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SURFACE AND SUBSURFACE OWNERSHIP
IN THE REGIONAL COPPER-NICKEL
STUDY AREA

Level I Report

May, 1978

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Minnesota Environmental Quality Board
Regional Copper-Nickel Study

May, 1978

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ABSTRACT

It is necessary to examine the ownership of land and minerals in the Regional Copper-Nickel Study Area (Study Area) to forecast the availability of resources needed for mining. The federal government controls over one-third of the 505,700 hectares of land area in the Study Area. Nonpublic interests hold one half, and the remaining two fifths are divided evenly by state and county ownership.

Due to the complexity of mineral, or subsurface ownership records, data was gathered only for areas that would immediately be affected by iron ore and taconite mining, or copper-nickel mining development. Minerals in areas adjacent to the Biwabik Iron Formation and the Duluth Complex are claimed by the state and federal governments and nonpublic parties. Approximately 208,760 hectares or 40 percent of the subsurface area of the Study Area is claimed by one or sometimes all three classes of owners; federal, state, or private.

The mining of public lands and minerals follows multi-stepped procedures involving applications and recommendations from at least three federal agencies for federal mineral leases and prospecting permits, and a not so complex procedure for state of Minnesota mineral leases. There are presently eight active state copper-nickel leases, seven active state iron ore leases, and two active federal copper-nickel leases in the Study Area.

INTRODUCTION

It is necessary to examine the ownership of surface lands and minerals within the Regional Copper-Nickel Study Area (Study Area) in northeastern Minnesota to aid in forecasting future mining activities, mine placement, and impacts to the area (Figure 1). Within the Study Area, surface ownership is comprised of 34 percent federal, 13 percent state, 13 percent county, and 47 percent nonpublic (Table 1)(Figure 2). Mineral, or subsurface, ownership in the Study Area is much more complex due to situations involving severed and multiple mineral claims.

METHODOLOGY

Surface ownership data was collected for the entire Study Area using mapped information acquired from the Federal Bureau of Land Management (BLM), and plat maps for St. Louis and Lake counties from the respective County Assessors' offices. More detailed surface ownership data specifying even private mining company ownership was gathered for land adjacent to the Biwabik Iron Formation and the Duluth Complex under the assumption that lands located outside of these areas would not be directly affected by taconite mining expansion or copper-nickel mining development (Figure 3).

Due to the complexity of the subsurface ownership situation, data gathering was limited to the Duluth Complex and the Copper-Nickel Resource Area. This area is most relevant to our study because it will be the area most likely to be affected by new mining development. Subsurface information for the Copper-Nickel Resource Area was supplied by Clark Isle, Register of Deeds and Titles for St. Louis County.

All surface and subsurface information for the Study Area was coded by legal description for computer mapping by the Minnesota Land Management and Information System (MLMIS). The following maps are uniform representations of official information.

The development of mining in the Study Area involves the procurement of permits and leases to explore or mine federal or state minerals.

Information pertaining to federal prospecting permits, special use permits, surface, and mineral leases was supplied by the BLM and the U.S. Department of Agriculture Forest Service (USFS). The Minnesota Department of Natural Resources (MDNR)--Minerals Division supplied state mineral lease information.

FEDERAL LANDS--OWNERSHIP AND MANAGEMENT

Surface Ownership

Federal surface ownership in the Study Area is legally recorded at the St. Louis and Lake County Assessors' offices. Federal lands comprise 174,477 sq ha or 34 percent of the land in the Study Area. There are no unusual constraints in regard to the buying, selling, exchanging, or leasing of Federal land within the Study Area. Federal land originates from public domain, tax forfeiture, and acquisition (Figure 4).

Federal Special Use Permits

Nonfederal concerns must be granted a Special Use Permit before engaging in any surface activities on federal lands. A Special Use Permit may cover any type of surface operation including; road construction, road use, stockpiles, logging, building construction, occupancy, or gravel

excavation. Special Use Permits often accompany federal prospecting permits and mineral leases to regulate surface use and reclamation. These permits are administered by the USFS after review and recommendations have been submitted by the U.S. Department of the Interior Geological Survey (USGS).

A Special Use Permit is most often granted for conducting geophysical and geological surveys limited to surface operations. Reserve Mining Company, U.S. Steel, AMAX, Joseph Pucel, and Duval Corporation hold Special Use Permits for geophysical survey for approximately 25, 470 sq ha in the Copper-Nickel Resource Area. Special Use Permits are terminable by the USFS at any time.

Special Use Permit stipulations are often attached to federal prospecting permits. The most common stipulations used refer to timber sales and drilling (Appendix A).

Federal Surface Leases

Federal surface ownership has not in the past been an obstacle for mining concerns wishing to acquire surface use control. As an example, Lake Forest Enterprises, a land agent for Erie Mining Company, has submitted a final impact statement for a land-for-land exchange for intention to construct a clearwater reservoir on lands within the Superior National Forest. The statement is likely to be approved by the USFS (Meineke 1978). County and municipal governments are also included in mining related land sales, exchanges, and leases.

Subsurface or Mineral Ownership

For purposes of this study we have confined the examination of mineral ownership to areas most likely to be immediately affected by the expansion of taconite mining or the development of copper-nickel mining. Mineral claims adjacent to the Biwabik Iron Formation are primarily controlled by private concerns. However, there are 32 state iron ore leases adjacent to the Biwabik Iron Formation covering approximately 3028 ha or .5 percent of the total land in the Study Area. There are also over 5000 ha of undisputed federal mineral rights in the Copper-Nickel Resource Area. Another 15,806 ha of federal mineral claims are presently disputed or are claims on a 16 ha parcel shared by the federal government with the state of Minnesota or private parties (Figures 5 and 6).

There are roughly 25,068 sq ha of disputed mineral rights in the Copper-Nickel Resource Area. Mineral claims are recorded most accurately by tax records. The tax on minerals in the state of Minnesota is \$.61 per ha per year. If one party claims the surface and minerals then this tax is paid as a property tax with 80 percent of the tax distributed to local governments and the remaining 20 percent to the federal government to be distributed to Indian Reservations in the vicinity. If more than one party claims subsurface rights, then more than 100 percent tax is paid.

Severed Mineral Rights

Severed mineral rights add more complications to subsurface ownership. In this situation the owner of the surface may not be the only party claiming the minerals for that same parcel. For example, one party may own the surface rights for a 40 acre or 16 ha parcel and mineral rights may be claimed not only by one other party, but often three other parties. Multiple claims often include the state and federal governments.

In cases of severed minerals each party pays a \$.61 tax on the percent of minerals claimed. With up to three parties claiming, 300 percent tax can be paid. This tax is distributed in the same manner as the property tax for minerals.

Federal Mineral Leasing Practices

To prospect for or extract minerals a party must make agreements with the owners of the surface and subsurface rights. The BLM is the official leasing agent for all federal lands covered by the Leasable Minerals Act. Parties desiring to prospect must first apply to the BLM. The application must specify exact locations and types of mineral groups for which the applicant desires to prospect. The USFS administers National Forest lands within the Study Area, and are integral in the decision-making process (Figure 7).

Procedure--The BLM, after receiving formal applications, consults the USGS and the USFS. The USGS is asked to recommend action toward approval or disapproval and attach any specific stipulations to the permit. The USGS is also asked to determine if the applicant proposes a reasonable or unreasonable method of exploration. The USFS must insure that the permit, if granted, will accommodate the mineral lease laws governing public domain and acquired lands. Both laws require that the USFS, by authority of the Secretary of Agriculture, give consent for any land or mineral use in the Superior or Chippewa National Forests in Minnesota. The USFS may also attach any special stipulations necessary to protect any resource values. The USFS also conducts a search to determine official owner status of the tracts for which an application has been filed. An example of standard and special stipulations attached to prospecting permits are listed in Appendix A.

The BLM considers the submitted recommendations and acts on the application. After a prospecting permit is granted and before actual prospecting can begin the prospecting party must submit an operating plan. The BLM, USGS, and USFS may add any necessary modifications to the operating plan for optimum prospecting efficiency and resource protection. These may include allowable axle weight over roads within the prospecting area, logging, and construction restrictions. The USGS is required to: 1) approve or disapprove the operating plan; 2) verify the logic of the plan; and 3) insure that the plan will sufficiently explore all mineable resources. Final action is again decided by the BLM. If the operating plan is approved, authorized work may commence only after the \$.61 per ha rent is paid. This process, from date of application to date of final approval, may span a few months to five years. There are to date, seventeen federal prospecting permit applications pending approval.

Federal Mineral Lease Application--After the land under prospecting permit has been worked and proves to hold valid mining potential the prospecting party may apply to the BLM for a mineral lease. The USGS and USFS are consulted by the BLM in much the same procedure as is involved in the processing of prospecting permit applications (Figure 8). A lease allows the lessee to extract, test, process, and market the minerals from the area as stated in the lease. Additional rent payment must be agreed upon by the BLM and the lessee. The lessee must also pay a royalty as defined in each lease on all minerals extracted and processed. The United States has the option to reserve certain mineral rights. Minerals reserved usually include coal, oil, gas, and other minerals essential to the production of fissionable material

Federal Preferential Rights Leases--Presently nine preferential rights lease applications have been filed for lands within the Study Area. Such an application is submitted after a party has sufficiently explored and has made valuable mineral discovery on the land for which a lease is sought. The expired prospecting permit protects a party's right to a preferential decision if a second party applies for the same tracts. Except for environmental concerns, the BLM usually finds no reason to deny a preferential rights lease.

Six leases were applied for by Hanna Mining Company, Heart Lake Associates, Lloyd K. Johnson, and W.S. Moore Company in 1969 and 1972. These leases are still pending environmental assessment by the Lake States Office of the BLM. Only the International Nickel Company (INCO) holds federal mineral leases in the Study Area (A list of federal permits and leases is included in Appendix B.)

INCO has been granted two leases in the Study Area for copper-nickel and associated minerals. The United States reserves the rights to all oil, gas, oil shale, coal, phosphate, potassium, sodium, or sulfur for 1619 sq ha at the INCO Spruce Road site adjacent to the South Kawishiwi River (Figure 9).

STATE OF MINNESOTA LANDS-OWNERSHIP AND MANAGEMENT

The state of Minnesota controls approximately 68,728 sq ha or 13 percent of land in the Study Area. The MDNR issues surface leases for mining-related and nonmining surface activities in the Study Area.

State Mineral Leases

The procedure for prospecting, mining, or engaging in mining-related

activities for state-owned minerals is not as complicated as that for federally-owned lands and minerals. The MDNR Minerals Division serves as the administrating arm for state-owned minerals. The MDNR periodically makes parcels of land available for mining or prospecting. The MDNR will offer land and minerals for a bidding process if the Executive Committee approves the action (the Executive Committee is comprised of heads of state agencies). Interested parties then bid a percentage of the royalty; in mining cases, a percent of the market value of extracted minerals to be paid to the state. The lease is granted to the highest bidder. Unlike the multi-step process involved in securing a federal mineral lease, the granted state lease allows for prospecting, mining, and surface use after the appropriate environmental assessments have been filed and accepted (Figure 10).

A mining concern may request a state lease for mineral rights adjacent to land already leased or controlled by them. In this case the interested party can negotiate directly with the MDNR Minerals Division.

State Copper-Nickel Leases--In the Copper-Nickel Resource Area five companies hold ten state leases for copper-nickel mining. These companies include Duval Corporation, INCO, AMAX, Exxon, and Bear Creek (Figure 11). All companies are awaiting the outcome of this study to commence action on these leases.

State Iron Ore Leases--Iron ore and taconite mining take place adjacent to the Biwabik Iron Formation. The seven companies possessing and mining taconite or iron ore leases in the Study Area include U.S. Steel Corporation, Pittsburgh Pacific Company, Rhude and Fryberger, Incorporated,

Erie Mining Company, Reserve Mining Company, Eveleth Expansion Company, and Inland Steel Mining Company (Figure 12).

CONCLUSION

Presently, only parties involved in taconite and natural ore mining are engaging in extractive activities in the Study Area. INCO, the only company holding federal copper-nickel leases, has suspended operations and moved out of the Study Area until environmental assessments have been completed. Besides INCO's leases, there are nine federal mineral lease applications pending approval for copper-nickel mining in the Study Area. There are also four companies holding state copper-nickel leases in the Study Area, but these companies have either suspended or never opened operations within the Study Area. Approximately 7552 ha, or 1.4 percent of the Study Area is covered by pending or granted coppernickel leases. This area, added to the area covered by state leases and private control for iron ore mining, is approximately 62,856 ha, or 12 percent of the land in the Study Area.

It is difficult to estimate availability of lands and minerals in the Study Area due to the diversity of ownership and land classification, but the amount of land and minerals already under state and federal permits and leases illustrates a definite interest in the mineral potential of the Study Area.

APPENDIX A

Special Use Permit Stipulations

(only stipulations #18-30 were included with Permits. Stipulation #32 was also included in two cases)

18. Only so much of the surface shall be occupied, used or disturbed as is necessary for the purpose.
19. Payment at the usual rates charged in the locality for sales of National Forest timber and timber products ... No timber undergrowth, or re-production shall be unnecessarily cut, destroyed, or damaged.
20. Timber sale shall be in agreement with timber sale operator, permittee and District Ranger.
21. Employees shall be available for service in the extinguishment of fires within the particular locality. Employees shall be involved in the prevention and suppression of fires.
22. Stipulations attached hereto shall become a part of this permit.
23. Prior to drilling or any other subsurface exploration, the permittee shall provide the Forest Service with a written statement giving assurance that such activity is formally authorized by virtue of a lease or other agreement between the private mineral owner and the permittee.
24. No drilling on government owned minerals. (paraphrased).
25. All drilling locations and roads and trails on lands in this permit for purpose of reaching drill locations shall be approved in advance by the Forest officer in charge.
26. Caution will be exercised not to damage existing roads. Permittee will pay for repairs for damages if any.
27. Drill site area will be cleaned and rehabilitated as directed by Forest Service.
28. and 29. Repeat Standard Stipulations
30. No access is permitted of State Highway No. 1.
32. No occupancy or use of the surface within 400ft. of shoreline of any lake or stream is authorized without written approval of Forest Supervisor in conformity with principles of the Shipstead-Newton-Nolan Act of July 10, 1930 (16 U.S.C. 577).

STANDARD STIPULATIONS

Forest Service-USDA

Serial No. _____

National Forest

Applicant

The (lessee)(permittee) is notified and agrees:

That all work and any operations authorized under this (lease)(permit) shall be done in accordance with an approved operating plan on file with the Forest Supervisor (District Ranger) at _____, zip code _____. Such plans generally require a minimum of 45 days for Forest Service review. U.S. Geological Survey has final authority for approval.

The operating plan will contain information the Forest Officer determines reasonable for assessment of (1) public safety, (2) environmental damage, (3) protection for surface resources. The content of such plans will vary according to the location and type of activity and may contain the following:

- 1) Steps taken to provide public safety.
- 2) Location and extent of areas to be occupied during operations.
- 3) Methods to be used in the operations.
- 4) Size and type of equipment to be used in the operations.
- 5) Capacity, character, standards of construction, and size of all structures and facilities to be built.
- 6) Location and size of areas upon which vegetation will be destroyed or soil will be laid bare.
- 7) Steps which will be taken to prevent and control soil erosion.
- 8) Steps which will be taken to prevent water pollution.
- 9) Character, amount, and time of use of explosives or fire, including safety precautions which will be taken during their use.
- 10) Program proposed for rehabilitation and revegetation of disturbed lands.

Copies of all permits obtained from state or federal agencies which pertain to the work can be required. If archeological studies are required, they should accompany the plan.

The Forest Supervisor or his designated agent has the authority to temporarily suspend or modify these operations in whole or in part due to changing forest conditions such as high fire danger or other unsafe situations.

The (lessee)(permittee) must keep the District Ranger informed about the progress of the operation to the extent that is reasonably necessary to insure public safety. This is especially important with geophysical inventory and testing activities because of their mobile nature. The District Ranger will alert the (lessee)(permittee) to circumstances which may affect safe and efficient conduct of work activities.

The terms of this (lease)(permit) are considered violated if not done according to these stipulations. In disputed cases final approval or denial of operating plans can be expected no later than 180 days from the date submitted.

(Lessee)(Permittee)

SPECIAL STIPULATIONS

- 1) A prospecting plan must be submitted to and approved in advance by the Area Mining Supervisor or his authorized representative.
- 2) At least one adequate test well will be drilled at the location and depth approved by the Area Mining Supervisor or other comparable prospecting performed on lands during initial term of the permit to qualify for an extension.
- 3) To qualify for a preference right lease for all or part of the land, the permittee must drill at least 1 adequate test hole or perform comparable prospecting in accordance with the approved plan for exploration and make a discovery of a valuable deposit satisfactory to the Area Mining Supervisor on each tract of land under permit.

Permittee

Table 1. Surface ownership in the Study Area.

Owner	Area (hectares)	Percent of Total Land Area In Study Area ^a (percent)
Federal		
Boundary Waters Canoe Area	21,490	4
National Forests	152,972	30
Other Federal Land	16	.003
	<u>174,478</u>	<u>34</u>
State of Minnesota		
DNR-State Forests	37,652	7
DNR-Nonstate Forests	28,696	6
DNR-Water, Soil, Mineral	389	.07
Wildlife Management Areas	113	.02
Enforcement-Field Service	65	.01
DNR-Parks and Recreation	1,360	.2
MHD-Rest Areas	178	.03
MHD-Adjacent to Lakes	81	.01
MHD-Maintenance and Storage	16	.003
MHD-Gravel Pits	130	.02
Military Affairs	32	.006
Multiple State Agency	16	.003
	<u>68,728</u>	<u>13.4</u>
County		
Forests	16,065	3
Tax Forfeit	47,903	9
Multiple County	32	1
Partial Ownership	5,587	.006
	<u>69,587</u>	<u>13</u>
Joint Ownership		
Federal and State	486	.09
County and Federal	599	.1
State and County	113	.02
	<u>1,198</u>	<u>.21</u>
No Public Ownership	238,299	47

SOURCE: Base information from Bureau of Land Management and County Assessors' Records for St. Louis and Lake counties. Tabulations made from information as it was mapped in 16.19 hectare cells by MLMIS.

^aThe total area of the Study Area is 55,229 hectares. Percentages for this table were figured for land area only (excluding 100% water parcels) or 505,700 hectares.

Appendix B. Federal prospecting permits and leases

PROSPECTING PERMIT APPLICATION-PENDING PERMITS

SERIAL #	APPLICANT	FOR MINERALS	HECTARES	DATE FILED	LEGAL DESCRIPTION
ES-14974	AMAX	Cu-Ni	48.6	2/10/75	T.61N, R.12W, Sec. 35, E $\frac{1}{2}$ -NE $\frac{1}{4}$, NE $\frac{1}{4}$ -SE $\frac{1}{4}$
ES-14845	AMAX	Cu-Ni	70.8	7/23/75	T.59N, R.12W, Sec. 5 all except the SE $\frac{1}{4}$ -SE $\frac{1}{4}$
ES-14844	AMAX	Cu-Ni	585	1/31/75	T.60N, R.11W, Sec. 6, Lots 6,7, & 8 T.61N, R.11W, Sec. 30, Lots 1-17, N $\frac{1}{2}$, NE $\frac{1}{4}$, S $\frac{1}{2}$ -SE $\frac{1}{4}$, Sec. 31, Lots 1-15, NE $\frac{1}{4}$, N $\frac{1}{2}$ -SE $\frac{1}{4}$
ES-13700	L.K. Johnson	Cu-Ni, titanium, cobalt, gold, silver, and platinum	225.5	12/27/74	T.59N, R.12W, Sec. 5, Lot 1 & 2, SE-SW, S $\frac{1}{2}$ -NE, NE-SW, NW-SW, SW-SW, N $\frac{1}{2}$ -SE, SW-SE
ES-15194	Exxon	Cu-Ni	48.6	7/23/75	T.59N, R.14W, Sec. 25, NW $\frac{1}{4}$ -NW $\frac{1}{4}$, Sec. 27, SW $\frac{1}{4}$ -SE $\frac{1}{4}$, Sec. 34, NE $\frac{1}{4}$ -NW $\frac{1}{4}$
ES-15299	Erie	Iron ore and other solid minerals	32.4	9/16/75	T.59N, R.14W, Sec. 31, E $\frac{1}{2}$ -NE $\frac{1}{4}$
ES-15498	L.K. Johnson	Iron ore and other solid minerals	32.4	10/09/75	T.59N, R.14W, Sec. 31, NE $\frac{1}{4}$ -NE $\frac{1}{4}$, NE $\frac{1}{4}$ -SE $\frac{1}{4}$
(NOTE: ES-15498 Applied for same lands as ES-15299)					
ES-17028	Eileen Scully	Everything	16.2	2/11/77	T.61N, R.12W, Sec. 26, Lot 4, Sec. 25, SW $\frac{1}{4}$ -SW $\frac{1}{4}$
ES-17029	Eileen Scully	Everything	16.2	2/11/77	T.59N, R.14W, Sec. 27, SE $\frac{1}{4}$ -SE $\frac{1}{4}$

PROSPECTING PERMIT APPLICATION-PENDING PERMITS (contd.)

SERIAL #	APPLICANT	FOR MINERALS	HECTARES	DATE FILED	LEGAL DESCRIPTION
ES-16970	Paul Beaird, Leon Scully	Noniron minerals	64.8	10/06/75	T.61N, R.12W, Sec. 35, E $\frac{1}{2}$ -E $\frac{1}{2}$
(NOTE: 120 of these acres are under permit to Exxon, ES-12908)					
ES-15135	Exxon	Everything	16.2	5/19/75	T.61N, R.12W, Sec. 35, SE $\frac{1}{4}$ -SE $\frac{1}{4}$
ES-14836	INCO	Cu-Ni	592.9	7/23/75	T.61N, R.11W, Sec. 13, NE $\frac{1}{4}$ -NW $\frac{1}{4}$, SW $\frac{1}{4}$, N $\frac{1}{2}$ -SE $\frac{1}{4}$, Lots 1 & 2, Sec. 15, NE $\frac{1}{4}$ -NE $\frac{1}{4}$, W $\frac{1}{2}$ -NE $\frac{1}{4}$
ES-14831	INCO	Cu-Ni	952.2	7/23/75	T.61N, R.10W, Sec. 5, Lots 1-4, S $\frac{1}{2}$ -NE $\frac{1}{4}$, S $\frac{1}{2}$ -NW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 6, Lots 1-11, E $\frac{1}{2}$ -SW $\frac{1}{4}$, S $\frac{1}{2}$ -SE $\frac{1}{4}$, Sec. 7, Lots 1-4, NE $\frac{1}{4}$, E $\frac{1}{2}$ -NW $\frac{1}{4}$, E $\frac{1}{2}$ -NW $\frac{1}{4}$, SE $\frac{1}{4}$
ES-14832	INCO	Cu-Ni	1010.7	7/23/75	T.61N, R.11W, Sec. 21 all, Sec. 22 all, Sec. 27, NE $\frac{1}{4}$ -NW $\frac{1}{4}$, SW $\frac{1}{4}$, S $\frac{1}{2}$ -NW $\frac{1}{4}$; Sec. 28, N $\frac{1}{2}$ -N $\frac{1}{2}$, Sec. 29, NE $\frac{1}{4}$, Sec. 23, Lots 1-3, NW $\frac{1}{4}$ -NE $\frac{1}{4}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$ -SE $\frac{1}{4}$
ES-14834	INCO	Cu-Ni	736.9	7/23/75	T.61N, R.10W, Sec. 17 all, Sec. 20, W $\frac{1}{2}$ -NW $\frac{1}{4}$, Sec. 18, Lots 1-4, NE $\frac{1}{4}$, E $\frac{1}{2}$ -NW $\frac{1}{4}$, E $\frac{1}{2}$ -SW $\frac{1}{4}$, Sec. 19, Lots 1-3, NE $\frac{1}{4}$, E $\frac{1}{2}$ -NW $\frac{1}{4}$, NE $\frac{1}{4}$ -SW $\frac{1}{4}$, N $\frac{1}{2}$ -SE $\frac{1}{4}$
ES-14835	INCO	Cu-Ni	498.7	7/23/75	T.62N, R.10W, Sec. 29, NE $\frac{1}{4}$ -SW $\frac{1}{4}$, S $\frac{1}{2}$ -SW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 31, NE $\frac{1}{4}$, Lots 6-9, E $\frac{1}{2}$ -SW $\frac{1}{4}$, N $\frac{1}{2}$ -SE $\frac{1}{4}$, Sec. 32, W $\frac{1}{2}$ -NE $\frac{1}{4}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$
ES-14280	Hanna	Cu-Ni	25.6	11/13/74	T.62N, R.11W, Sec. 24, Lot 8, Sec. 26, NW $\frac{1}{4}$ -SE $\frac{1}{4}$

Appendix B (contd.)

LEASE APPLICATION

SERIAL #	LESSEE	FOR MINERALS	HECTARES	DATE APPLIED	LEGAL DESCRIPTION
M-21442 (Minn)	Erie	All	32.4	5/18/72	T. 61N, R. 12W, Sec. 35, E $\frac{1}{2}$ -SW $\frac{1}{4}$
M-15263	INCO	Cu-Ni	190.9	8/31/70	T. 62N, R. 10W, Sec. 18, Lots 1, 2, 5, 6, 7, 8, 9, SE $\frac{1}{4}$ -NE $\frac{1}{4}$; T. 62N, R. 11W, Sec. 24, Lot 1, Sec. 33, Lot 2
M-20418	Hanna	Cu-Ni	32.4	1/10/72	T. 64N, R. 11W, Sec. 31, NW $\frac{1}{4}$ -NE $\frac{1}{4}$, SE $\frac{1}{4}$ -NW $\frac{1}{4}$
ES-1979 (Minn) ES-0131	Lloyd K. Johnson	Cu-Ni	284.1	9/22/69	T. 59N, R. 12W, Sec. 2, SW $\frac{1}{4}$ -NW $\frac{1}{4}$, SE $\frac{1}{4}$ -NW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 3, SE $\frac{1}{4}$ -NE $\frac{1}{4}$, SE $\frac{1}{4}$ -SW $\frac{1}{4}$, NW $\frac{1}{4}$ -SE $\frac{1}{4}$, NE $\frac{1}{4}$ -SE $\frac{1}{4}$, SW $\frac{1}{4}$ -SE $\frac{1}{4}$, Sec. 4, Lots 3 & 4, SW $\frac{1}{4}$ -NW $\frac{1}{4}$
BLM-A-073725	Hanna	Cu-Ni	261.1	6/25/69	T. 61N, R. 11W, Sec. 6, Lot 21, Sec. 7, Lots 5 & 8, Sec. 8, Lots 1, 3, 4, W $\frac{1}{2}$ -NE $\frac{1}{4}$, NW $\frac{1}{4}$ -SE $\frac{1}{4}$, Sec. 18, Lots 10, 11, 21, 22, Sec. 19, Lots 1, 9, 10, 11, 17, 18, 19, SE $\frac{1}{4}$ -SE $\frac{1}{4}$, T. 61N, R. 12W, Sec. 25, Lot 1, Sec. 35, SE $\frac{1}{4}$ -SE $\frac{1}{4}$
BLM-A-073726	Hanna	Cu-Ni	447.7	10/1/69	T. 62N, R. 11W, Sec. 25, SE $\frac{1}{4}$ -SE $\frac{1}{4}$, SW $\frac{1}{4}$ -SE $\frac{1}{4}$, NW $\frac{1}{4}$ -SE $\frac{1}{4}$, NE $\frac{1}{4}$ -SW $\frac{1}{4}$, SE $\frac{1}{4}$ -SW $\frac{1}{4}$; Sec. 26, SW $\frac{1}{4}$ -SE $\frac{1}{4}$, SE $\frac{1}{4}$ -SW $\frac{1}{4}$; Sec. 33, NE $\frac{1}{4}$ -SE $\frac{1}{4}$, SW $\frac{1}{4}$ -SE $\frac{1}{4}$; Sec. 34, S $\frac{1}{2}$ -NE $\frac{1}{4}$, W $\frac{1}{2}$ -SE $\frac{1}{4}$, N $\frac{1}{2}$ -SW $\frac{1}{4}$; Sec. 35, N $\frac{1}{2}$ -NW $\frac{1}{4}$, N $\frac{1}{2}$ -NE $\frac{1}{4}$, NE $\frac{1}{4}$ -SE $\frac{1}{4}$, SW $\frac{1}{4}$ -SE $\frac{1}{4}$, NW $\frac{1}{4}$ -SW $\frac{1}{4}$ T. 61N, R. 11W, Sec. 4, Lots 1 & 2, SE $\frac{1}{4}$
BLM-A-073727	Hanna	Cu-Ni	130	6/23/69	T. 62N, R. 10W, Sec. 20, E $\frac{1}{2}$
M-12795	Heart Lake Associates	Cu-Ni, gold, silver, and platinum group	447.4	5/05/72	T. 61N, R. 11W, Sec. 1, Lots 3 & 4, S $\frac{1}{2}$ -NW $\frac{1}{4}$; Sec. 2, Lots 2, 3, 4, SE $\frac{1}{4}$ -NE $\frac{1}{4}$, SE $\frac{1}{4}$; Sec. 10, N $\frac{1}{2}$ -SW $\frac{1}{4}$ T. 62N, R. 10W, Sec. 3, Sec. 4, Sec. 5, SE $\frac{1}{4}$ -NW $\frac{1}{4}$
BLM-A-072150	W.S. Moore Company	Cu-Ni	145.8	6/25/69	T. 57N, R. 14W, Sec. 4, SE $\frac{1}{4}$ -SW $\frac{1}{4}$, Sec. 22, NW $\frac{1}{4}$ -NE $\frac{1}{4}$, SE $\frac{1}{4}$ -NE $\frac{1}{4}$, Sec. 2, SW $\frac{1}{4}$ -SE $\frac{1}{4}$, Sec. 27, NW $\frac{1}{4}$ -NW $\frac{1}{4}$, NE $\frac{1}{4}$ -NE $\frac{1}{4}$, Sec. 28, NE $\frac{1}{4}$ -SE $\frac{1}{4}$, Sec. 33, SE $\frac{1}{4}$ -NE $\frac{1}{4}$, Sec. 35, NW $\frac{1}{4}$ -SE $\frac{1}{4}$

Appendix B (contd.)

ACTIVE PROSPECTING PERMITS

<u>SERIAL #</u>	<u>COMPANY</u>	<u>FOR MINERALS</u>	<u>EFFECTIVE DATE*</u>	<u>LEGAL DESCRIPTION</u>
M-17754	Duval	Cu-Ni	5/1/72	T.61N, R.11W, Sec. 17, Lots 1 & 2
ES-12908	Exxon	Cu-Ni	10/01/77	T.61N, R.12W, Sec. 35, NE $\frac{1}{4}$ -NE $\frac{1}{4}$, SE $\frac{1}{4}$ -NE $\frac{1}{4}$, NE $\frac{1}{4}$ -SE $\frac{1}{4}$

Appendix B (contd.)

ACTIVE FEDERAL MINERAL LEASES

SERIAL #	LESSEE	FOR MINERALS	HECTARES	EFFECTIVE DATE	LEGAL DESCRIPTION
ES-01353	INCO	Cu-Ni	945.2	1/14/66- 6/01/86	T.62N,R.10W,Sec.19 all, Sec.20,SW $\frac{1}{4}$,Sec.29,N $\frac{1}{2}$, Sec.30,N $\frac{1}{2}$,Lot 3,NW $\frac{1}{4}$ -SW $\frac{1}{4}$ T.62N,R.11W,Sec.24,Lot 7,SE $\frac{1}{4}$ -SW $\frac{1}{4}$,S $\frac{1}{2}$ of SE $\frac{1}{4}$, Sec.25,N $\frac{1}{2}$,W $\frac{1}{2}$ -SW $\frac{1}{4}$,NE $\frac{1}{4}$ -SE $\frac{1}{4}$, Sec.26,S $\frac{1}{2}$ -NE $\frac{1}{4}$, NE $\frac{1}{4}$ -SW $\frac{1}{4}$,E $\frac{1}{2}$ -SE $\frac{1}{4}$
ES-01352	INCO	Cu-Ni	1056.7	1/14/66- 6/01/86	T.61N,R.11W,Sec.3,Lot 2,SW $\frac{1}{4}$ -SW $\frac{1}{4}$,S $\frac{1}{2}$ -SE $\frac{1}{4}$, Sec.5,Lots 1 & 2,S $\frac{1}{2}$ -NE $\frac{1}{4}$,Lots 6 & 7, NE $\frac{1}{4}$ -SW $\frac{1}{4}$, S $\frac{1}{2}$ -SW $\frac{1}{4}$,N $\frac{1}{2}$ -SE $\frac{1}{4}$, Sec.6,Lots 13,22,23,24, Sec.7, Lots 1-4,9,10,12,15,16,19 Sec.8, Lots 2 and 6 Sec.9, all except W $\frac{1}{2}$ -NW $\frac{1}{4}$ Sec.18,lots 2,7,9, and 12-20 Sec.19,lots 2-5, 7 and 8 T.62N,R.11W,Sec.27,SE $\frac{1}{4}$ of SW $\frac{1}{4}$, Sec.32, Lot 4, Sec.33, lots 6 and 7 Sec.34,NW $\frac{1}{4}$ T.61N,R.12W, Sec.25,Lot 2,SW $\frac{1}{4}$ of SW $\frac{1}{4}$

SOURCE: USFS, Duluth, and Bureau of Land Management, Silver Springs, MD, 1978.