Yukon
Energy, Mines and Resources
Assessment and Abandoned Mines
Box 2703 - K-419
Whitehorse, YT Y1A 2C6

January 23, 2013

MEMORANDUM

Re: YES Report "2012-2013 Mount Nansen Complete Site Survey" (September 2012)

This memorandum is in response to the "2012-2013 Mount Nansen Complete Site Survey" (September 2012) written by Yukon Engineering Services and submitted to Yukon Government Assessment and Abandoned Mines for review. The outcome of the review is detailed below.

Points not Captured

The following table includes a number of wells which were not captured in the survey; the locations of which were confirmed by AAM during a site visit in October 2012. In addition, four new boreholes were drilled at Mount Nansen in October 2012. These identification points are also included in the table below and coordinates are noted, if known.

	Well Identification	Location	Easting	Northing
1	MW09-05	Tailings Pond SE		
2	MW09-06	Tailings Pond SE		
3	MW09-07	Tailings Pond SE		
4	MP09-01	Pony Creek	388706	6881928
5	MP09-02	Pony Creek	388867	6881810
6	MP09-03	Pony Creek	388957	6881736
7	MP09-04	North of Seepage Pond	389573	6880608
8	MP09-08	Pony Creek	389156	6881709
9	MP09-12	West End of Tailings	389218	6880613
10	MP09-14	Tailings Pond	389132	6880719
11	W14103083-BH01		389526	6880668
12	W14103083-BH02		389561	6880668
13	W1413083-BH03		389132	6880732
14	W14103083-BH04		389543	6880666

Table 1: Points not captured in YES Complete Site Survey (2012)

Points not Plotted

The following table includes wells that were listed in Appendix D – Water Well Locations as being surveyed, but were not located on any of the maps provided. No explanation was included in the report as to why these points were not plotted on the maps; the information provided in the table was extracted from Appendix D.

	Well Identification	Easting	Northing	Notes
1	MP09-09	389240.24	6880680.80	Unable to locate on map.
2	MP09-11	389220.89	6880613.63	May be overlapped on map with MP09-12 label.
3	MP09-13	389076.46	6880749.69	May be overlapped on map with MP09-14 label.
4	MW	389607.29	6880579.19	Unable to locate on map; this point is referenced twice in Appendix D spreadsheet.
5	STAFFGUAGE-T	392434.84	6879237.15	Unable to locate on map.
6	STAFFGUAGE-G	392435.01	6879237.27	Unable to locate on map.
7	W2	392407.67	6878820.54	Unable to locate W2 and associated benchmarks on map.
8	BM1	392431.36	6879229.82	
9	BM3	392429.50	6879224.53	
10	STAFFGUAGE H-DC-R	392304.51	6878756.55	Unable to locate STAFFGUAGE H-DC-R and associated benchmarks on map.
11	BM1	392303.39	6878761.81	
12	BM2	392319.83	6878752.03	
13	BM3	392306.27	6878760.80	
14	STAFFGUAGE	392434.84	6879237.15	Unable to locate STAFFGUAGE and associated BM2 on map.
15	BM2	392436.03	6879239.79	

Table 2: Points not plotted in YES Complete Site Survey (2012)

In addition to the above, one well (MP09-06) was indicated on the map to be located under the bridge at the Dome Creek Diversion Channel. This well has been previously identified as being destroyed during excavations in the channel; furthermore, AAM was unable to locate this well during a site visit in October 2012. It is unclear whether this well was visually confirmed by YES in order to be included in the survey.

Further Issues Identified

The following features were not captured by YES during the site survey and should be located and recorded to produce a final set of maps.

- All crest lines need to be identified;
- Five-point atop the waste rock dump requires capturing;
- Water quality and hydrology station was not captured;
- The cement foundation of the water storage building requires capturing;
- The cement foundation where the feeders formerly stood requires capturing;
- Staff gauges at the seepage and tailings ponds require capturing or inclusion on the map if these are the points identified within Table 2, above;

- The propane tanks captured NE of the Main Building face the wrong direction on the current map;
    - Additionally, a third propane tank located in the same area requires capturing;
- A blue pipe, west of pit, requires capturing (N62˚02.9315’ W137˚07.707);
- A blue pipe, on top of pit, requires capturing (N62˚03.0446’ W137˚07.6511’);
- A white pipe, west of pit, requires capturing (N62˚02.8878’ W137˚07.7011’); and
- A final set of maps is required.

Sincerely,

Emilie Hamm
Project Assistant
Assessment and Abandoned Mines

2012-2013 Mount Nansen

Complete Site Survey

Assessment and Abandoned Mines Branch (AAM) K-419
Department of Energy Mine and Resources, Yukon Government
Room 2C Royal Centre

SOA# AAMB-11-001-YES

Revision #2

Submitted by:
Yukon Engineering Services
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September 18th 2012

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Digital Copies

1.0 Introduction

Yukon Engineering Services has a standing offer agreement completed the field work at the Mount Nanasen Mine Site under the SOA # AAMB-11-001-YES. The work consisted of establishing permanent control at the mine site, topographic surveys and locating existing infrastructure within the project area. The following report outlines the work completed by YES between May 23rd to May 28th , 2012 and July 17th, 2012 at the project area.

2.0 Field Crews

The field crew was Gary Birckel, CET, and Corey Birckel for. They mobbed from Whitehorse and drove to the site. Accommodation and cooking facilities were supplied at the mine site. Upon completion of the field work, they traveled back to Whitehorse.

The second trip was done in a long day and the field crew was Jason Anderson and Corey Birckel.

3.0 Control

3.1 Primary Control

The primary control was established utilizing Natural Resource Canada's Precise Point Positioning software that allows for NAD83 CSRS (ITRF2002) coordinates to be established for control point **Brown125.** Data was collected in a dual frequency, Topcon geodetic grade GPS receiver for 4 hours and 35 minutes. The data processed provided an absolute accuracy of <1cm in the Northing and Easting and <2cm in the Elevation of **Brown125**.

The coordinates from **Brown125** were used in the derivation of the Primary Control Network and establishing UTM NAD83 CSRS (ITRF2002) with elevations using the HT2.0 geoid model. Where possible control points were drilled and cemented into exposed rock or a concrete pillar dug three feet into the ground. All the control points have brass caps with the name stamped into them and are identified in the field with an orange marker post, lath and a wooden tripod.

YES tied two control monuments in Carmacks to the Primary Control Network. These points had previous coordinates assigned to them by Natural Resources Canada (NRCan) and were part of a territory wide network. The most up to date listing of the locations of these control points shows NAD83 CSRS (ITRF1997) coordinates. However, NRCan does not maintain the coordinates of these points anymore and have not updated their position to the NAD83 CSRS (ITRF2002) system. The new values of these coordinates help create the Primary Network for the mine site. Having off site control ensures that the coordinate system can be re-established if the other points within the mine site become disturbed through natural or unnatural causes.

It is also recommended that any new control that is established within the project area is directly tied to the Primary Control Network.

The following is a listing of the Primary Control Points with the combined scale factor.

PRIMARY CONTROL, UTM NAD83 CSRS (2002), ZONE8 HT2.0 Geoid					
Station	**Northing**	**Easting**	**Elevation**	**Combined Scale Factor**	**Description**
Brown125	6881273.574	388993.810	1214.178	0.99955945	Brass Cap cemented into rock
828016	6885290.527	433101.164	534.791	0.99956987	Control Moument in Carmacks
828017	6884645.950	432544.665	535.311	0.9995707	Control Moument in Carmacks
Camp126	6881340.768	387633.668	1243.517	0.99955858	Concrete pillar with emebedded brass cap
Dam127	6880622.858	389639.148	1084.797	0.99957794	Concrete pillar with emebedded brass cap

The Primary Control network was derived from a Least Squares adjustment using StarNet®. A listing of the network can be found in Appendix A. The relative positional accuracy of the control points to Brown125 within the Primary Network is less then 0.5cm in Northing, Easting and Elevation.

3.2 Secondary Control

The Secondary Control Network was computed using the two points from the Primary Network and establishing coordinates for four other points through a network adjustment. The points consisted of 3 foot iron bars pounded into the ground or brass caps that have drilled and been cemented into rock.

The Secondary Control Network consists of infill control points within the project area and derived from the Primary Control Network.

The listing is as follows:

SECONDARY CONTROL, UTM NAD83 CSRS (2002), ZONE8 HT2.0 Geoid					
Station	**Northing**	**Easting**	**Elevation**	**Combined Scale Factor**	**Description**
Brown129	6881707.77	388512.32	1246.44	0.99955729	Brass Cap cemented into rock
Dam128	6880934.14	389595.40	1121.99	0.99957381	Brass Cap cemented into rock
Y16777	6880496.24	389458.40	1099.13	0.99957776	Iron Bar
Y16778	6880587.41	389508.13	1087.57	0.99957943	Iron Bar

The Secondary Control network was derived from a Least Squares adjustment using StarNet®. A listing of the network can be found in Appendix B. The positional accuracy of the Secondary Control is less then 1cm relative to the Primary Control Network.

4.0 Topographic Pickup

The survey crew did their best to find, identify and survey the listing of points provided by EMR. The complete listing of coordinates is provided in Appendix C. The format of the points are given in a Point#, Northing, Easting, Elevation, Description. The topographic data was collected from differential GPS data collection utilizing Real Time Kinematic Surveys. The data was collected related to the base point at one

of the Primary Control Network Points. The accuracy of the RTK survey data is +/-2cm in Northing and Easting and +/-3cm in Elevation.

The ground and top of well pickup is noted under the descriptions of XXX-G for ground and XXX-T for top. A spreadsheet was created grouping these features together showing the Position of the well (N,E,Z) and the ground elevation. It can be found in Appendix D.

The digital AutoCad file has all the points imported and breaks lines of features and buildings joined together for clarity. YES surveyed two trenches as identified on the CAD file.

YES computed the volumes of fill for two trenches as identified in the CAD file. The results are as follows:

West Trench: $795m^3$ @ 81m → $9.8m^3/m$
North Trench: $527m^3$ @ 65m → $8.1m^3/m$

The above shows the overall fill volumes over the length of surveyed area and a fill volume per lineal metre at the area.

A soft copy of the work can be found in Appendix E.

The locations and identification of various wells, infrastructure and features within this survey should be easily identified by EMR once merged with their existing data sets.

The second trip included picking up the perimeter of the ponds, core boxes and the remainder of the diversion trench. The trench information was being used by other consultants to establish positive drainage around the tailings area.

5.0 Close

If you have any questions please feel free to contact me at 668-2000 or by email.

Yours truly,
Yukon Engineering Services Inc.
Per

Marshall Hatton, P.Eng