



## **KENO HILL SILVER DISTRICT MINING OPERATIONS**

### **TRAFFIC MANAGEMENT PLAN**

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February 2021

Prepared by:

**ALEXCO KENO HILL MINING CORP.**



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## 1. INTRODUCTION

The Traffic Management Plan (the Plan) describes procedures and protocols for site access, traffic routing and management, and company policy with respect to vehicle and employee transportation during the Keno Hill Silver District (KHSD) Mining Operations, as authorized by QML-0009. The previous Traffic Management Plan addressed traffic associated with the Bellekeno, Lucky Queen, Onek, and Flame & Moth Mines. This updated Traffic Management Plan also addresses mine-related traffic associated with the development and production of the Birmingham deposit along the Calumet and Duncan Creek Roads. Bellekeno, Birmingham and Flame & Moth are currently active, whereas Lucky Queen and Onek 990 are inactive mines and they are not included in Water Licence QZ18-044.

Public, employee, and contractor safety is the primary goal of this plan. Alexco Keno Hill Mining Corp. (AKHM) recognizes that the project area has a short but busy tourism season. The safety of tourists, who may lack local familiarity, are a special consideration during the summer season. Road construction details are presented in the Road Construction Plans submitted under QML-0009.

## 2. SITE ACCESS – GENERAL

In the interest of site security and public safety, access to operational areas related to mining in the KHSD will be restricted to authorized site personnel through the usage of signs and gates where appropriate. Facilities that potentially present danger to persons or wildlife such as the electrical substation and settling ponds will be fenced or barricaded as appropriate to prevent access.

All mine traffic on haul routes is radio controlled. Signage is installed at appropriate locations in order to warn the public of haul routes.

In the event that temporary closure occurs, access to mine and mill sites will be further restricted through the use of fences and gates as appropriate. Access to adits, shafts, raises and all openings to underground workings will be securely blocked by means of a temporary but robust barrier. Buildings and ancillary facilities will be locked and secured. The Reclamation and Closure Plan prepared under QML-0009 contains additional details on site access controls during closure and post closure.

A number of additional general measures related to site access, road management, and public safety and construction events notification are presented here:

- Private employee off-road vehicles will be prohibited on the mine access roads and at the mine site;
- Existing trails and disturbed areas will be used where possible to minimize the addition of new linear corridors, and there will be no unnecessary disturbance to the organic mat and soils;
- Snow clearing equipment will be available on site to maintain the mine access roads;
- Snowplows on the access road will create breaks in the snow berm every 0.5 km to allow for wildlife to escape from the access road;
- Signage posted near all construction sites;
- Weekly events notice to be updated and posted when general activities change within the district at two locations (Post Office in Keno City and Keno City Snack Bar);

- 40 km/hr speed limit within or near the Elsa town;
- No use of engine retarder brakes within 1 km of the center of Keno City;
- Review of highway access, signage, and sign placement with YG Highways & Public Works; and
- In accordance with the Occupational Health and Safety Regulations for public roads, use of flashing devices on all vehicles/machinery and equipment that will cross, travel on or may otherwise pose a risk to users of public roads.

### **3. EMPLOYEE TRANSPORTATION**

To the extent possible, employees rely on project bussing and pool transportation from Mayo/Elsa to the mine and mill site, thereby reducing overall vehicle traffic. Fleet vehicles are utilized by staff as necessary. Masks are worn by all passengers in pool transportation as a control for Covid-19 during the pandemic.

### **4. SPEED LIMITS**

Speed limits will be enforced for mine traffic and posted along the access and site roads (maximum 40 km/hr, reduced to 20 km/hr at blind corners and bridge crossings). Mine traffic on the mine and mill access roads is radio controlled for safety and speed control.

Employees and contractors are educated on safety including traffic protocols and speed limits during mandatory orientation. Routine traffic inspections and/or speed indicator signs will be used to encourage safe and responsible driving and ensure that AKHM's traffic and safety protocol are adhered to.

AKHM will investigate and take appropriate modification of policy and/or disciplinary action in the event of any traffic incidents or complaints.

## 5. COMMUNICATIONS PROTOCOLS

Mine traffic along all haul and access roads are radio-controlled. Road location/travel direction signs (e.g., BKR 7 Up, road abbreviation/kilometre marker/direction) are installed at various locations along all of the mine access roads. Employees, contractors, and supply vehicles identify their location and travel direction as they travel the mine access and haul roads to alert any oncoming traffic. This system is integral to the safe operation of the mine access roads and is one of the primary reasons public access is prohibited on the active mine areas.

The two channels used for traffic notification and routine on-site communication, which are publicly accessible, are:

- Alexco Channel 3 (Receive TX 157.61; Transmit RX 151.97); and
- Alexco Channel 4 (Receive TX 154.1; Transmit RX 154.1).

AKHM anticipates that any road maintenance/upgrades will require only single-lane temporary closures. Signage warning of construction activities on the roadway will be placed at appropriate distances from the construction site, in consultation with YG Highways & Public Works. For significant upgrade/maintenance events (those requiring more than one day to complete), written notification will be distributed to Keno City residents and YG Highways & Public Works will be notified. Routine road maintenance (grader/snowplow) of the mine access roads including the Wernecke Road will occur on a routine basis as road conditions dictate. The Wernecke Road is used for access to a local residence and maintenance of this road will be made in an effort to accommodate recreational access by the residents; however, the primary objective is for the safety of employees, contractors, and residents. With Lucky Queen Mine not in active development or operations, the Wernecke Road will not be maintained.

A public notice is posted in Keno City to communicate to residents any new activities that may be occurring or scheduled. Contact information for AKHM senior management is provided in Section 11, and any concerns regarding road maintenance or traffic management can be forwarded to AKHM management through this notification system.

## 6. ROAD MANAGEMENT

AKHM's Road Management Plan (RMP), submitted to Yukon Workers Compensation Health & Safety Board (WCB) in 2020, includes mitigation measures and best practices to minimize damage to permafrost, vegetation and sensitive wildlife habitat during construction, use and reclamation of access routes as well as to ensure public and workers safety. This RMP is adaptive and will be updated as needed as the Project evolves. The following provides extracts from that document, where they support the Traffic Management Plan.

AKHM commits to the following best road management measures:

- Ensuring that the bridges over Lightning Creek are capable of supporting the weights that will be crossing it;
- All vehicles will be operated to avoid rutting and gouging of roads and trails;
- Off-road and trail routes will be reconnoitered and will be used in a way that minimizes ground disturbance, including damage to permafrost and sensitive wildlife habitat;

- If rutting, gouging, ponding or permafrost degradation occurs off-road or trail, vehicle use will be suspended or relocated to ground that is capable of bearing the weight of the vehicle without cause such damage;
- Use of skids on permafrost or wet ground will only be permitted outside of winter where it is not reasonable to use any other means of transporting equipment;
- Routes for temporary trails will be reconnoitered and flagged; and
- Temporary trails will be blocked to prevent further vehicular access.

With regards to construction, use and reclamation of access routes, AKHM will adhere to the following guidelines:

- Ensuring that soil conditions beneath, and in proximity to, the proposed right-of-way are stable to support the intended construction and use;
- No acid generating or metal leaching material will be used for road construction;
- All construction and upgrades that utilize non-acid metal leaching (AML) waste rock will be done in a manner conducive to monitoring run-off as per the updated Waste Rock Management Plan;
- New roads will be constructed in such a way that minimizes permafrost degradation; and
- Access routes will be constructed and maintained in the following manner:
- Routes will be selected from topographic maps and aerial photos and walked and flagged prior to earthmoving;
- Routes will avoid creek crossings and will aim to minimize amount of earth moving;
- Routes will be located on well drained ground;
- Areas where ponding occurs will be avoided;
- Seeps, marshes and springs will be avoided;
- Disturbed areas will be stabilized to prevent long term soil erosion, slumping and subsidence, and to provide conditions suitable to the re-establishment of the vegetative mat; and
- If rutting and gouging that could lead to ongoing erosion, ponding, or permafrost degradation occurs, vehicle use will be suspended or relocated to ground that is capable of bearing the vehicle and the former routes must be restored in compliance with the operating conditions for re-establishment of the vegetative mat and erosion control.

Regarding access restriction, AKHM will abide by the guidelines below.

- All roads in the project area that are not public roads will be secured so as to deny access by the public;
- Monitoring will be conducted with respect to secure areas;
- Traffic will be appropriately controlled on the mine access road;

- Erecting signage to alert visitors to mining activity, and restrict access between the Signpost Road and the Haul Road and to the Onek Pit; and
- Ensuring that all adits and other historic mine workings within the project area are secured from public access or, at a minimum, well signed to inform the public and site employees of any risk.

## 7. TRAFFIC ROUTING AND VOLUMES – BELLEKENO MINE

Mine traffic associated with the Bellekeno Mine has been redirected around Keno City to ensure that direct ore haulage traffic is routed around the community and potential impact to the local community is minimized. Figure 1 shows the routing of traffic around the community along the Bellekeno Project Bypass Road, which consists of two portions:

- Bellekeno Project Bypass North consists of the section of former haul road between Duncan Creek Road and the Silver Trail Highway to the west of Keno City. This portion of the bypass ensures that all mill traffic and concentrate haul bypasses Keno City; and
- Bellekeno Project Bypass South is the section of road connecting the Sourdough Trail on the south side of Lightning Creek to the Duncan Creek Road across Lightning Creek.

A portion of the Bellekeno haul road will be re-routed for the proposed dry stack tailings facility shown on Figure 1. There will continue to be occasional light vehicle traffic and vendor delivery within Keno City.

Table 1 summarizes the volume of traffic in the Keno City area for the operations phases related to the Bellekeno mine.

**Table 1: Estimated Daily Traffic Count – Operations Phase Bellekeno Mine**

Vehicle Type – One way traffic count	Travel Direction	Shift Change	Day Shift	Shift Change	Night Shift
		6 am – 8 am	7 am – 7 pm	4 pm- 6 pm	7 pm – 7 am
Light Trucks (< 1 ton) and Autos	Elsa to Mine/Mill	4	8	4	6
Buses	Elsa to Mine/Mill	2		2	
Heavy Trucks (> 5 tonne) bulk materials	Elsa to Mine/Mill		8		
Ore Trucks (> 20 tonne) hauling ore	Mine to Mill		14		
Ore Trucks (> 20 tonne) hauling tailings or empty	Mill to Mine		14		
<b>Total round trips per day</b>		<b>6</b>	<b>44</b>	<b>6</b>	<b>6</b>

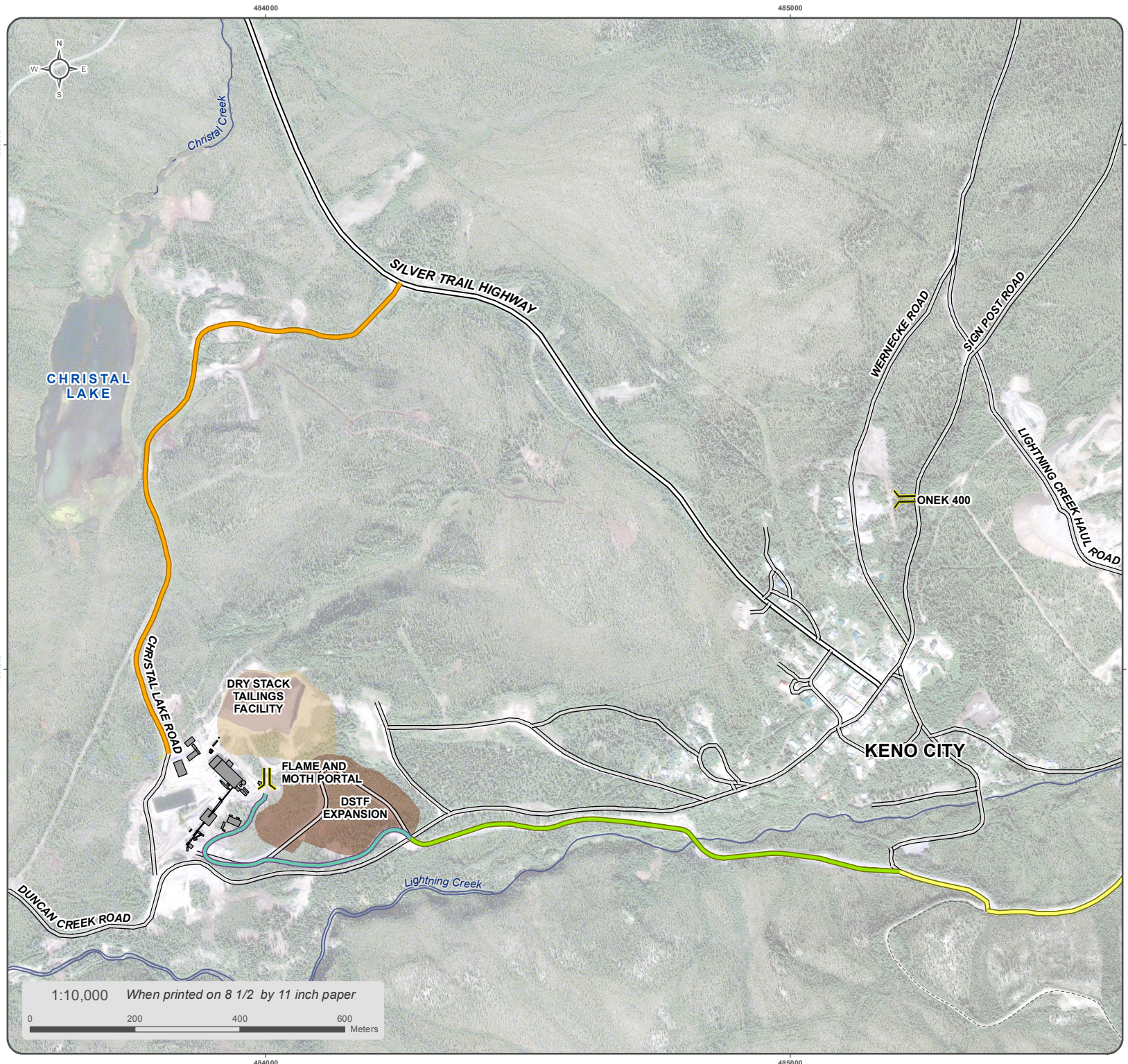
Notes:

- 1) Warehouse receiving and shipping normally confined to hours between 8 am and 4 pm. This will minimize heavy traffic during shift changes. Normally no heavy truck deliveries on night shift.
- 2) Bulk materials include fuel, reagents, materials, supplies and concentrate haulage.
- 3) Above values are considered typical of daily traffic anticipated during operations. Variations up to 50% are possible on any given day.
- 4) Based on 408 t/d production rate which results in highest ore haulage traffic count.



**FIGURE 1**  
**BELLEKENO BYPASS ROAD**

JULY 2018



- Adit/Portal
- Bellekeno Haul Road
- Bellekeno Project Bypass Road North
- Bellekeno Project Bypass Road South
- Proposed Haul Road
- Silver Trail Highway
- Road
- Limited-Use Road
- Existing Building
- DSTF 322k Tonnes Design
- Current DSTF
- DSTF Phase II Expansion

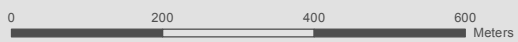
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Datum: NAD 83; Map Projection: UTM Zone 8N

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1:10,000 When printed on 8 1/2 by 11 inch paper







## **8. TRAFFIC ROUTING AND VOLUMES – ONEK AND LUCKY QUEEN MINES**

No mining operation is scheduled to take place at Lucky Queen and Onek 900. AKHM will continue to work with tourism and heritage representatives and the community to develop signage to be installed along the Silver Trail Highway to Keno and within Keno that shows a road/trail map of the area indicating the roads that are in active mining use, identifies key tourist features, and lists general safety precautions and traffic management procedures for active roads.

## 9. TRAFFIC ROUTING AND VOLUMES – FLAME & MOTH MINE

Mine traffic associated with the Flame & Moth Mine will use the Christal Lake Road and a short haul road (~175m) to be constructed between the portal and the crusher pad, as shown in Figure 1. The Bellekeno Project Bypass Road North has been re-routed to allow development of the DSTF expansion. As the mine operations at Flame & Moth begin, traffic from other deposits is expected to decrease, and the net level of traffic for the district should remain the same. A decrease in traffic along the Bellekeno Bypass Road is expected during Flame & Moth operations. There will be no additional traffic through Keno City for the Flame & Moth Mine.

Table 2 summarizes the volume of traffic in the Keno City area for the mine development phase at Flame & Moth. These estimates are for traffic in/out of the Christal Lake Road since this is the only access road envisioned for the Flame & Moth Mine.

**Table 2: Estimated Traffic During Development – Flame & Moth**

Vehicle Type	Average Traffic Volume (roundtrips/week)
Light Truck	50
Water truck	3
Sewage truck	3
Semi-trailer loads (mining equipment, building supplies, construction equipment, etc.)	7
Grader	1
<b>Total</b>	<b>64</b>

During mine production, all heavy and light truck traffic will be routed along the Christal Lake Road. Table 3 presents traffic volumes during operations on the Christal Lake Road and the road from the Flame & Moth Mine to the crusher.

**Table 3: Estimated Daily Traffic Count – Operations Phase Flame & Moth**

Vehicle Type – One way traffic count	Travel Direction	Shift Change	Day Shift	Shift Change	Night Shift
		6 am – 8 am	7 am – 7 pm	4 pm- 6 pm	7 pm – 7 am
Light Trucks (< 1 ton) and Autos	Elsa to Mine/Mill	4	8	4	6
Buses	Elsa to Mine/Mill	2		2	
Heavy Trucks (>5 tonne) bulk materials	Elsa to Mine/Mill		3		
Ore Trucks (>20 tonne) hauling ore	Mine to Crusher		14		
Ore Trucks (>20 tonne) hauling tailings or empty	Crusher to Mine		14		
<b>Total round trips per day</b>		<b>6</b>	<b>39</b>	<b>6</b>	<b>6</b>

Notes:

- 1) Warehouse receiving and shipping normally confined to hours between 8 am and 4 pm. This will minimize heavy traffic during shift changes. Normally no heavy truck deliveries on night shift.
- 2) Bulk materials include fuel, reagents, materials, supplies and concentrate haulage.
- 3) Above values are considered typical of daily traffic anticipated during operations. Variations up to 50% are possible on any given day.
- 4) Based on 408 t/d production rate which results in highest ore haulage traffic count.

## 10. TRAFFIC ROUTING AND VOLUMES – BIRMINGHAM MINE

Mine traffic associated with the Birmingham mine will consist of three portions (Figure 2):

- Birmingham Access Road consists of the section of haul road between the Birmingham Mine and Calumet Road;
- Calumet Drive consists of the section of road from where the Birmingham Access Road enters Calumet Drive up until where Calumet Drive enters the Duncan Creek Road; and
- Duncan Creek road consist of the section of road from where Calumet Drive enters the Duncan Creek Road up until the Mill.

The access road from the Duncan Creek Road to the Hector Mine has undergone an engineering review to identify areas of risk and safety improvement opportunities. As a result of this assessment, the overall safety of the road has been improved with the widening of the road where possible, the addition of berms and pullouts for vehicle passing, runaway lanes, and additional warning, speed and radio callout signage. This road is maintained year-round by the Alexco mining team with the use of snowplows, sanders, and graders.

Although the Duncan Creek Road will also have mining equipment traveling on it, that travel will be mainly limited to a 2.2 km stretch from the mill yard to the bottom of the Birmingham access road. This road will also be maintained when needed by the Alexco mining team and has areas that permit the safe passing of equipment.

The new signs that will be installed will notify vehicles of where they can and cannot access. Every effort has been made to allow public access to the historic sites in the area. Access to the active mining areas has been deemed too hazardous for the public to access. These areas are clearly marked as having no public access as in these areas there are significant mining activities and heavy equipment operating.

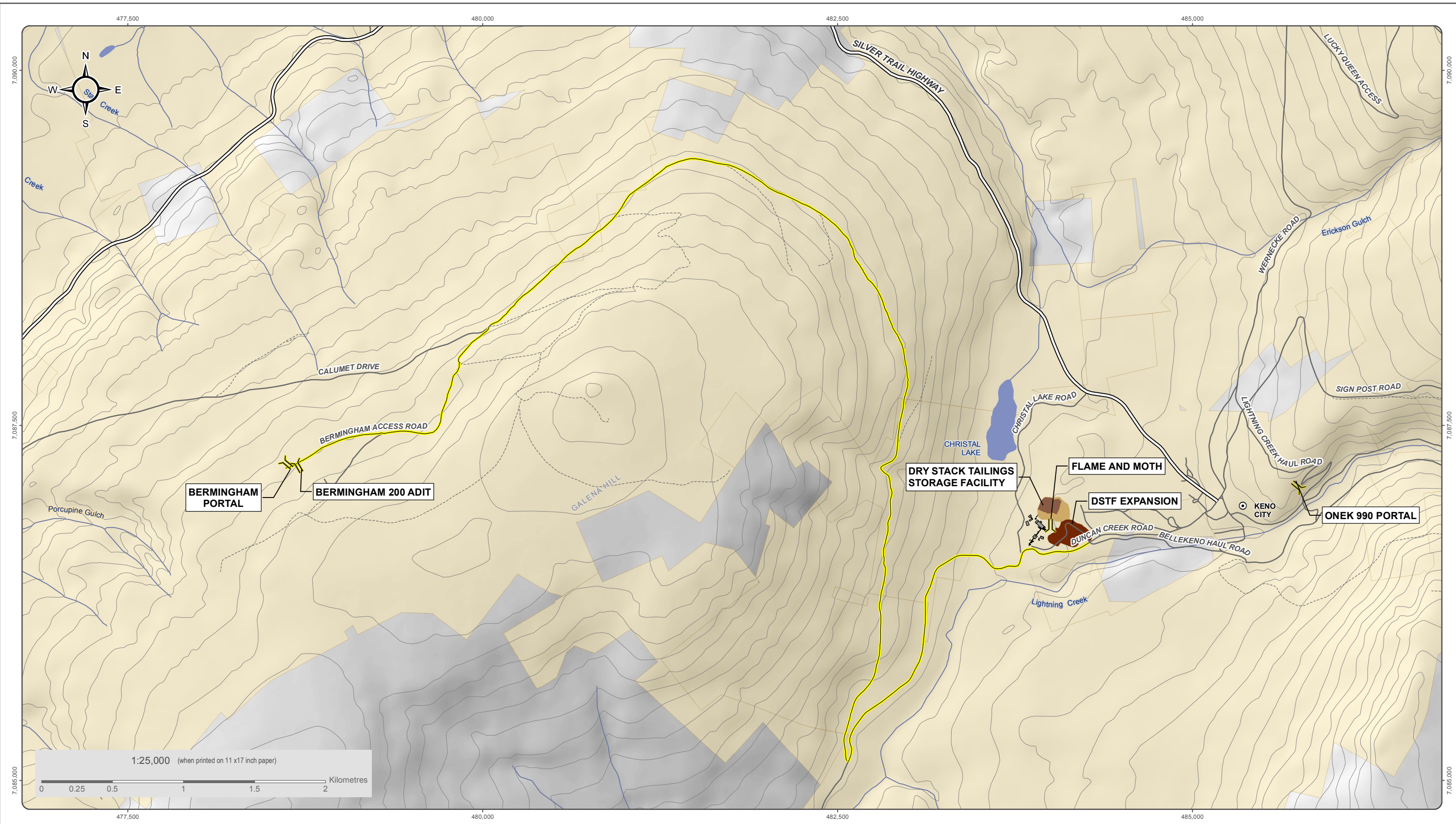
As production from Birmingham begins, traffic from other deposits is expected to decrease, and the net level of traffic for the district should remain the same. A decrease in traffic along the Bellekeno Bypass Road is expected during Birmingham operations as Bellekeno mine operations are completed. There will be no additional traffic through Keno City for the Birmingham Mine. Estimated traffic volumes associated with mining activities at Birmingham are shown in Table 4 below.

**Table 4: Estimated Daily Traffic Count – Birmingham**

Vehicle Type – One way traffic count	Travel Direction	Shift Change	Day Shift	Shift Change	Night Shift
		6 am – 8 am	7 am – 7 pm	4 pm- 6 pm	7 pm – 7 am
Light Trucks (< 1 ton) and Autos	Elsa to Mine/Mill	4	12	4	6
Buses	Elsa to Mine/Mill	2		2	
Heavy Trucks (>5 tonne) bulk materials	Elsa to Mine/Mill		3		
Ore Trucks (>20 tonne) hauling ore	Mine to Crusher		8		
Ore Trucks (>20 tonne) hauling tailings or empty	Crusher to Mine		8		
<b>Total round trips per day</b>		<b>6</b>	<b>31</b>	<b>6</b>	<b>6</b>

Notes:

- 1) Warehouse receiving and shipping normally confined to hours between 8 am and 4 pm. This will minimize heavy traffic during shift changes. Normally no heavy truck deliveries on night shift.
- 2) Bulk materials include fuel, reagents, materials, supplies and concentrate haulage.
- 3) Above values are considered typical of daily traffic anticipated during operations. Variations up to 50% are possible on any given day.
- 4) Based on 408 t/d production rate which results in highest ore haulage traffic count.



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- ⊙ Place of Interest
- ⌵ Adit
- Alexco/ERDC Quartz Claims

- DSTF 322k Tonnes Design
- Current DSTF
- DSTF Phase II Expansion

- Waterbody
- Watercourse
- == Silver Trail Highway
- Other Road
- - - Limited-Use Road



**ALEXCO KENO HILL MINING CORP.  
BERRINGHAM**

**FIGURE 2  
TRAFFIC ROUTING AND TRAFFIC MANAGEMENT –  
BERRINGHAM MINE**

**SEPTEMBER 2017**

D:\Project\AllProjects\Keno\_Area\_Mines\BERRM\Map\01-Overview\04-Specific\Traffic Management\Traffic\_routing\_2017025.mxd  
(Last edited by: amstashevskis 27/09/2017 11:17 AM)

## 11. TRAFFIC MANAGEMENT AND DISTURBANCE NOTIFICATION

AKHM will adhere to the following best practices:

- All personnel are trained in the safe operation of vehicles and equipment. AKHM is aware of the potential to encounter vehicles that are not equipped with the same 2-way communications that we use and are prepared to ensure the safe travel of those without;
- No existing public road will be blocked for use except for temporary closures for safety reasons or during road construction;
- All traffic related to the Bermingham development will remain a minimum of 500m from the Keno City Campground; and
- Signage will be provided at relevant intersections, informing visitors where active mining may be expected.

In accordance with term and condition #10 of the YESAB Decision Document for project 2017-0176, AKHM is providing Keno City residents with a means to formally complain of traffic disturbance. AKHM has created a Traffic Disturbance Register to track traffic disturbance claims. Copies of the Traffic Disturbance Notification Form are available at the Keno City Library or will be sent to Keno City residents upon request. Residents can request a form by calling 647-519-3537 or emailing [contactus@alexcoresource.com](mailto:contactus@alexcoresource.com).

Traffic disturbance incidents are investigated on a case-by-case basis. Responses to a traffic disturbance claim will be based on the nature of the claim and may include (but are not limited to):

- AKHM will record the traffic disturbance claim in the Traffic Disturbance Register and will notify the complainant that the claim has been recorded;
- If warranted, AKHM personnel will conduct an onsite visit to further investigate the incidence;
- AKHM personnel will attempt to link the identified traffic disturbance with a source (a specific event or activity conducted as part of mining or construction), and will determine measures that may be taken to lessen the traffic; and
- AKHM will then report back to the community and regulators.



# **APPENDIX A**

## **DISTURBANCE NOTIFICATION FORM**



## DISTURBANCE NOTIFICATION FORM

### ALEXCO KENO HILL MINING CORP. – KENO HILL SILVER DISTRICT MINING OPERATIONS

**Name of Complainant:**

**Phone Number & Address of Complainant:**

<b>Date</b>	<b>Start Time/ End Time</b>	<b>Location</b>	<b>Description of Noise, Traffic or Dust (e.g., likely source, magnitude, duration, ongoing or isolated dust incident)</b>	<b>How did the disturbance disrupt your life and/or your business/livelihood?</b>

This form has been created for Keno Residents to formally complain of disturbance associated with Alexco Keno Hill Mining Corp.'s Keno Hill Silver District Operations. Please call 647-519-3537 or email [contactus@alexcoresource.com](mailto:contactus@alexcoresource.com) with your complaints. Should you choose to use the form, please complete all fields and return to [contactus@alexcoresource.com](mailto:contactus@alexcoresource.com).

Signature:

Date: