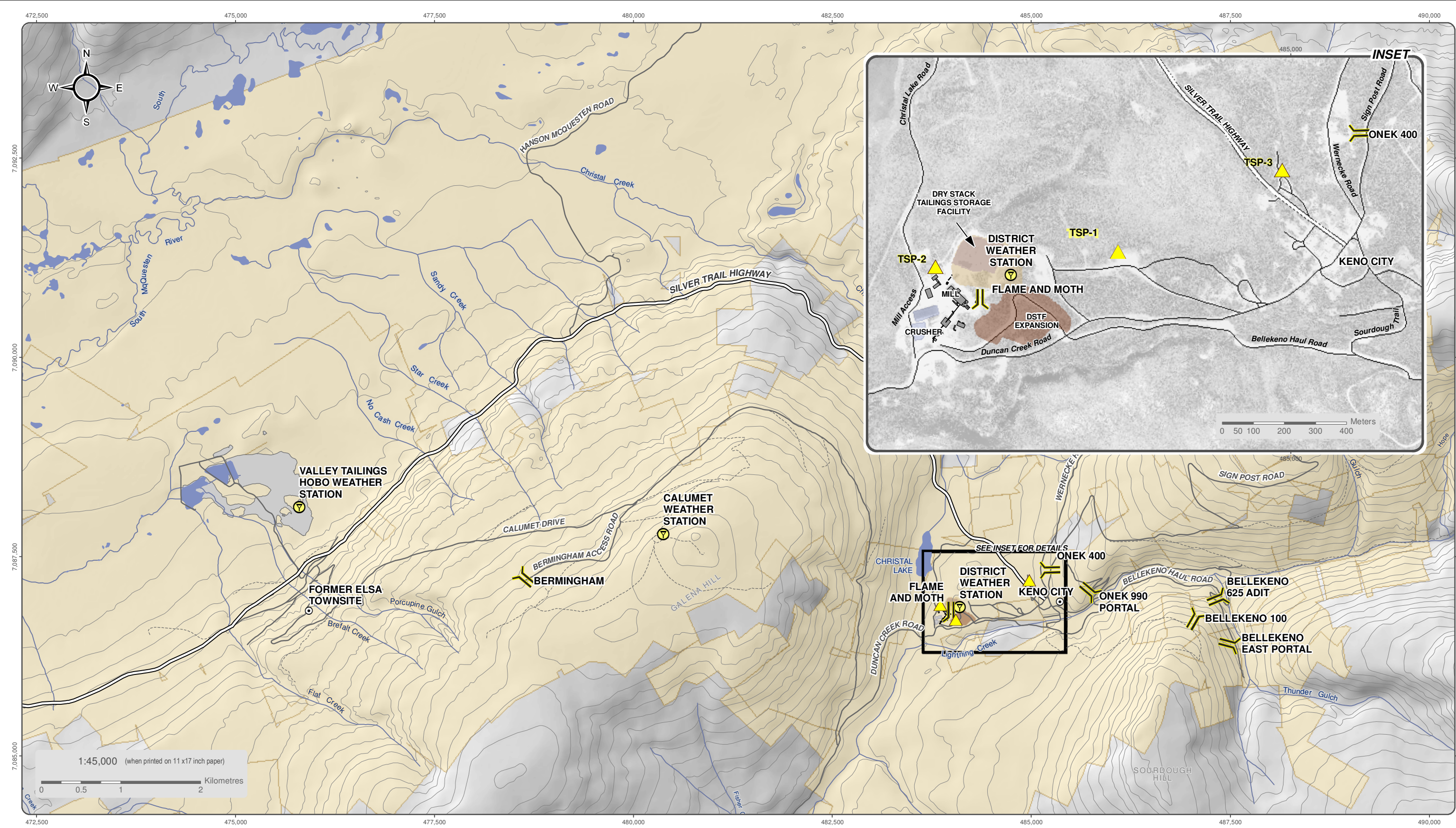
The data collected during the second quarter of 2022 shows that any dust originating from AKHM was kept at a minimum and did not exceed thresholds that may indicate a change in operations for reducing dust produced warranted. The dust abatement and monitoring program will continue at AKHM throughout the year to ensure AKHM operations maintain minimal impact on the community of Keno City.

## REFERENCES

Ontario Ministry of Environment. (2012). *Ontario's Ambient Air Quality Criteria. Standards Development Branch.* PIBS#6570e01. April 2012.

Yukon Environment. (2019). *Yukon Ambient Air Quality Standards.* April 2010, updated October 2019.





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Satellite imagery obtained from Yukon Geomatics map service <http://mapservices.gov.yk.ca/ArcGIS/services> on January 2018

Datum: NAD 83; Map Projection: UTM Zone 8N

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|--------------------------------|-------------------------|----------------------|
| Alexco TSP Monitoring Stations | Mill Pond               | Valley Tailings      |
| Weather Station                | DSTF Phase II Expansion | Waterbody            |
| Adit                           | DSTF 322k Tonnes Design | Watercourse          |
| Alexco/ERDC Quartz Claims      | Current DSTF            | Silver Trail Highway |
|                                | Existing Building       | Other Road           |
|                                |                         | Limited-Use Road     |



**ALEXCO KENO HILL MINING CORP.**

**FIGURE 1**

**DUST MONITORING STATIONS LOCATION**

**JULY 2022**

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