

Yukon Abandoned Mine Assessment
BARITE MOUNTAIN MINE SITE

Prepared for:

Waste Management Program
Indian and Northern Affairs Canada

Environmental Services
Public Works and Government Services Canada

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Executive Summary

The Barite Mountain exploration site is located at 61°50'18"N, 133°08'30"W, approximately 34 km southwest of Ross River. Environmental Services, Public Works and Government Services Canada was retained to conduct an assessment of the Barite Mountain abandoned mine site to identify specific environmental and human safety risks and aesthetic concerns. The Barite Mountain mine site was inspected by PWGSC on July 28, 1998. Assessment components included mine openings and workings, waste rock disposal areas, and non-hazardous materials on the site.

A small test quarry and blast face area are accessible but present no safety risks.

Mineral and waste rock at the Barite Mountain site contain abundant carbonates and essentially no sulphides; therefore, there is the potential for ARD is negligible. No hazardous materials or stained soil were observed at this site. Aesthetic concerns associated with a single rusted drum are very minor. No further assessment or remedial work is required for this site.

TABLE OF CONTENTS

1.	BACKGROUND	- 1 -
1.1	Location and Site Access	- 1 -
1.2	Overview of Site Development	- 1 -
1.3	Previously-Identified Site Issues	- 5 -
2.	PURPOSE AND SCOPE OF WORK	- 5 -
3.	MINERALIZATION	- 5 -
4.	SITE DESCRIPTION AND FINDINGS	- 6 -
4.1	Buildings, Infrastructure, and Equipment	- 6 -
4.2	Non-Hazardous Waste Materials	- 6 -
4.3	Hazardous Materials	- 6 -
4.4	Surface Water Quality	- 6 -
4.5	Waste Rock Disposal Areas	- 6 -
4.6	Mine Openings and Excavations	- 6 -
5.	CONCLUSIONS AND RECOMMENDATIONS	- 7 -
	REFERENCES	- 7 -
Appendix A - Determination of Acid Rock Drainage Potential		
Appendix B - Site Photographs		
Appendix C - Assessment Methodology		

Yukon Abandoned Mine Assessment

BARITE MOUNTAIN MINE SITE

1. BACKGROUND

In 1993, assessments of 98 abandoned Yukon mine exploration and development sites were completed under the Arctic Environmental Strategy - Action on Waste program by DIAND Technical Services. These initial assessments provided a general overview of historical activities, described site infrastructure, workings and wastes, summarized existing environmental or safety concerns on each site, and provided general recommendations for remediation or mitigation work. No rock, soil or water samples were collected during the 1993 DIAND assessments.

In 1996, PWGSC Environmental Services completed assessments of 49 abandoned mine sites, with follow-up assessments in 1997 and early 1998 at six of those sites. DIAND Waste Management has determined that the remaining 49 sites should be assessed; candidate sites for this second round of assessments were identified in accordance with a process shown in Figure 1.

1.1 Location and Site Access

The Barite Mountain exploration site is located at 61°50'18"N, 133°08'30"W, approximately 34 km southwest of Ross River (Figure 2). The base of Barite Mountain is accessible by 2-wheel drive vehicles via the Canol Road between Ross River and Whitehorse; site access from the mountain base is by ATV or foot, or alternately by helicopter from Ross River.

1.2 Overview of Site Development

Barite Mountain claims were originally staked as Norma and Lucky Lu claims (4291) in 1944, restaked as Jean in 1952, and as Bar and Barite in 1962. A tote road was constructed in 1963, and about 2.7 tonnes of barite were mined in the same year. The property was restaked in 1966 as the BA claim (Y10082), and optioned from October 1969 to June 1970 by Mineral Hill Mining Ltd., which added the HM claim (Y38937) in October 1969. H.S. Aikins staked the Barry claim (Y75454) around the BA group in June 1973 and both groups were optioned by Fosco Mining Ltd. and later assigned to Tri Can Mining Co. Ltd. in 1974.

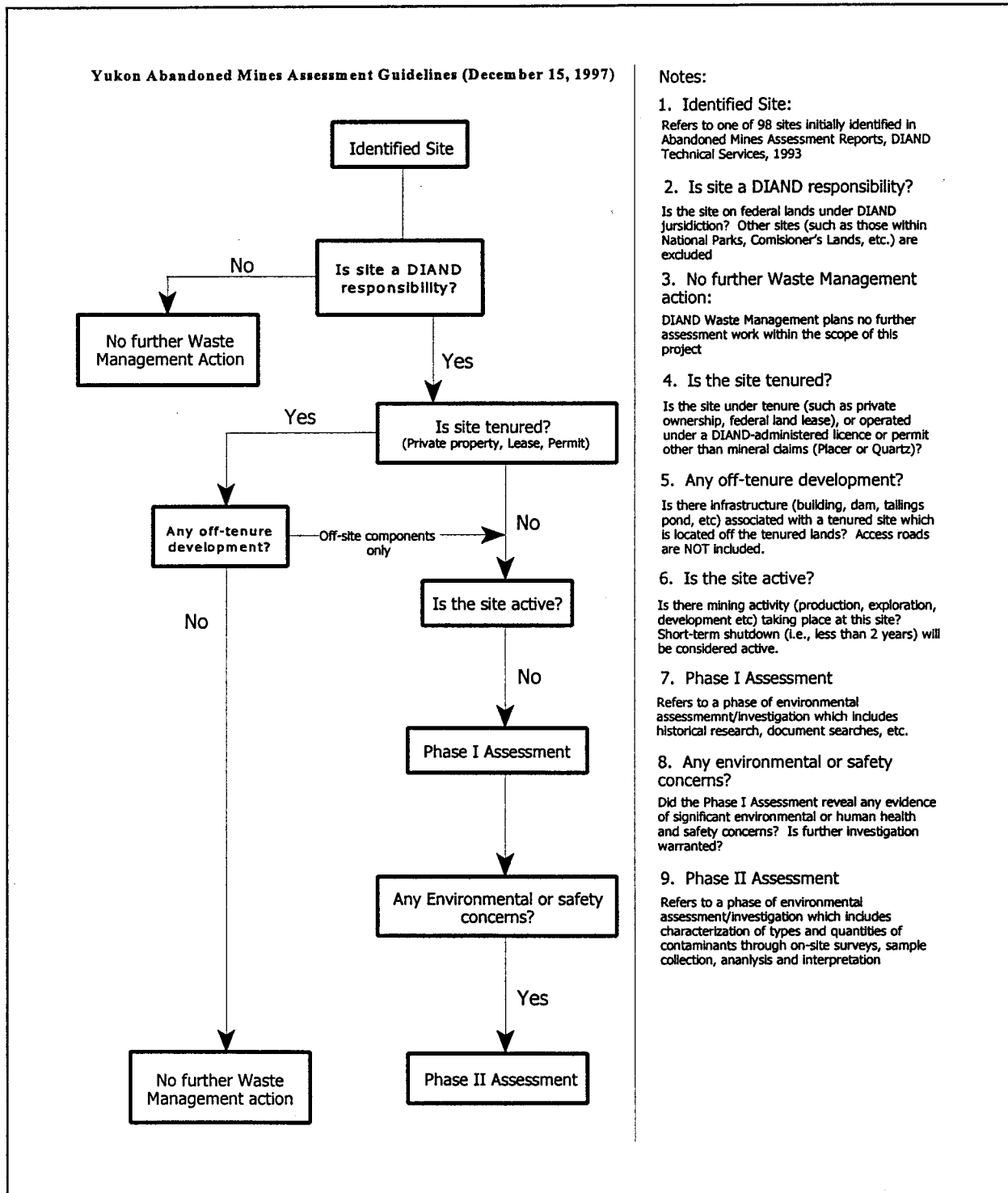


Figure 1. DIAND Abandoned Mine Assessment Flowchart

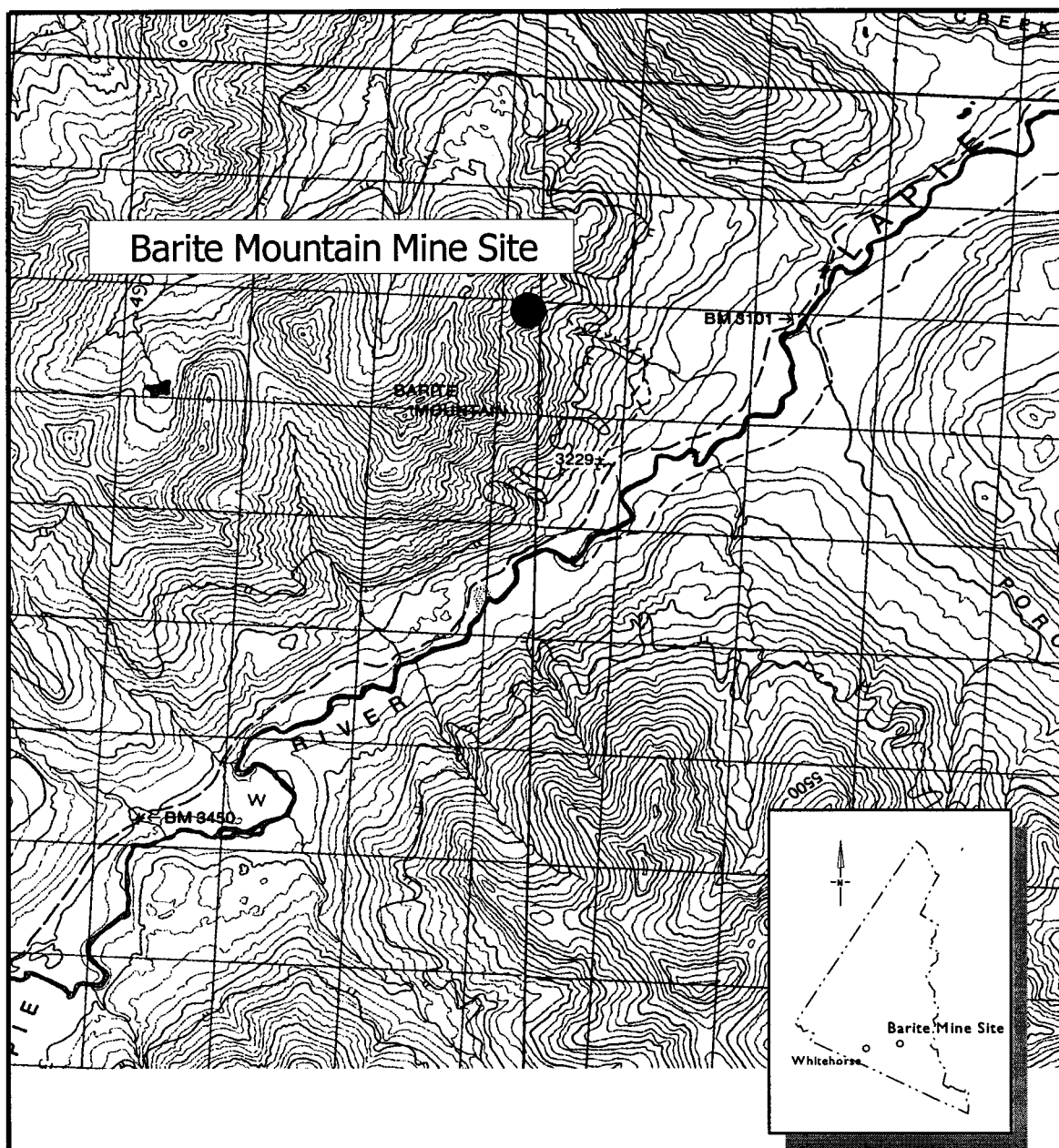


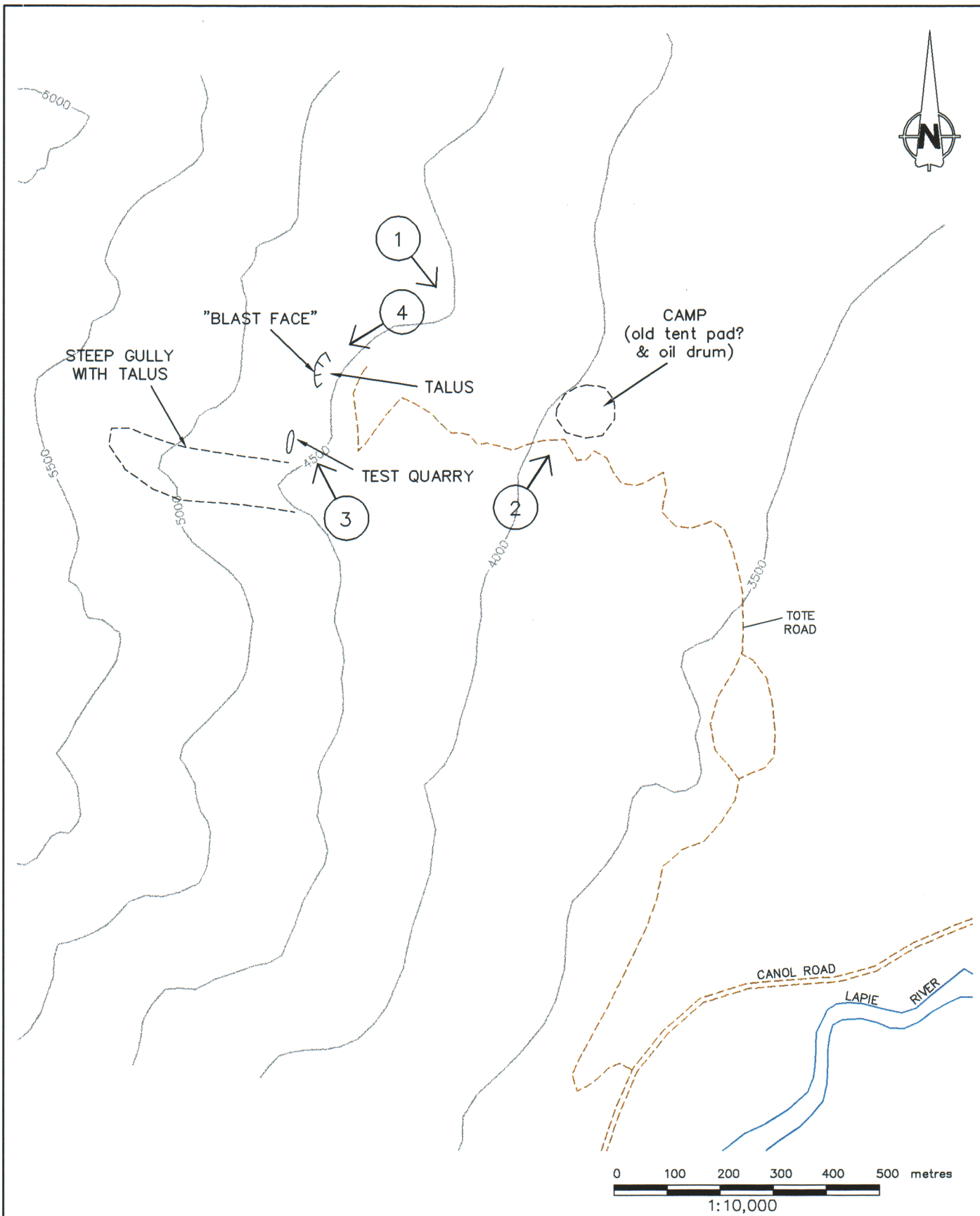
Figure 2. Barite Mountain Mine Site

DIAND Site No. 105F-14-1

Map Sheets: 105 F14/F15

Map Scale: 1:50,000

Site Location: $61^{\circ} 50' 18''$, $133^{\circ} 08' 30''$



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PUBLIC WORKS AND GOVERNMENT
SERVICES CANADA

ARD ASSESSMENT, YUKON

BARITE MOUNTAIN SITE DEVELOPMENT AND PHOTOS

PROJECT NO.
1CP001.04

DATE
NOV. 1998

APPROVED

FIGURE

3

The showing reverted back to H. Verslucce in 1975. Aikins restaked his ground in September 1976 as JM claim (YA8146), which was transferred to Tri Can Mining Co. Ltd. The JM and surrounding BA claims were restaked in April 1981 as Char claim (YA59927) by C.W. Friday Construction Ltd., which mapped and sampled in 1982 before transferring the claims to H. Verslucce; restaked in June 1985 as Webb claim (YA87037) by G. Clarke, and again in May /87 as Rite claim (YA97367) by Dodge Ltd., which performed mapping in 1988 (Yukon Geology Program Minfile 105F 038).

1.3 Previously-Identified Site Issues

A DIAND Technical Services assessment form dated 1 August, 1993 states that personnel could not access the site, but that the site was overgrown and had "reclaimed itself". No other site information was noted on that form. DIAND's file for the Barite Mountain site did not contain any information related to existing or potential environmental and human safety risks or aesthetic issues.

2. PURPOSE AND SCOPE OF WORK

Since environmental and human health/safety-related site information was essentially non-existent, PWGSC Environmental Services visited the Barite Mountain exploration site on July 28, 1998 to identify any existing or potential mine-related environmental and health/safety issues. Assessment activities included:

- Visual inspection of mine openings and workings and waste disposal areas;
- Photo documentation and mapping of relevant site features;
- Identification and inventory of hazardous and non-hazardous materials on the site;
- Assessment of safety hazards and the probability of human access to hazardous areas; and
- Assessment of acid rock drainage potential in waste rock and mine development areas.

3. MINERALIZATION

The barite deposit is hosted by Siluro-Devonian dolomite, which is thrust over Devonian-Mississippian black slate. It consists of at least a dozen pure barite veins ranging in size from 0.3 to 3.0 metres, and a 9.1 metre wide zone of brecciated limestone that is partially cemented by barite (DIAND, 1996). A second occurrence, with five 0.6 to 3.5 m wide showings is located 300 m to the south (Yukon Exploration and Geology, 1982). The GSC estimated that the deposit contains approximately 45,360 tonnes of barite. The barite contained no sulphides (GSC, 1945).

4. SITE DESCRIPTION AND FINDINGS

4.1 Buildings, Infrastructure, and Equipment

No buildings, infrastructure, or equipment were observed at the Barite Mountain site. A partially-rotted wooden tent platform (perhaps the remains of the mine camp) were located 550 m east of the blast face/quarry area.

4.2 Non-Hazardous Waste Materials

One rusted, ruptured drum was seen near the wooden tent platform. No other non-hazardous wastes were observed at the blast face/quarry area or in the vicinity of the tent platform.

4.3 Hazardous Materials

No stained soils or other solid hazardous materials were observed during the site visit. No petroleum hydrocarbons or other liquid hazardous wastes were present.

4.4 Surface Water Quality

No ponded water, surface runoff, or seepage from the adit or waste rock areas were observed; therefore no surface water samples could be collected.

4.5 Waste Rock Disposal Areas

Relatively little waste rock was blasted to access barite at the test quarry. All waste rock fell below the quarry face and is now indistinguishable from natural talus.

Abundant carbonates and a complete absence of sulphides are indicated in the ore and host rock geology. As well, the disturbance due to exploration activity is negligible compared to natural weathering processes. SRK has therefore assessed the potential for ARD production at this site as negligible (see the *Determination of Acid Rock Drainage Potential* report for the Barite Mountain site attached as Appendix A).

4.6 Mine Openings and Excavations

The quarry is a very shallow excavation, while the blast area is essentially a sheer face with minimal overhang. Neither feature poses a substantial risk to human health and safety, although

there is the commonplace safety risk posed by falling rock from upslope cliffs.

5. CONCLUSIONS AND RECOMMENDATIONS

PWGSC's inspection revealed no substantial health and safety hazards, other than the typical risk posed by falling rock from upslope cliffs. No environmental and only very minor aesthetic concerns exist at the Barite Mountain mine site.

No further assessment or cleanup work is required.

REFERENCES

Geological Survey of Canada, 1945. Geological Reconnaissance along the Canol Road from Teslin River to MacMillan Pass, Yukon. GSC Paper 45-21, p. 23, 27-28.

Indian and Northern Affairs Canada. "Mine Reclamation in Northwest Territories and Yukon". Prepared by Steffen, Robertson and Kirsten (B.C.) Inc. for DIAND Northern Affairs Program, April 1992.

Indian and Northern Affairs Canada. Exploration and Geological Services Division, 1996. Yukon Minfile No. 105F 038, Barite Mountain.

Yukon Geology and Exploration, 1982, p. 124.

Appendix A
Determination of Acid Rock Drainage Potential

1CP001.04

**BARITE MOUNTAIN
ACID ROCK DRAINAGE
ASSESSMENT REPORT**

TABLE OF CONTENTS

1. INTRODUCTION	1
2. GEOLOGY AND MINERALIZATION	2
3. WASTE DISPOSAL AREAS.....	2
4. EXISTING AND POTENTIAL ACID ROCK DRAINAGE CONDITIONS	2
5. REMEDIATION OPTIONS.....	2
6. CONCLUSIONS AND RECOMMENDATIONS	3
7. REFERENCES	3

**BARITE MOUNTAIN
ACID ROCK DRAINAGE
ASSESSMENT REPORT**

1. INTRODUCTION

This appendix reviews the existing and potential acid rock drainage (ARD) conditions at the Barite Mountain site. The report: "*Yukon Abandoned Mine Site Assessment, Evaluation Of Acid Rock Drainage, 1998 Review Report*", prepared by SRK, includes similar assessments for a number of sites, and details regarding the site assessment methodology, ARD remediation options and option evaluation. The accompanying Public Works and Government Services Canada (PWGSC) report "*Phase I Environmental Assessment of the Barite Mountain Abandoned Mine Site*", presents the complete environmental assessment of the Barite Mountain site.

The Barite Mountain site is located in the St. Cyr Range of the Pelly Mountains, approximately fifteen to twenty kilometres southwest of Ross River, Yukon Territory, on the west side of the Lapie River (Figures 1 and 2). The site is accessible by vehicle along Canol Road, then by foot up a steep tote road that has been largely overgrown by Willow brush. Helicopter access provides the most efficient means of reaching the development area.

Mining related disturbances include: the tote road, a shallow exploration quarry, minor blasting of material from the cliff face, and a small camp (Figure 3). The barite occurrence was discovered by the GSC in 1944. The tote road was constructed in 1963, and approximately 2.7 tonnes of barite were "mined" from the talus slope. Subsequent activities have included mapping and sampling programs along the cliff face, including blasting of the cliff face (DIAND, 1996).

Due to the limited nature of the disturbance, the PWGSC/SRK site visit consisted of a detailed file review, and aerial inspection of the site.

6. CONCLUSIONS AND RECOMMENDATIONS

The site assessment indicates the Barite Mountain site should be regarded as an exploration site with minimal development activities. The only "waste rock" exposures are equivalent to the natural talus present at the base of the sampling area. The ARD potential is negligible, both due to the small amount of disturbance, and favorable geological conditions.

No further investigation or remediation is required.

7. REFERENCES

DIAND, Exploration and Geological Services Division, 1996. Yukon Minfile No. 105F 038., Barite Mountain.

Geological Survey of Canada, 1945. Geological Reconnaissance along the Canol Road from Teslin River to MacMillan Pass, Yukon. GSC Paper 45-21, p. 23, 27-28.

Yukon Geology and Exploration, 1982, p. 124.

2. GEOLOGY AND MINERALIZATION

The barite deposit is hosted by Siluro-Devonian dolomite, which is thrust over Devono-Mississippian black slate. It consists of at least a dozen pure barite veins ranging in size from 0.3 to 3.0 metres, and a 9.1 metre wide zone of brecciated limestone that is partially cemented by barite (DIAND, 1996). A second occurrence, with five 0.6 to 3.5 m wide showings is located 300 m to the south (Yukon Exploration and Geology, 1982). The GSC estimated that the deposit contains approximately 45,360 tonnes of barite. The barite consists of a “good grade of white barite”, with no sulphides present (GSC, 1945).

3. WASTE DISPOSAL AREAS

Only a very limited amount of mining related disturbance was present at the site. Barite from the test quarry was hauled off site, and waste rock from the test quarry and blast face is essentially indistinguishable from the native talus. Photos MN3 and MN4 show the extent of this disturbance.

Samples of the talus were not collected.

4. EXISTING AND POTENTIAL ACID ROCK DRAINAGE CONDITIONS

The potential for ARD from this site is negligible. The geology of the ore and host rock indicates that there is both abundant carbonates, and a complete absence of sulphides. In addition, the extent of disturbance is negligible compared to disturbances related to natural weathering processes.

5. REMEDIATION OPTIONS

No remediation recommended at this site

Appendix B
Site Photographs



Photo 1. Downslope view of tote road (lower centre); former exploration camp believed to have been located in cleared area visible in centre of photo.



Photo 2. Possible exploration camp area; rusted drum visible at centre of photo.



Photo 3. Northward view of barite occurrence. Test quarry visible at left centre & blast face visible at upper centre of photo; tote road begins at lower right of photo.



Photo 4. Westward view of barite occurrence. Blast face visible at upper centre of photo; talus and waste rock seen at photo centre.

Appendix C
Assessment Methodology

BARITE MOUNTAIN ASSESSMENT METHODOLOGY

1. Assessment Area Constraints

The abandoned mine site assessments carried out for DIAND Waste Management have been restricted to a) the area specifically developed or occupied for mine exploration or mining purposes (i.e., excavation areas, waste rock dumps, mine camp) and b) any off-site environmental resources potentially affected by the mine-specific exploration or development activities. The assessments include all infrastructure associated with the specific site exploration or development, regardless of whether the infrastructure is located on or off the mine claim area. However, access roads have not been included in these assessments.

2. Assessment Criteria

Mine Reclamation in Northwest Territories and Yukon (INAC, 1992)

This report defines factors which are to be considered in reclamation of abandoned mine sites operating in northern climates. Factors include:

- open pit and underground mines
- waste rock and tailings disposal
- acid generation and leaching, and
- estimating cleanup costs.

3. Methods

3.1 Background Information

Available background information was consolidated from the Yukon Chamber of Mines mine records, Whitehorse Public Library, Yukon Archives holdings, and records and reports from the Yukon Renewable Resources Library, Yukon Water Board, DIAND Lands Branch, DIAND Water Resources, and DIAND Library. INAC (1994) provided an overview assessment of the Barite Mountain mine site to that date. Other published information sources were examined for site or regional information as applicable. On the basis of available information, knowledge gaps regarding existing or potential safety and environmental risks at the site were identified and a site assessment plan was developed.

3.2 Site Assessment Components

Waste rock disposal areas were assessed by a professional geologist for Acid Rock Drainage (ARD) and metal leachability potential. The ARD and leachability assessment included:

- review of existing site geological data to identify probable areas and sources of ARD and leachable metals; and
- mapping and logging of waste rock disposal areas and rock faces as appropriate for the site

Mine openings and excavations were visually inspected and documented to identify safety concerns and closure requirements.

Non-hazardous site debris was inventoried. Scale site plans were prepared to identify the dimensions and locations of site structures, mine workings and adits, waste rock disposal areas, and any other pertinent information.