

Local Economic Benefits from Two Advanced Gold Exploration Programs in the Kivalliq Region of Nunavut

A case study for Natural Resources Canada

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990401NWB2MEL meliadine Case Study.

Background

The conventional model by which resource projects in remote locations are often viewed holds that the communities and social units most negatively impacted from resource exploration and development ventures are the ones that benefit least from the activity. The exploration histories of two Keewatin gold discoveries - Meadowbank and Meliadine - provide an opportunity to test the hypothesis that is central to the above model in the context of Canada's newest political territory - Nunavut and the Nunavut Land Claims Agreement.

The objective of this study is to document community participation by way of contracting, supply and employment in each of the two exploration ventures and so determine the level of economic activity that is generated through the early to late stages of mineral exploration projects. The history of exploration in the Meadowbank area began in 1979 with regional scale prospecting for uranium by Comaplex Minerals in the Baker Lake area. Similar to the history of many mineral discoveries, these initiatives, over time, led to the recognition of gold potential in the area. For the next 10 years regional scale exploration was carried out by Comaplex and several partners and eventually a much smaller area with significant potential was outlined. The resulting Meadowbank project is today 100% owned by Cumberland Resources and contains a pre-feasibility level resource of 1.73 million ounces. Exploration at Meliadine began in 1989 with Comaplex and Asamera who were joined by Rio Algom for a short period. WMC International arrived in the region in 1995 when it agreed to earn an interest in the western half of the Meliadine project from Comaplex and Cumberland. Since 1995 WMC has funded \$26 million in exploration expenditures and has outlined a major new gold resource in Nunavut.

Documentation

Two streams of information were examined to document the exploration effort and the level of community participation. Assessment reports filed with DIAND were reviewed to obtain a historic profile of the type and overall amount of exploration work undertaken in the early days of the programs. The data presented below for the period prior to 1995 are based on assessment report data and data gleaned from unpublished files and reports with Comaplex Minerals in Calgary. Some values (and indicated as such) are interpolated estimates derived from examining the overall field expenditures and deriving local expenditures based on current operating and unit costs. For recent activity (1995 - 1998 included) Cumberland Resources, Comaplex Minerals and WMC International, provided data directly from private records in response to data set templates provided (see Appendix 1).

Data provided by the exploration program operators did not necessarily provide for the names of individual companies or employees in order that a degree of confidentiality could be maintained. It was therefore difficult to develop a rigorous data set on the secondary economic effects of the program. In order to examine this aspect, follow-up telephone contact was made with the primary contractors in Rankin Inlet and Baker Lake to assess the secondary employment and economic spin off activity generated in serving these exploration programs.

core for assays. Cumberland changed that practice when it took over the exploration program in 1995 and today all expediting and freight is handled in Baker Lake. Expenditure data for 1979 to 1994 (Table MB1) are estimates to provide a basis for comparison to today's practice.

Table MB1. Local Expenditures at Meadowbank^{1,2} Joint Venture* 1979-1995 (estimates)

	1983-1985	1986	1987	1988	1989	1990	1991	1992-94
Wages	no data	40,000	25,000	no data	30,000	50,000	75,000	no data
Expediting/Transport	no data	55,000	30,000	no data	36,000	60,000	90,000	no data
Fuel	no data	75,000	40,000	no data	48,000	80,000	120,000	no data
Total (Kivalliq) ¹		170,000	95,000		114,000	190,000	285,000	
Cumulative (Kivalliq)		170,000	265,000		379,000	569,000	854,000	
Cumulative (Program)					1,500,000			5,000,000

*Operators 1979-1985 Comaplex 1990 Agnico-Eagle
 1986 Asamera 1991 Agnico-Eagle
 1987 Asamera 1992 Asamera
 1988 Asamera 1993 Cumberland
 1989 Agnico-Eagle 1994 Cumberland

Note: The Meadowbank Joint Venture was started in 1985.

Note: Comaplex managed the overall exploration programs for Asamera and Agnico-Eagle from 1986 to 1992.

¹ Expenditures pre 1989 include exploration other than at Meadowbank.

² Drilling at Meadowbank began in 1987.

median of 382 from a range of 28 - 1285 hours. The 3 employees with the most hours were, in descending order, cook's helper, core splitter / general camp duties, and core splitter. In addition to task specific training, 4 persons received WHMIS, TDG, and fuel spill management training in 1998. The hours of work for persons with fair and poor performance ratings were consistently below the median.

The data above does not include the work of local employees for the drilling contractor. Two drillers helpers from Rankin Inlet were employed by the drilling contractor in 1998.

Secondary Benefits

The secondary benefits by way of employment and increasing local capacity were examined by telephone interviews with the Baker Lake businesses involved. Expediting and freighting services contributed to the seasonal employment of 6 persons in Baker Lake in 1998. Provisioning the camp by a local grocery store does not stimulate increased employment as the camp needs can be served by a normal staff complement.

Meliadine Exploration History: 1987 - 1995

Some of the lands which currently comprise the overall Meliadine gold exploration effort were held by the Rankin Nickel Syndicate between 1969 and 1972. Both airborne and diamond drilling were conducted in that period which resulted in discovery of gold in the area. Results of this exploration work reinforced some of the results in the airborne survey done by the Geological Survey of Canada in 1965 which attracted the attention of exploration geologists with Comaplex and Asamera who visited the area in 1987 and staked the first claim. Since 1989, subsequent claims and prospecting permits have been added to the original property.

In 1990 Asamera undertook an exploration program in the central portion (Discovery Zone) of the overall Meliadine area. Subsequently, Asamera drilled 1,116 m in 1990, 4,597 m in 1991, and 4,236 m in 1992. In 1993 Cumberland Resources Ltd. acquired all of Asamera's interests in the Meliadine area and became a 50% partner and operator of the joint venture with Comaplex.

Rio Algom undertook an exploration program on a portion of the western lands of the Meliadine area by joint venture agreement in 1991. They drilled 728 m in 1991 and 2,559 in 1992. Rio Algom dropped its interest in the Meliadine western lands in 1993.

Comaplex managed the overall exploration program for Cumberland in 1993 and 1994. Initial programs concentrated on the western lands where drilling totalled 1,240 m in 1993 and 5,548 in 1994.

WMC International entered the western half of the original property in 1995 by a joint venture agreement with Comaplex and Cumberland. As operator of the Meliadine west project, WMC has outlined several large new gold deposits. Exploration on the eastlands continues under the Comaplex (50%) Cumberland (50%) joint venture.

Table ML2. Local expenditures at Meliadine East Joint Venture* 1995-1998

Activity / Year	1995	1996	1997	1998	Total
Wages	12,324	39,401	37,248	17,881	106,854
Expediting/Transport	84,435	94,766	67,705	47,407	294,313
Food/Accommodations	37,640	44,172	33,024	10,489	125,325
Fuel	27,082	130,626	46,380	36,229	240,317
Camp/construction	55,897	7,539			63,436
Land Use Fees	830	125			955
Equipment	5,830	3,816	5,097	4,003	18,746
Other local costs			2,837	5,758	8,595
Total (Kivalliq)	224,038	320,445	192,291	121,767	
Total (Program)	1,250,232	1,415,157	1,018,318	482,214	
Cumulative (Kivalliq)	224,038	544,483	736,774	858,541	
Cumulative (Program)	1,250,232	2,665,389	3,683,707	4,165,921	

* Operator: 1995 Cumberland managed by Comaplex
1996 Cumberland managed by Comaplex
1997 Cumberland
1998 Cumberland

Meliadine West : 1995 - 1998

In the summer of 1995 WMC drilled 33 holes for 7,172 m. The mineralization of previous drilling was confirmed and two new targets, the Fox and Wolf zones were discovered. In 1996 WMC drilled 77 holes for 18,200 m. All previous gold bearing zones were confirmed. Also, more mineral claims were staked in 1996. The exploration area was enlarged by adding approximately 8,000 ha of federal ground and 40,000 ha of Inuit owned ground.

The 1997 exploration effort concentrated on the Fox, F, Wolf, and Pump gold bearing zones with a lesser effort put into finding new sources of gold mineralization. 103 holes were drilled in these zones for 28,992 m while 19 holes were drilled in the outlying lands for 3,828 m.

In February 1998 the core area around Meliadine West was selected for a pre-feasibility study to assess the profitability of establishing a gold mine. Ore resource estimates were completed on the basis of the 1995, 1996, and 1997 drilling results. The combined resource in the Fox and F Zones was estimated to be 3.29 million ounces. While the conclusions of this study were encouraging, it showed that more gold must be found to assure an ongoing profit in today's global gold market. Resource estimates completed following the 1998 field program revised the inferred resource in place to include more than 6 million ounces of gold in the Meliadine West Gold Project.

Primary Economic Inputs to Rankin Inlet

Table ML3 summarises the direct dollar contribution by the Meliadine West exploration program to the local economy by WMC since it began in 1995. It also shows the cumulative dollar value of the program.

Table ML5 Hours of work by function at Meliadine West, 1995 - 1998

Activity	1995	1996	1997	1998
Core splitter	957	3,779	5,553	4,329
Geo. Asst.			923	647
Prospector				762
Camp services	203		7,292	9,128
Survey assistant				1,007
Cook's helper		230	1,939	1,321
Labourer		441	672	
Construction			64	176
Environmental Asst.				3,564
Total	1,159	4,450	16,442	20,932
range	67.5-256	34-1090.5	46-2133	76-2958
average	193.2	296.7	747.3	615.6
median	202.5	230	656.5	541

The regional exploration program was expanded in 1998 by establishing a new camp at Peter Lake. Prospecting, mapping and drilling were undertaken with 4,418 m of diamond drilling completed. Nine local persons were employed as camp personnel and core splitters. The expenditure data is shown in Table ML6.

Table ML6 1998 Expenditures by the Peter Lake exploration program

Wages	33,600
Food	29,460
Hardware-Building Supplies	87,345
Office Supplies	2,370
Helicopter	282,300 *
Fuel	78,980
Expediting	13,460
Overland Transport	18,450
Barge	25,944 *
Total (Kivalliq)	571,909
Total (Program)	2,255,000

*services provided by Inuit Owned Companies (Helimax - Nunavut, and NTCL) included above.

Secondary Benefits

The secondary benefits by way of employment and increasing local capacity were examined by telephone interviews with the Rankin Inlet businesses involved.

Expediting services contributed to the employment of 2 persons for 5 months annually since 1995; freighting services require the addition of 4 persons for 4 months, and provisioning the camp by a local grocery store contributed to the employment of 2 additional persons for 5 months since 1995. Also, the volume and range of food items required by the exploration camp allows the grocery store to increase the fresh food items that the store can offer the community as a whole.

example, for local suppliers to provide core racks and core boxes? It is this level of scrutiny that may provide some cost effective growth for local contractors and suppliers.

New capacity within the region to serve early to mid stage mineral exploration might be developed in helicopter services by way of joint-venture agreements with southern operators.

The next stage of exploration, test mining and bulk sampling, at both sites will require a new set of equipment and skills: heavy equipment and operators. Both represent significant opportunities for local contractors and staff who train to operate the needed machinery efficiently and safely. The data presented in this study shows a strong presence of local businesses and employees in the ongoing mineral exploration effort. The working relationships developed with the local business community in the course of the exploration to date is a sound foundation on which to build the service sector in the region that can continue to serve exploration programs as well as grow with the minerals industry from exploration to mining.

The recent history of gold exploration in the Kivalliq Region of Nunavut and the continued exploration and expenditure is a statement of confidence by Comaplex Minerals in the mineral endowment of the lands there. This confidence is shared by both Cumberland Resources and WMC International, parties that continue to finance the projects and assess their commercial potential. The data in this study show that remote communities and mineral explorers can work together for mutual benefit. There is every indication that the working relationship will grow as the mineral industry in the Kivalliq region matures and begins mining.

Appendix 1. Local employee documentation template

Employee name / identification _____

Home community _____

Pay period Start date _____ End date _____

Hours worked _____

Duties performed _____

Training received _____

Reportable incidents (both positive and negative):

attitudes _____

performance _____

work habits _____

reliability _____

safety _____

Appendix 2. Local business participation profile template

Name _____

Ownership residence - Local Y / N; elsewhere

(specify) _____

Community _____

Services supplied

(specify) _____

Goods supplied (specify) _____

Is an alternate supplier available? locally - Y / N

southern Canada - location _____

Total number of transactions _____

(month) _____ (year) _____

Reportable incidents (both positive and negative):

quality _____

price _____

reliability _____

safety _____

capacity _____

Total value for the year _____