

DRAFT REPORT TO

MONOPROS LIMITED

201, 4905-48th Street

Yellowknife, NT

X1A 3S3

AN ARCHAEOLOGICAL OVERVIEW

ASSESSMENT OF MINERAL

EXPLORATION AREA,

ROCKINGHORSE LAKE, NUNAVUT

PROJECT NO: ABC50142

Prepared by:

Jacques Whitford Environment Limited

Suite 500, 703 6th Avenue SW

Calgary, AB T2P 0T9

Tel: (403) 263-7113

Fax: (403) 263-7116

January 25, 2000

EXECUTIVE SUMMARY

Over 60 known archaeological sites are present within 30 km of the boundary of the Monopros mineral exploration area north and east of Rockinghorse Lake, Nunavut. Most are located on eskers or other level glacial features, and associated with lakes. No archaeological surveys have been conducted in the Monopros area, but many of the same attributes that attracted human occupants for as long as 8,000 years in areas surrounding the property are present within the exploration area. It can be expected, therefore, that certain environments such as eskers, lakes and caribou migration areas will contain a similarly high density of sites.

Monopros' exploration methods and environmental policies will undoubtedly minimize the risk of disturbance of sites; however, some site types are not easily recognized by lay persons. It is recommended that a preliminary archaeological inventory be conducted when practicable to identify the range of site types and preferred site locations in the exploration area.

TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION	1
1.1 Proposed Exploration Activities	1
1.2 Objectives	3
1.3 Report Organization.....	3
2.0 STUDY AREA	3
2.1 Environmental Setting	3
2.2 Past Land Use	4
2.3 Previous Investigations	5
3.0 METHODOLOGY	5
3.1 Background Research	5
3.2 Potential Project Impacts	6
4.0 RESULTS	6
4.1 Known Archaeological Sites.....	6
5.0 CONCLUSIONS.....	15
5.1 Data Gaps.....	15
5.2 Site Prediction.....	15
5.3 Heritage Resources Values	16
5.4 Potential Project Impacts and Impact Management Options.....	17
6.0 RECOMMENDATIONS	18
6.1 Archaeological Viewpoint	18
6.2 Aboriginal Viewpoint	21
6.3 Project Activities.....	22
7.0 REFERENCES	22
7.1 References Cited	22

Appendix A Known Archaeological Sites in Vicinity of Project Area

LIST OF TABLES

Page No.

Table 4.1	Known Archaeological Sites in Contwoyto Lake – Rockinghorse Lake Area.....	8
-----------	----------------------------------------------------------------------------	---

LIST OF FIGURES

Page No.

Figure 1.1	Monopros Limited Rockinghorse Lake Claims Area	2
Figure 4.1	Known Archaeological Sites in Contwoyto Lake – Rockinghorse Lake Area.....	7
Figure 5.1	Procedures for Recording/Avoiding Suspected Archaeological Sites.....	19

1.0 INTRODUCTION

At the request of Monopros Limited (Monopros), Jacques Whitford Environment Limited (Jacques Whitford) has conducted an overview assessment of potential development related conflicts between archaeological sites and exploration activities proposed for the early spring, 2000. The project area borders on the north and east ends of Rockinghorse Lake, in Nunavut, between Napaktulik Lake 12 km to the west and the north end of Contwoyto Lake 8 km to the east, near the southwest border between Nunavut and the Northwest Territories. Proposed activities for 2000 include exploratory drilling from lake ice, geophysical surveying, and possibly a limited amount of surficial sediment sampling

1.1 Proposed Exploration Activities

Monopros, a Canadian company with a regional office in Yellowknife, has prospected and explored in the Rockinghorse Lake/Hood River area of the Slave Geological Province throughout the 1990s. Monopros would like to continue this activity and has applied for permission to access Inuit-Owned Lands (IOLs) that lie on or within its exploration area, namely CO-05 and CO-40. The Monopros base camp located at 65° 58' 48" (lat.) and 111° 45' 00" (long.) is within the IOL portion, or southeast corner, of the project area (Figure 1.1).

In order to determine if the claims area holds economic potential, active exploration comprising surface sediment sampling, airborne and ground geophysical surveying and exploratory drilling of numerous targets is necessary; without this level of care and effort, the three known kimberlites would not have been discovered. Without further field exploration, additional kimberlites cannot be discovered and the economics of the area will remain unproven.

A diamond drilling program consisting of one small core rig drilling a maximum of 15 lake-based holes in five areas of the property is planned; all drilling will occur on Crown land. No drilling is planned to occur on IOLs in this year. NQ-sized cores will be extracted, logged on site, and flown out for analysis. A follow up till sampling program is scheduled for 2001 on selected areas of the property, and further drilling in 2002, under a program similar in scope to that of 2000.

The drill, equipment, fuel drums and personnel for the winter program will be moved from site to site by helicopter, which will be based at the Rockinghorse camp. Fixed-wing aircraft will be used to mobilize, supply and demobilize the Rockinghorse camp and to transport the core samples. Around camp, transportation will be by snowmobile. As this is a fly-in drill program, there are no viable alternatives to these modes of transportation. Sampling, when conducted, will be by foot traverse, with pickup and dropoff of samples by helicopter.

Figure 1.1 Monopros Limited Rockinghorse Lake Claims Area

1.2 Objectives

The objectives of the archaeological overview assessment are to identify any known archaeological sites within the project boundary; to evaluate the likelihood of (additional) sites being present; to identify any likely project-related effects on such sites; and to recommend means of mitigating any such effects. Monopros is committed to heritage conservation and has carried out a similar program at its Kennady Lake (Gahcho Kué) exploration area in the Northwest Territories, where 54 archaeological sites have now been identified and protected during the exploration phase (Jacques Whitford 1998; Thomson 1999).

1.3 Report Organization

This report will present a brief description of the nature of the project area, drawing in part on material documented for other similar projects in the vicinity of the Rockinghorse property. Section 3 will summarize the methods used to obtain the project results. Section 4 will present those results. Sections 5 and 6 will offer conclusions and recommendations, respectively, and Section 7 lists sources consulted. Appendix 1 includes site entry forms for known sites in the region.

2.0 STUDY AREA

2.1 Environmental Setting

Archaeological sites previously recorded in the area show a preference for lake shores, river and stream margins, and elevated places such as eskers and terraces where a broad lookout can be maintained. Human settlement, as evidenced by archaeological sites and traditional knowledge, reflects a knowledge of environmental conditions, seasonal availability of game, and subsistence opportunities. This knowledge is manifested by a range of site types and locations selected to take advantage of environmental attributes and cultural preferences. Thus, in the study region under discussion, archaeological sites primarily tend to be clustered where attributes such as caribou migration routes, elevated lookout points, fresh water, and well-drained camp sites coalesce. Most sites found to date consist of scatters of quartz tools and flakes from the precontact period.

The study area is contained within the Bear Slave Upland of the northwestern Canadian Shield (Bostock 1970), east of the present northern limit of the tree line; it should be noted, however, that the study area may have been forested at times during the past few thousand years. Exposed Precambrian bedrock predominates, revealed as an undulating plain occasionally broken by prominent bedrock outcrops, eskers, esker fans, lakes and streams, and overlain by a thin and discontinuous layer of glacial till. A thin ground cover consisting of shrubs, primarily birch with some willow, grasses, lichen and moss, several varieties of berry plants, Labrador tea, and cotton grass occupies depressions in the exposed

Shield and is present along stream and lake borders where soil has been deposited by glacial and post-glacial activities. Isolated dwarf spruce outliers are also present (Fedirchuk 1996).

The barren ground caribou, specifically the Bathurst herd, is the primary game animal in spring and late summer-fall. Muskoxen and grizzly bear are present year round but of lesser economic importance. Fish, particularly whitefish, trout and longnose sucker are also important contributors to subsistence. Waterfowl are important during the spring and fall migrations. Berries are available in late summer.

2.2 Past Land Use

The earliest occupations of the region appear to have been by people of the Northern Plano tradition, following the retreat of the last remnants of the Laurentide ice sheet. This resulted in a corresponding uplift of the land mass and some development of raised beach lines, reestablishment of a productive ecosystem, fluctuations in the tree line as the climate changed, and occupations by Plano and subsequent cultural traditions (Damkjar 1994). Sites of the Agate Basin and Acasta complexes are widely scattered across the barren grounds, particularly at major caribou crossings (Harp 1961) and eskers (Noble 1981). Wright (1981) suggests that the Northern Plano people moved north onto the barrens from the northwestern plains to seasonally exploit caribou and other resources.

The Shield Archaic tradition appears to have evolved from the Plano between 6000-3000 B.P. (years before present), although sites of this period are not well represented in the region (Wright 1972, 1976, 1981; Gordon 1976), and is in turn replaced by people of the Arctic Small Tool tradition, with Palaeo-Eskimo people moving south during a period of cooling climate from the Arctic coast. A Palaeo-Eskimo or Pre-Dorset variant of the Arctic Small Tool tradition (3200-2600 B.P.) also focussed on caribou exploitation, with sites being found from Great Bear-Great Slave Lake eastward as far as Hudson Bay.

The final precontact phase is termed the Taltheilei Shale tradition, beginning with the onset of a warmer climatic period, and is seen as being ancestral to the development of the Athapaskan people (Noble 1981). Sites of this time period (2500 B.P. to contact, in the late eighteenth and early nineteenth centuries) are generally found to the south and east of the study area. About 1000 years ago, a second Eskimo expansion out of Alaska culminated in the Copper Inuit seasonal expansion south from the coast of Coronation Gulf onto the barrens (Damas 1984).

Contwoyto Lake formed a border for historic period peoples, with the Yellowknives Dene ranging north from Great Slave Lake to the Coppermine River and east to the Thelon River (Gillepsie 1981); Dogrib extending as far east as Contwoyto Lake (Helm 1981); and Copper Inuit moving as far inland as the north end of Contwoyto Lake from Banks Island, Victoria Island and the mainland coast as far east as Perry River (Damas 1984; Fedirchuk 1996). A *komatik* found at the south end of Reid Lake in 1999 suggests that their range may have extended at least another 200 km south (Thomson 1999).

Caribou were the key to success of the people occupying the barren grounds. In spring, Dene bands would move north with the herds towards the calving grounds, situating their camps at key locations to ensure a large harvest on the migration route. In summer, the people dispersed into smaller groups, following the caribou across the barrens, carrying small, light, birchbark canoes to cross and travel along the innumerable lakes and rivers crossed by the herds. Caribou were most commonly killed from canoes as they crossed lakes and rivers (Hearne 1911). In fall, the dispersed groups of people would again coalesce to build or mend fences or lines of cairns to take the largest possible numbers of caribou in a communal effort. In winter, the groups moved south and west into the forests, where caribou continued to be available and were snared in pounds or hunted on foot. Muskoxen, moose, arctic hare, waterfowl, game birds, fish, berries and small fur-bearers would be sought, depending on the season. In late spring, the Copper Inuit also traveled onto the barrens from their winter homes on the sea ice, to obtain caribou, fish and waterfowl. Ice fishing in lakes and in spring would be replaced by waterfowl hunting in summer, and weir fishing and caribou hunting in late summer, when the animals were at their best and were hunted from kayaks as they crossed the lakes. Char fishing, as the fish ascended the rivers to their lake winter homes, took place in fall before the return to the sea ice where they built snow houses and hunted seals at their breathing holes (Damas 1984; Fedirchuk 1996).

Samuel Hearne was the first well-documented European to enter the study area, in 1770-1771 (Hearne 1911). He encountered Yellowknives Dene around Contwoyto Lake and Inuit at Bloody Falls on the Coppermine River. Over the next 20 years, various fur traders moved into the territory, mapping the region and providing base stations for other explorers.

2.3 Previous Investigations

There are no known, or recorded, archaeological sites in the Monopros claims area. The closest sites are located at the northwest corner of Contwoyto Lake, on the upper section of the Burnside River and at its confluence with Kathawachaga Lake, and at the south end of Rockinghorse Lake. These sites were discovered during archaeological assessments for Tahera Corporation (Fedirchuk and Unfreed 1999), Lytton Minerals (Fedirchuk 1996), the Ulu Mine Project (Kroker 1996), and Metall Mining Corporation (Damkjar 1994), and during research for the Archaeological Survey of Canada (Gordon 1985).

3.0 METHODOLOGY

3.1 Background Research

Background research involved plotting the project area on 1: 250,000 NTS maps; acquiring archaeological site records from the Archaeological Survey of Canada Sites Office for this area and the immediate vicinity; reviewing relevant reports housed at the Archaeological Survey of Canada and the Prince of Wales Northern Heritage Centre; and reviewing the project description and related information provided by Monopros Limited.

3.2 Potential Project Impacts

Monopros provided the following summary of potential project impacts within the Project Description made available to the Kitikmeot Inuit Association. Potential project impacts of this exploration project locally, regionally, and to the hamlet of Kugluktuk approximately 220 km away are predicted to be minimal. The closest “settlement” is Echo Bay’s Lupin Mine, not scheduled to resume operations until April, 2000. The Lupin Mine lies 20 km from the southeastern edge of the property. Together, the Monopros camp and drill sites amount to only a few hectares, and the period of activity within any one year is limited. As per best practice, guided by the longstanding Monopros Environmental Policy, areas used are reclaimed when use ceases. In sampling, for example, overburden is replaced over hand-dug holes immediately after till is extracted, so that there is no chance that grazing animals such as caribou and muskoxen may trip and fall. In the case of drill holes, holes are grouted and the small amount of water and sediment and oil that collects on the ice during the lake-based drilling is soaked up with absorbent pads or heat-steamed.

The health and wellbeing of wildlife is of great concern to Monopros in all its operations. If caribou enter an area where work is proceeding, all work ceases until the caribou move on. Although the project area offers limited esker habitat, Monopros is aware of the importance of this habitat to bears, wolves, foxes and prey animals, and limits habitat disruption wherever possible. Eskers are present in the northern part of the property, but are more abundant to the south of Napaktulik Lake and southwest of Rockinghorse Lake.

4.0 RESULTS

4.1 Known Archaeological Sites

There are no known archaeological sites on the Rockinghorse property. The closest sites on record are 6 to 12 km east of the project area, on the west side of the north end of Contwoyto Lake; 20 to 25 km east of the northeast corner of the property, on the Burnside River and the west end of Kathawachaga Lake; 4 to 20 km southwest at the south end of Rockinghorse Lake; and 1 to 8 km south of the property. Sixty-one of the closest sites are summarized below, in Table 4.1, Figure 4.1, and in Appendix A.

Sites on the west side of Contwoyto Lake were mostly found within two discrete areas, bounded by the limits of the developers’ exploration activities or other proposed disturbance, *e.g.*, road, camp, or airstrip construction (Fedirchuk and Unfreed 1999). On the Tahera Corporation property in the vicinity of Long Lake and Carat Lake, six small precontact sites were found, most often associated with relatively small lakes. One site was identified as being located on a knoll and three on bedrock outcrops or a ridge.

Figure 4.1 Known Archaeological Sites in Contwoyto Lake – Rockinghorse Lake Area

Table 4.1 Known Archaeological Sites in Contwoyto Lake – Rockinghorse Lake Area

Site Area and Site Borden No.	Biophysical Features						Age			Features
	Associated with lake, river	Knoll	Deflated exposure	Esker	Bedrock outcrop or ridge	Bench or terrace	Precontact	Recent or traditional period	Undetermined period	
Metall, Izok development, between Contwoyto and Rockinghorse lakes, < 7.5 km from Monopros area										
LkNx-2	4							4		recent cabin, caribou bone, recent refuse
LkNx-3	4						4?			stone hunting blind – Inuit?
LkNx-4	4							4		small tent ring and hearth – Inuit?
LkNx-5	4	4					4			Plano quartz projectile point
LkNx-6	4			4				4		rectangular tent ring, 2 partial rings, row of cobbles – Inuit?
LkNx-7	4			4			4			quartz biface and 21 quartz flakes
LkNx-8	4	4						4?		Inuit hunting blind and several <i>inuksuit</i>
Lytton, Willingham Hills and Contwoyto Lake Area, < 11 km from Monopros area										
LkNw-7	4						4			white quartz flake exposed on caribou trail
LkNw-8	4		4			4	4			clear quartz flake and white quartzite flake
LkNw-9	4		4		4					50 white quartzite flakes
LkNw-10	4		4	4						5 to 10 red quartzite flakes
LiNw-1	4	4					4			quartzite flake and core scatter
LiNw-2	4	4					4			quartzite vein and scatter of flakes and cores
LiNw-3	4			4			4			quartz flake scatter
LiNw-4	4			4			4			quartz flake
LiNw-5	4					4	4			red quartz core
LiNw-6	-		4		4		4			quartzite vein and quartz flake scatter
LiNw-7	4				4		4			quartz flake scatter
LiNw-8	4				4		4			quartz vein and flake scatter
LiNw-9	4				4		4			quartz vein and flake scatter

Table 4.1 Known Archaeological Sites in Contwoyto Lake – Rockinghorse Lake Area

Site Area and Site Borden No.	Biophysical Features						Age			Features
	Associated with lake, river	Knoll	Deflated exposure	Esker	Bedrock outcrop or ridge	Bench or terrace	Precontact	Recent or traditional period	Undetermined period	

Tahera, Long Lake-Carat Lake Area, < 12 km from Monopros area

LINw-10	4				4		4			quartz vein
LINw-11	4				4		4			quartz vein
LINw-12	4				4		4			quartz veins
LINw-13	4						4			quartz vein
LINw-14	4	4					4			quartzite core
LINw-15	4						4			quartz vein

Metall Mining, Rockinghorse Lake Area, < 5 km from Monopros area

L1Nx-1	4		4		4		4			lithic tools and flakes: shale, siltstone, quartz
LkPb-1	4				4			4		tent ring, hearths (2), recent artifacts
LkPb-2	4			4				4		Hearth
LkPb-3	4			4			4	4		tent ring, hearth, lithic tools and flakes, recent artifacts
LkPb-4	4		4	4			4			concentration of lithic tools and flakes
LkPb-5	4			4			4	4		tent ring, recent material; lithic tools and flake
LkPb-6	4				4					hearth, lithic tools and flakes
LkPb-7	4		4	4						lithic tools and flakes
LIPa-1	4	4								lithic tools and flakes

Ulu Mine, Burnside River and Kathawachaga Lake, < 50 km from Monopros area

MaNv-3	4					4			4	cache, stone line
MaNw-1	4			4					4	2 tent rings
MbNv-2	4							4		two tent rings, 4 caribou skulls
MbNv-3	4						4			scatter of quartz flakes
MbNv-4	4							4		Euro-Canadian tent ring and refuse

Table 4.1 Known Archaeological Sites in Contwoyto Lake – Rockinghorse Lake Area

Site Area and Site Borden No.	Biophysical Features						Age			Features
	Associated with lake, river	Knoll	Deflated exposure	Esker	Bedrock outcrop or ridge	Bench or terrace	Precontact	Recent or traditional period	Undetermined period	

Gordon Survey, Burnside River and Kathawachaga Lake

MaNv-1	4					4			4	tent ring
MaNv-2	4			4			4		4	quartzite scatter, tent ring
MaNv-4	4	4						4	4	caches
MaNv-5	4					4			4	17 tent rings, pits, caches
MbNt-1	4			4			4			Two tent rings

Lytton, Carat Lake Area, < 10 km from Monopros area

MaNw-2	4		4				4			quartzite flake scatter
MaNw-3	4		4				4			quartzite flake
MaNw-4	4		4				4			red quartzite flake
MaNw-5	4		4				4			quartzite flake
MaNw-6	4		4				4			quartzite tool and flake scatter
MaNw-7	4		4				4	4?		chert biface fragment, quartzite flakes, two cooking slabs
MaNw-8	4						4			quartzite flake scatter
MaNw-9	4	4					4			quartzite flake scatter
MaNw-10	4			4			4			quartzite and shale flake scatter
MaNw-11	4	4					4			quartzite flake
MaNw-12	4	4					4			quartzite flake scatter
MaNw-13	4		4				4			quartzite flake
MaNw-14	4			4			4			quartzite flake scatter
MaNw-15	4		4				4			quartz flake
MaNw-16	4		4			4	4			quartz flake scatter
MaNw-17	4			4			4			quartz flake scatter

Only one site contained material that had been altered for tool manufacture; the remaining five sites were quartz veins with associated quartz shatter, *i.e.*, material that presumably resulted from human

attempts to test or obtain quantities of the resource for tool making (Fedirchuk and Unfreed 1999). In some cases, shatter associated with quartz veins may result from natural effects caused by frost.

Surveys for Lytton Minerals in the Carat Lake area and southeast to the Lupin Mine resulted in the finding of 34 generally small precontact sites, 24 in the Jericho Mine Project area and an additional ten on the proposed all-weather road route to Lupin at the northwest end of Contwoyto Lake. Most were associated with a lake, river, or drainage; three were on a bedrock knoll, four on a sand knoll, five on a bedrock hill, eight on a sand plain, one on a sand bench or terrace, nine on an esker, and four on a lake shore. One site had two possible traditional period features identified as cooking slabs. All of the sites contained a scatter of white quartz, red or white quartzite or, rarely, some other lithic material such as shale, or a single, isolated flake. No veins were found (Fedirchuk 1996). Of the 24 sites around the Jericho Mine Project area, eight are isolated finds, 11 are artifact scatters, two are habitation sites and three are quarries. On the proposed road route, three sites were isolated finds, six were artifact scatters, and one is a quarry. None of the sites was judged to be of sufficient potential significance to require avoidance by development. One site, MaNv-7, is recommended for controlled excavation to determine whether additional, undisturbed cultural features are present. Mitigation recommendations for the other sites include collection of a representative sample of cultural material. Additional field work is recommended once detailed mine and road development plans have been formulated, focusing primarily on the selected road route and any borrow sources.

Surveys for Lytton Minerals in the vicinity of the Willingham Hills and the northwest end of Contwoyto Lake resulted in the discovery of nine precontact sites, all containing lithic material. Eight of the sites are described as being associated with a lake or river. Two sites are on a knoll, one on a deflated exposure, two on an esker, four on a bedrock outcrop or ridge, and one is on a bench or terrace. Lithic material included quartzite flakes, cores and veins, quartz flakes and veins, and a red quartz core (Fedirchuk 1996).

During surveys for the Echo Bay Mines Ltd. proposed Ulu Mine north of the Hood River at 66°54'N, 110°58'W, 70 km north of the Monopros study area, Kroker (1996) inspected areas which may be affected by the mine development and use of an associated winter haul road to the Lupin Mine site. Phase I consisted of archaeological investigations of the mine site and associated components within a 20 ha area (mine, camp, storage area), a 4 km road to the airstrip and another camp, a borrow location at Reno Lake, and part of the Hood River. Phase II looked primarily at the haul road options between Lupin and the Hood River, and associated aggregate source areas. One site was found near a set of rapids on the Hood River (MeNu-1), consisting of two scatters of quartz flakes and some tabular shale flakes. Both loci were interpreted as stations where a hunter waited at the edge of the terrace chipping stone tools while waiting for game. The flakes were thought to derive from quartz pebbles found in the till deposits. Another extensive site (MeNu-2) was found on the Hood River on a plateau overlooking a set of rapids. The site consists of three tent rings and numerous concentrations of quartz flakes, mostly on the north edge of the plateau overlooking the rapids or the east side, overlooking the Hood River valley. The tent rings were oval, about 2.5 m long. Cobbles comprising the tent ring were 20-30 cm long, partially buried, and lichen encrusted. No lithics were found in the tent rings but the obvious age

and finding of one Middle Taltheilei-like tool suggest that all site elements fall within the Middle to Late Taltheilei period, *ca.* 1850-950 B.P., Kroker (1996) recommended avoidance of this site due to time and cost considerations involved in mitigative excavations.

During Phase II investigations for the Echo Bay Mines Ltd. proposed haul road route from Ulu Mine to Lupin Mine, Kroker (1996) found 21 new archaeological sites, mostly on the Burnside River/Kathawachaga Lake system or on the major esker north of Kathawachaga lake. Projected impacts from any of the route options were considered to be minimal as all routes bypass most sites by a wide margin. Gravel extraction was also thought to have minimal potential for disturbance of heritage resources, particularly if the extraction occurs on the lower lateral ridges rather than on the crests and upper plateaus, which contain the majority of the major archaeological sites. Routes were overflowed by helicopter, and areas judged to be of high potential or where features were noted were walked. Precision in site location was not considered necessary, as most project elements were flexible. Sites found were associated with a riverbank (9), a riverbank and esker (2), a riverbank and lakeshore (2), a lake shore (4), an esker (13), or a lakeshore and esker (1). Sixteen sites were identified as campsites, three as a campsite or possible campsite and chipping station, one as a cache and feature, one as a cache and campsite, one as a feature, eight as chipping stations, and one as a cairn. Estimated ages ranged from recent to precontact, with many undetermined, and cultural affiliation of the various components included undetermined (28), Inuit or possibly Inuit (6), Northern Plano (1), Thaltheilei (?), Dorset Palaeo-Eskimo (1), Tourist (1), and Euro-Canadian (1).

Over half of the sites were associated with eskers, locations most likely chosen for their well-drained surface as well as for their unobstructed vision over the surrounding area. Twelve sites were located on the Burnside River/Kathawachaga Lake system and five on the Hood River; the difference was suggested by Kroker as lying in poorer fishing opportunities on the Hood, as caribou and muskoxen are present on both. At campsite locations, four types of tent ring were observed: oval or circular pattern of stones; an oval or circular pattern of stones with outliner rocks serving as anchors for guy ropes; a square or rectangular pattern of stones; and a square or rectangular pattern of stones with outliner rocks serving as anchors for guy ropes. Variations within these categories included size of stones, spacing, continuous alignment, and linear or circular patterns for guy rocks. This variation may indicate idiosyncratic choices or, more likely, multiple occupations by different population groups at different times, each constructing their tent rings to cultural norms. The multiple occupation scenario was somewhat borne out by the temporally diagnostic artifacts.

Kroker (1996) concluded that, with regard to the Ulu mine project, extractive mineral development and heritage resource protection and preservation are not incompatible. Bedrock outcrops, terraces adjacent to eskers, low lying terrain, wetland, and the margins of small, shallow lakes are unlikely to contain heritage resources, but are suited to some form of development (however, note that precontact and traditional period sites were found in all of these situations around Kennady Lake (Thomson 1999), and

Metcalf (1978) reports finding sites on bedrock outcrops and ridges, peninsulas, and other elevated landforms in the Coppermine/Rawalpindi River area). Areas containing one or more attributes which are more likely to contain heritage sites include proximity to a river for travel or spawning fish, well drained areas elevated above large lake shores, higher locations providing good observation points, and good travel routes into the interior.

Surveys for Metall Mining Corporation's proposed Izok Mine plant site, port site, and winter road route between Izok and Lupin Mine resulted in the discovery of 49 heritage sites. An additional three sites were found on the proposed Izok to port winter route, which was proposed for further assessment in 1994 (Damkjar 1994). The sites were found associated with various topographic features, notably lakeshores, eskers and esker fans, knolls and outcrops, and the coast of Coronation Gulf. Site types included lithic scatters (19), lithic workshops (2), isolated finds (2), hunting sites (2), lookout sites (1), campsite/lookouts (1), possible prehistoric campsites (9), cache sites (2), historic camp sites (12), and historic cabin sites (5). Two sites yielded lanceolate points suggesting Plano affiliation and an age between 8000-7000 B.P. Three sites contained small chert tools suggestive of the Pre-Dorset phase of the Palaeo-Eskimo tradition, and a fourth site may also belong with this group (3500-2700 B.P.). Although only two sites had clear evidence of the Taltheilei tradition, it is likely that many of the remaining precontact sites date to this period (post-2700 B.P.). Most of the more recent sites, including all of the coastal occupations, are believed to be associated with Inuit land use (Damkjar 1994). The most common raw material is massive white or grey quartz, which is widely available in bedrock veins and as till. The most common formed tools made from this material are large bifaces and wedges; retouched flakes may also have been made but are difficult to discern. The second most common raw materials are fine grained, thought to be silicified sedimentary rock, mostly shale and siltstone. Shale is mostly dark to pale green and siltstones grey, often banded. Less common materials include chert and porphyritic rhyolite. An analysis of cultural affiliation suggested the following:

Plano: two sites contain lanceolate points with lateral and, in one case, basal grinding, similar to Wright's (1976) Grant Lake site Agate Basin material, dated to about 8,000 B.P.;

Pre-Dorset: two sites contain chert or silicified shale microblades and one had a tiny chert uniface. Another site had a quartz crystal microblade, a small chert biface, several hearths filled with fire-broken rock, and a location on an esker fan, all characteristic of Pre-Dorset (Noble 1981), although the assemblage also included a Late Taltheilei point, and the quartz microblade could also be Taltheilei;

Taltheilei: Taltheilei sites included a large point mid-section at one site, other sites with large bifaces, and one site with a *chi-tho*; however, many if not most of the prehistoric sites were judged to be Taltheilei; and

Thule/Inuit: one site contained an iron sled shoe and a soapstone carving; in addition, all the sites on the coast were considered to be Inuit.

Bussey (1999) has spent the last five years undertaking archaeological research for BHP Diamonds Inc. around the Ekati Diamond Mine site north of Lac de Gras, 150 km south of the Monopros exploration area. During the extensive surveys and mitigation, Bussey has recorded 126 precontact archaeological sites and four traditional use sites. The majority of the archaeological sites are lithic scatters characterized primarily by unworked white quartz flakes. Most sites are located on or adjacent to eskers, often near or between large lakes. Two sites date to the period when people of the Arctic Small Tool tradition occupied the region, between about 3500-2500 B.P., three probably represent occupations by people of the Taltheilei tradition dating to 2500 B.P. to contact, and most of the remainder most likely also belong in this time frame.

Andrews (1998) produced similar findings from surveys around Yamba Lake, north of Lac de Gras. Here, eight of the sixteen sites found contained lithic scatters with white or smokey quartz dominant; most of the sites were on or associated with eskers; and exploitation of caribou at the Daring Lake narrows crossing is likely to have been a prominent reason for site location.

5.0 CONCLUSIONS

5.1 Data Gaps

The review of known archaeological site information from the general study region illustrates that, while no sites have been identified in the Monopros exploration area, potential exists for the presence of archaeological resources. No archaeological surveys have been conducted in the area and no sites have been reported by exploration personnel, or by archaeologists flying over the area en route to other properties.

5.2 Site Prediction

A preliminary analysis of 1: 250,000 scale maps and a comparison with site distribution on adjacent exploration properties suggests that there is moderate to high potential for the presence of archaeological sites in some areas of the Monopros property. Areas of high potential include the shores and near-shore areas of Rockinghorse Lake, especially where knolls and ridges provide a good view of the surrounding terrain and where streams flow into the lake (Map Sheet 86 H); the shores and near-shore areas around the many lakes in Map Sheet 86 I, east of Napaktulik Lake, and the several long eskers shown on this 1: 250,000 scale map (*i.e.*, others are likely present); the shores and near-shore areas around the lakes in Map Sheet 76 L, especially the larger lakes to the south which flow into Kathawachaga Lake/Burnside River system, and the large eskers in the north; and the shores and near-shore areas around the many large and small lakes between Rockinghorse Lake and Contwoyto Lake on Map Sheet 76 E. In all of these areas, sites are likely to be found on eskers, knolls, low hill tops and ridges, deflated terraces, and

other similar features which provide both a broad view of the surrounding terrain to enable observation of caribou, and a level, well drained location for possible establishment of a camp. Other evidence of past land use may be found where quartz veins are present in bedrock, and where quartz cobbles and pebbles are found in glacial till.

5.3 Heritage Resources Values

All archaeological sites are unique and provide some information on human use and occupation of the environment of which they are a part. Archaeological sites are protected under several pieces of legislation, and sites and their contents must not be disturbed except under the terms and conditions of a permit issued by the Nunavut regulator and approved by the local community.

The precontact sites found during previous surveys around the Monopros exploration area are informative and any sites found within the Monopros area have the potential to provide more information, should a decision be made to adopt some or all of the following recommendations. Most of the sites found in the region have been located on prominent landforms associated with large lakes and rivers, or on smaller lakes adjacent to or between larger bodies of water; however, it can be expected that other sites would be found in other situations should more extensive surveys be undertaken. The general area has its share of large lakes and eskers, as well as a multitude of small lakes, so can be expected to contain precontact sites related to caribou hunting, other resource exploitation such as extraction of quartz, and travel. An archaeological inventory and assessment of the Monopros area might therefore be expected to contribute information that could influence decisions on the necessity for archaeological investigations in similar exploration and development situations elsewhere, as well as helping to adhere to the Monopros policy of heritage conservation. The region is accessible via the Burnside River or other routes by Inuit, was clearly used by Palaeo-Eskimo people, and has been exploited seasonally for several millennia by a succession of aboriginal groups from the south.

The sites found in the region provide archaeological evidence of how these people would have used the land. For example, Gordon (1996) paints a picture of large bands of Taltheilei people coming north from the tree line, splitting up on the tundra into smaller family groups to follow small subherds of caribou from spring until late summer. This may have been the pattern between spring and late summer in the Rockinghorse Lake area. Here, caribou aggregates may have been too small to justify amassing large numbers of people, and key caribou crossing locations such as are found on major rivers and large lake narrows are rare in the Monopros area, but a few families would have been likely to find sufficient resources at large and small lake crossings, around the shores of lakes, and when the caribou were milling (Metcalf 1978) or loitering in good grazing areas (Jacques Whitford 1998). The clustering of several sites on eskers and at key locations around the lakes in surrounding areas suggests that several families or family members may have occupied strategic points at the times when migrations were expected, so that larger areas and more directions were monitored.

Without the benefit of firearms, the people who occupied the sites described in this report would have used other means to acquire necessary resources, such as building stone fish weirs, spearing caribou swimming across lakes from birchbark canoes and skin kayaks, possibly building drive lanes of cairns or *inuksuit* to direct the movement of herds to a preferred hunting location, snaring hares and game birds, and gathering berries. But the key to survival would have been a sound knowledge of the area's ecology, the system of adaptation by the region's wildlife to local conditions, and seasonal changes, coupled with suitably adapted technology.

5.4 Potential Project Impacts and Impact Management Options

Because of the slow rate of soil development and general lack of vegetation, archaeological sites in the study region are mostly visible on the surface. Subsurface deposits may occur within the upper few centimetres of any accumulated soil, except in the rare circumstances where windblown sand has created deeper layers of overburden such as in sand dunes. Even then, the wind also acts to expose deposits.

Exploration activities as currently planned by Monopros, and procedures as described below for site identification and avoidance, are not expected to result in any major negative effects on archaeological resources. In the event that sites are present in the immediate vicinity of any exploration activities such as till sampling and geophysical surveying, they could be affected by damage to or displacement of archaeological materials during excavation of till samples, displacement of cobbles or boulders from a tent ring, cache, or other structures during placement of survey markers, or disturbance of archaeological materials by pedestrian and helicopter activities. The effects of known project activities on archaeological resources are usually predictable, given accurate project description details, and adequate time and resources for an archaeological assessment of the project areas.

Following the results of the 1998 and 1999 surveys at Kennady Lake, north of the East Arm of Great Slave Lake, it is apparent that none of the activities undertaken by Monopros over the past two years have resulted in disturbance of any known sites. However, past exploration activities by others have resulted in disturbance at several sites, including one adjacent to Kennady Lake where a drill rig had been operated and precontact materials have most likely been displaced; one south of Kennady Lake where a till sample pit had been dug within the site boundaries; and another southwest of Kennady Lake where a survey marker had been placed and weighted down with boulders which may have been removed from a tent ring and some of which had disturbed a concentration of quartz flakes; in addition, a till sample had been dug at this site. Several old drill rig sites were noted in other locations. Placement, operation, and cleanup of these sites have some potential for disturbance of any archaeological remains in the vicinity.

Because of Monopros's commitment to heritage preservation, adherence to their Environmental Policies, and the conduct of archaeological inventories during the exploration stage, no activities connected with expansion of the Canamera camp at Kennady Lake by Monopros, extraction of

aggregate from a local esker, use of a winter haul route for excavated esker material, construction of tailings disposal berms, till sampling, or drilling appear to have caused any direct impacts on known archaeological resources.

The potential concern described by Jacques Whitford (1998) that surface artifacts left *in situ* were at some risk of being collected was partially borne out when a complete and very visible biface was removed by an elder from a site recorded in 1998. However, this artifact had evidently been well cared for over the winter and is now part of the collection that will be submitted to the PWNHC, where a determination will be made as to its final disposition. Monopros is committed to site conservation and will not condone any unauthorized collecting by its agents. Figure 5.1 represents a draft set of procedures that were provided to geological field crews at Kennady Lake in 1999, and have been modified for use at Rockinghorse Lake.

In the event that sites are found on the Monopros Rockinghorse property during the exploration stage, mitigation can include several options. Avoidance is usually the preferred course, if practicable. Thus, if an archaeological site is noted in the vicinity of a till sample location, an alternate sample site should be selected, preferably at least 30 m from any observed scatter of quartz, boulders which may signify a habitation structure, or other likely feature left, made or used by humans. Each site reported should be evaluated by a qualified archaeologist. All archaeological sites will be reported to the relevant authority, and recommendations made for any required mitigation. It should be noted that in the planned March 2000 drill program, only lake-based targets will be selected.

6.0 RECOMMENDATIONS

6.1 Archaeological Viewpoint

Several recommendations are provided which, if adopted, will help to ensure the identification, better understanding and, for the most part, continued integrity of any sites present in the exploration area. The ability to predict site locations will also be enhanced, thus minimizing the potential for future, inadvertent disturbance of sites during activities not governed by land use and other permits. Recommendations presented for consideration include:

Figure 5.1 Procedures for Recording/Avoiding Suspected Archaeological Sites

Most of the archaeological sites found around the Rockinghorse Lake property have been situated on flat, deflated eskers, knolls, terraces and hilltops, typically close to water and with a good view. Many suggest that watching for and hunting caribou was the main focus of activity at these sites and in this area, most likely in late summer. This is supported by the fact that few of the sites found contain hearths or heavy tent rings, which might indicate occupation at other times of year.

Most of the sites contain a scatter of quartz or quartzite chipping flakes, where hunters probably sat making or resharpening tools such as knives and spear points while waiting. The material is locally available in bedrock veins or as blocks, chunks and cobbles scattered in the till.

If any suspected sites are encountered during field activities, the following should occur. If time is short, minimum information should include site coordinates:

- Flag the site for avoidance and later inspection by the company's archaeologist.
- If possible, avoid any disturbance at the site; if disturbance is necessary, try to confine the activities to a part of the site where no quartz or quartzite or boulder arrangements which may be archaeological in nature are situated.
- Check for evidence of a tent ring (roughly circular arrangement of boulders which would have held down skin tent walls or pegs) or hearths; if present, sketch, and avoid.
- Record the location by GPS, by elevation, and with a dot and reference number on a map (and aerial photo if available). Describe the location, local environment (blowout, knoll, hilltop, bedrock, *etc.*). Photograph the suspected archaeological material and provide a setting shot which will help in relocation. Add your name and contact numbers to the report. If you have a copy of a site record form, feel free to fill one out in as much detail as you like or have time for.
- Send a report on the site or sites to Shirley Standafer Pfister at Monopros, who will forward it to the firm's archaeologist for analysis.

At some point in the future, the archaeologist will visit the sites and verify the attributes as reported. Many thanks for your cooperation.

Shirley Standafer Pfister
Monopros Limited
Yellowknife, NT
Tel: (867) 873-4530
Fax: (867) 873-4532
E-mail: spfister@monopros.ca

Callum Thomson
Jacques Whitford Environment Limited
Calgary, AB
Tel: (403) 781-4142 (office)
Tel: (403) 212-1360 (home)
Fax: (403) 263-7116
E-mail: cthompson@jacqueswhitford.com

- wide distribution and relatively high density of identified sites around the Monopros exploration area (58 known sites within 30 km of the study area boundary) indicates that moderate to high potential exists for the presence of sites within the Monopros exploration area, and future inadvertent disturbance by till sampling, any land-based drilling and other related activities. It is recommended that a preliminary heritage resource inventory be conducted when practicable to identify the range of site types and preferred locations within a selection of environments in the study area. This will provide the ability to better understand precontact and historic site location preferences, predict site locations, and identify sites. Areas of particular interest will generally include headlands, peninsulas, islands, and shorelines of Rockinghorse Lake, especially where caribou crossings might be expected to occur; the shores of the long lakes north and northeast of Rockinghorse Lake and northwest of Contwoyto Lake, especially where caribou crossings might be expected to occur; a selection of smaller lakes, especially where caribou migrations are known to occur and where travel routes connect larger lakes and rivers; eskers and associated esker fans, terraces, and lake shores; potential fishing locations; locations possibly used as fords or canoe crossings; quartz veins; and a selection of areas where eskers, blowouts, knolls, hill tops and level bedrock outcrops provide suitable locations for camps, lookouts, and workshops;
- permission from affected aboriginal communities and agencies to access any existing reports or files on traditional knowledge of the region, to assist in identification of any sites or locations of potential interest;
- identification by a Monopros geologist of any areas of known or potential quartz or quartzite outcrops or veins; and
- documentation of any sites found during previous exploration activities, including acquisition of GPS coordinates and elevations, and confirmation that no project-related disturbances have occurred.

In summary, the preparation of a preliminary site inventory and baseline assessment would greatly assist Monopros in its planning, and would assist Nunavut regulators in their site protection mandate. Other heritage protection measures that should continue include:

- personnel conducting project activities, especially till sampling on eskers, kames, deflated terraces, and other similar features, should carefully inspect the target area and avoid any features which may be archaeological in nature, pending an archaeological assessment;
- project field personnel driving snowmobiles should avoid travel on eskers except where snow covered;

- any sites found by project personnel should be reported immediately to Shirley Standafer Pfister, who will arrange for verification and, if appropriate, notification to the Nunavut regulator. The sites should be marked for avoidance and protected pending approval for continuation of project activities in the vicinity;
- the existing Monopros corporate commitment to site conservation should be expanded to include a set of policies and procedures to be adopted by Monopros workers and subcontractors for protection and avoidance of known sites, and reporting of new sites, and an illustrated guide for site recognition;
- in the event that exploration activities increase or development such as road or airstrip construction is planned in future, a project-specific heritage resource protection plan should be prepared to help identify areas and issues of concern and ensure appropriate response procedures are followed; and
- an education program should be developed and delivered at the start of each field season to ensure that camp and field personnel are aware of Monopros policies and Nunavut regulations regarding heritage resources.

6.2 Aboriginal Viewpoint

Monopros intends to visit potentially affected communities before project start-up, and will thus be soliciting valuable local knowledge about the project area. But as no contact has been made yet by the consulting archaeologist with the regulators and local residents, the findings, conclusions, and recommendations contained within this report are therefore tentative, and subject to additional input.

The relatively high density of sites found in the near vicinity of the exploration area and the likelihood that elders and other community residents may be able to interpret site function, seasonality, and cultural affiliation stresses the importance of direct communication and the opportunities for acquiring valuable information on land use, resources, and other cultural aspects. It is recommended, therefore, that:

- this report be reviewed by community residents and comments made on land use information based on traditional knowledge, as a means of ensuring that the archaeological heritage is understood, preserved, or accorded other appropriate mitigation;
- representatives from local communities become involved in any future archaeological investigations, including provision of information on traditional land use, and identification of local place and feature names, and the stories that accompany them; pre-season training; and participation in the field and analysis processes; and

- as suggested by previous researchers (*e.g.*, Fedirchuk 1996; Thomson 1999), any collection of artifacts from the project area be preceded by an agreement among the regulators in Nunavut and Hull, the relevant aboriginal community(ies), and Monopros over the disposition of the artifacts. Construction and maintenance of new storage, exhibit and study facilities in local communities is an option which could be explored.

If Monopros decides to adopt the field inventory recommendation described above for the 2001 summer season, consultation will be initiated with the affected communities, and design of a suitable field program and research permit application will be completed prior to the Nunavut deadline of February 28 for 2001 investigations.

6.3 Project Activities

As the exploration activities conducted by Monopros in 1998-1999 at other properties do not appear to have affected any archaeological resources, it is our professional opinion that, provided that the recommendations as outlined above are adopted, exploration-related activities as described above for the Rockinghorse Lake property could proceed with little likelihood of disturbance to heritage resources. If expansion of exploration activities is planned in future, or if Monopros conducts a preliminary inventory to identify the predicted range of site types and locations, an initial investigation can be directed at a better understanding of traditional and precontact land use in the area.

7.0 REFERENCES

7.1 References Cited

- Andrews, Tom. 1998. Report of an Archaeological Survey of the Tundra Ecosystem Research Area, Daring Lake, NWT. Prince of Wales Northern Heritage Centre, Permit 95-807.
- Bostock, H.S. 1970. Physiographic subdivisions in Canada. In: *Geology and Economic Minerals of Canada*, edited by R.J.W. Douglas. Geological Survey of Canada, Canadian Geological Report No. 1: 10-30.
- Bussey, Jean. 1999. Five Years of Archaeological Research for BHP Diamonds Inc. at the Ekati Diamond Mine, NT, 1994-1998. Prepared for BHP Diamonds Inc., Yellowknife.
- Damas, David. 1984. Copper Eskimo. In *Handbook of North American Indians*. Volume 5, edited by David Damas, pp. 397-414. Smithsonian Institution, Washington.
- Damkjar, Eric. 1994. Heritage Resource Impact Assessment, Metall Mining Corporation Proposed Izok Project, District of Mackenzie, NWT. Metall Mining Corporation, Edmonton. Permit 93-752.

- Fedirchuk, Gloria J. 1996. Heritage Resource Studies, Lytton Minerals Limited Jericho Project. Canamera Geological Ltd., Vancouver. Permit 96-836.
- Fedirchuk, Gloria J. and Wendy Unfreed. 1999. Archaeological Impact Assessment, Tahera Corporation Contwoyto Pipe Project, Nunavut. Archaeological Survey of Canada Archives Ms. 4167. Permit Nunavut 99-1.
- Gillespie, Beryl C. 1981. Yellowknife. In Handbook of North American Indians, Volume 6, Subarctic, edited by June Helm, pp. 285-290. Smithsonian Institution, Washington.
- Gordon, Bryan C. 1975. Of Men and Herds in Barrenland Prehistory. National Museum of Man Mercury Series, Archaeological Survey of Canada Paper 28, Ottawa.
- Gordon, Bryan C. 1976. Migod – 8,000 years of Barrenland Prehistory. National Museum of Man Mercury Series, Archaeological Survey of Canada Paper 56, Ottawa.
- Gordon, Bryan C. 1985 Report on an archaeological survey of the upper Burnside River, Northwest Territories (report title not available). Archaeological Survey of Canada Archives Ms. 2494, 2499.
- Gordon, Bryan C. 1996. People of Sunlight, People of Starlight. Barrenland Archaeology in the Northwest Territories of Canada. Canadian Museum of Civilization Mercury Series, Archaeological Survey of Canada Paper 154, Hull.
- Harp, Elmer Jr. 1961. The archaeology of the lower and middle Thelon, Northwest Territories. Arctic Institute of North America, Technical Paper 8, Montreal.
- Hearne, Samuel. 1911. A journey from Prince of Wales's Fort in Hudson's Bay to the northern ocean in the years 1769, 1770, 1771, and 1772, edited by J.B. Tyrell. The Champlain Society, Toronto.
- Helm, June. 1981. Dogrib. In Handbook of North American Indians, Volume 6, Subarctic, edited by June Helm, pp. 291-309. Smithsonian Institution, Washington.
- Jacques Whitford Environment Limited. 1998. Archaeological Overview Assessment of the Proposed 1998-99 Winter Construction areas, Kennady Lake (Gacho Kué), District of Mackenzie, NT. Report prepared for Monopros Limited, Yellowknife.

- Kroker, Sid, 1996. Ulu mine project archaeological impact assessment phase I and II. Quaternary Consultants Limited. Consultant's report on file, Prince of Wales Northern Heritage Centre, Yellowknife. Permit: 96-831.
- Metcalf, Frank. 1978. Rawalpindi River Archaeological Survey, 1978. Report on file, Prince of Wales Northern Heritage Centre, Yellowknife.
- Noble, William C. 1981. Prehistory of the Great Slave Lake and Great Bear Lake region. In Handbook of North American Indians, Volume 6 Subarctic, edited by June Helm, pp. 97-106. Smithsonian Institution, Washington.
- Thomson, Callum. 1999. Heritage resource inventory, mineral exploration area around Kennady Lake (Gahcho Kué), District of Mackenzie, NT. Report prepared by Jacques Whitford Environment Limited for Monopros Limited, Yellowknife. Permit 99-887.
- Wright, James V. 1972. The Shield Archaic. National Museum of Man, Publications in Archaeology 3, Ottawa.
- Wright, James V. 1976. The Grant Lake Site, Keewatin District, N.W.T. National Museum of Man Mercury Series. Archaeological Survey of Canada Paper 47, Ottawa.
- Wright, James V. 1981. Prehistory of the Canadian Shield. In Handbook of North American Indians, Volume 6 Subarctic, edited by June Helm, pp. 86-96. Smithsonian Institution, Washington.