Department of
Iron Range Resources and Rehabilitation

STATE OF MINNESOTA

BIENNIAL REPORT 1964 - 1966

DEPARTMENT OF IRON RANGE RESOURCES AND REHABILITATION

Room 60, State Office Building, St. Paul, Minnesota
St. Louis County Court House, Hibbing, Minnesota

A. M. DeYOANNES, Commissioner
Virginia, Minnesota

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Conservation Department

J. Earl Cudd, Special Assistant
Attorney General

IRR&R COMMISSIONERS

Herbert J. Miller, Mpls.*	July 1, 1941 to June 30, 1942
Robert E. Wilson, Mpls.	July 1, 1942 to May 1, 1949
Ben P. Constantine, Eveleth	May 1, 1949 to November 20, 1950
Edward G. Bayuk, Eveleth	November 21, 1950 to April 30, 1955
Kaarlo J. Otava, Mountain Iron	May 1, 1955 to January 4, 1961
Hyrom S. Sorenson, Bagley	January 5, 1961 to February 2, 1961
A. M. DeYoannes, Virginia	February 3, 1961 to June 30, 1967

*Director from July 1, 1941 to April 18, 1942

STATE OF MINNESOTA

DEPARTMENT OF

IRON RANGE RESOURCES AND REHABILITATION

60 STATE OFFICE BUILDING

SAINT PAUL, MINNESOTA 55101

To the Governor and the Legislature
of the State of Minnesota:

It is my pleasure to submit the Twelfth Biennial Report of the Department of Iron Range Resources and Rehabilitation in compliance with Minnesota Statutes 1961, Section 298.22, Subd. 2.

This is the report for the Sixty-fifth Legislature of the State of Minnesota, including the fiscal years ending June 30, 1965, and June 30, 1966.

Copies of this report are available for members of the State Legislature and all State departments, as well as Federal, County and local agencies interested. Schools and libraries may obtain copies upon request. A limited supply will be available to the general public.

Respectfully submitted,

A. M. DeYOANNES, Commissioner

FOREWORD

The Iron Range Resources and Rehabilitation Commission was created by the 1941 Legislature under Minnesota Statute 298.22.

The Commissioner, appointed by the Governor with the advice and consent of the Senate for a term of two years, may use funds appropriated to him by law as he may determine to be necessary and proper in the development of the residents of any area "when the Commissioner shall determine that distress and unemployment exists or may exist in the future in any county by reason of the removal of natural resources or possibly limited use thereof in the future and the decrease in employment resulting therefrom."

The Commission consists of seven members, three State Senators and three members of the House of Representatives, and the Commissioner of Conservation of the State of Minnesota. This Commission recommends approval or disapproval or modification of expenditures and projects for rehabilitation purposes as provided by Laws 1943, Chapter 590.

Funds derived from the State occupational tax on iron ore dedicated to the IRR&R Department were used in programs to develop natural resources and rehabilitation of the residents of the area who were victims of serious economic conditions as a result of the reduced activity in mining operations and the loss of income and employment in the timber industry.

The passage of the Taconite Amendment by an overwhelming 7 to 1 majority has assured the Range communities of a revival of the mining industry in the area. The lumber industry has also been revived creating demand for cut-over timber in a new forest production industry resulting from chemical discoveries leading to the manufacture of paper from wood and other wood products, which can make use of the second growth of timber left after the big lumber companies depleted the area of its vast supplies of rich pine resources.

Unless there is a change in the present taconite tax structure, which does not include any appropriation for the IRR&R from its occupational tax, the Department will be gradually phased out of existence, with a continuing reduction in receipts as the direct shipping ores decline in proportion to the increase in taconite.

The IRR&R receives no share of the occupational tax on taconite and less on concentrates (other than taconite) because of certain tax credits allowed which are not computed on natural ores.

According to Dr. Eugene Pfleider, Professor of Mineral Engineering at the University of Minnesota, there will be a steady increase of taconite and semi-taconite pellet production along with a steady decline of shipments of natural iron ores with a decided drop from 1965 to 1975.

In a report delivered before the annual meeting of the Minnesota Section of AIME, Dr. Pfleider said new projections show 50 million tons of pellet production by 1975. The shipment of natural iron ores for that period will drop to 8 million tons. He estimates the drop in natural ores will be from 32 million tons in 1965 to 19 million tons in 1970; 8 million tons in 1975, 5 million tons in 1980, 4 million tons in 1985, and 3 million tons in 1990.

By this time the total taconite and semi-taconite shipments would reach 72 million tons. These statistics clearly indicate that the IRR&R will have a greatly reduced budget and limited funds by 1970 with a very nominal budget in 1975.

Northeastern Minnesota still has serious problems of inadequate employment, population migration, and lack of industrial diversity, which have been aggravated because of new methods of the mining industry and the changes in the timber industry.

The taconite industry requires considerably less employees because of the technical aspects and automation of mining and pelletizing of iron ore as compared to the direct shipping methods of high-grade natural iron ores.

Similarly, changes in the timber industry have also affected the type and number of employees required for the industrial use of forest resources.

As a result there is a definite need to develop other resources in the area and provide improved economic conditions for new industries and job opportunities for the many displaced miners and timber employees and their families who are no longer qualified for employment in these two basic industries.

The IRR&R can contribute much to research in both the mining and timber industries as it has done for the past 25 years.

The main mission for this Department however, is to rehabilitate the persons unemployed as a result of the modern methods of mining and logging and to encourage new industries to create employment in other fields.

Commissioner of Iron
Range Resources and
Rehabilitation
January, 1967

FEDERAL FUNDS INCREASE EMPLOYMENT

The most significant contribution of the Department of Iron Range Resources and Rehabilitation to the State of Minnesota during the past biennium was the participation in Federal programs which resulted in a total of approximately **$510,000** in participating Federal funds for programs administered and supervised by this Department.

Funds were made available through contracts with the U. S. Department of Labor and the U. S. Department of Commerce.

Applications for additional funds were submitted to the Department of Interior for approval which will add another $150,000 making a total of over $650,000, most of which would be appropriated for payrolls for personnel engaged in projects in Northeastern Minnesota.

These projects create new employment potential in the area as part of the nationwide approach to solving the poverty and unemployment problem which exists in certain parts of the State in spite of the economic boom resulting from the increasing activity of the taconite operations in Northeastern Minnesota.

Many new jobs were also created as a result of new industries made possible with participating funds from the Department of Iron Range Resources and Rehabilitation.

With Federal funds providing the payroll the Department employed approximately 250 youths on the Neighborhood Youth Corps program in 12 counties and from 10 to 20 persons on the ARA-EDA peat research project at Wilderness Valley Farms. In addition, approximately 150 students were employed in summer work projects in cooperation with Forestry and Land Departments of Northeastern Minnesota counties.

Following are some of the industries financially assisted by IRR&R which have been providing new employment and contributing to the economy of the area:

The Chun King Corporation, Duluth	750
Superwood Corporation, Duluth	250
Onamia Garment, Inc., Onamia	110
Nu-Ply Corporation, Bemidji	105
Great River Veneer Company, Deer River	20
Rustic Fence, Inc., Northome	20
Formed Fiber Products, Inc., Floodwood	15
Mesabi Grow Co., Inc., Central Lakes	12
Duluth Filter Company, Duluth	10
Lookout Mountain Ski Lodge, Inc., Virginia	6
Minnesota P & O Mfg. Co., Inc., Virginia	6
Arrowhead Seed Growers Coop., Cook	4
Kimball's, Inc., Hill City	4
Mills Cash Sales, Inc., Grand Rapids	4
Typha Products, Inc., Northome	4
TOTAL	1320

A 25-YEAR SUMMARY

Three major projects in which Iron Range Resources and Rehabilitation funds were used in the start of a new industry developed into highly successful operations and reimbursed the State for its full investment.

During the past 25 years the IRR&R has appropriated funds for research in the iron mining industry mostly through legislative transfers of funds directly to the University of Minnesota, Institute of Technology, Mines Experiment Station, School of Mines and Metallurgy.

A total of $2,780,748 of IRR&R funds has been spent on iron ore research from 1941 through 1966. A breakdown on this is produced in the tabulation on a following page.

A total of $3,575,267 was appropriated for research and development in the timber industry by legislative transfer or Commission action to the Forestry Division of the Conservation Department of the State of Minnesota, the University of Minnesota, U. S. Forest Service, and the Northeastern Minnesota county forestry programs. This is outlined in the tabulation on page (10).

In addition, substantial contributions have been made to the U. S. Geological Survey for mapping and water studies for counties in Northeastern Minnesota totaling $1,090,627 which have provided valuable information for industry interested in expanding or locating in this part of the State.

A total of $2,804,242 has been transferred from IRR&R funds for projects other than forestry and mineral research. In addition to the U. S. Geological Survey topographic mapping and water survey, this includes appropriations for agriculture, water pollution control, State Mapping Advisory Board, State Conservation Department, peat research and marl survey. These are outlined on page (11).

Industrial loans made available through the purchase of buildings and equipment available on a lease-purchase contract totaling approximately $3,669,006 have resulted in several very successful industrial operations in the area. The failures however, also have some compensation as in the case of all pilot and experimental projects, as they produce facts and information that otherwise would be unknown and would eventually cost the government or private industry many thousands of dollars to discover.

Total receipts from IRR&R industrial appropriations to date total $1,313,816. Property value and/or balance due the State under existing contracts is $981,166.

The Chun King Corporation of Duluth received a $200,000 appropriation from the IRR&R in 1951 which was repaid to the State in full in 1957. Late in 1966 this company was sold by Jeno F. Paulucci, President, to R. J. Reynolds Tobacco Company for $63,000,000.

Superwood Corporation received an appropriation of $367,500 in 1948. This was paid in full in 1959. This plant today produces over 600,000 feet of hardboard daily on a 24-hour 7-day per week basis with approximately 250 full-time employees.

Nu-Ply Corporation of Bemidji started with an $332,692 appropriation in 1956 and also reimbursed the State for its entire investment. This plant has 105 full-time employees with a gross income of sales of 2 million dollars a year.

A total of 15 other industries which have received IRR&R funds are still operating in the area. Some of these are very successful and expect to comply with contract terms and reimburse the State for its full investment. Others however, are having problems involving marketing as well as technical complications resulting in very limited operations and resulting in serious financial problems.

Whenever possible the IRR&R is providing research and consulting service in an effort to continue activity and maintain employment and use of natural resources.

Following is a list of the companies under contract with the State of Minnesota through the IRR&R indicating the original investment by the State, the present contract amount or value, and the payments to date. Brief descriptions of each project and its status will be included in the latter part of the report.

Property Owned by IRR&R as of January 1, 1967

Project	Orig. Invest. by IRR&R	Date	Contract Amount/Value	Payments to Date	Present Status
Arrowhead Seed Growers' Cooperative, Cook	$ 27,654.52	1947	$ 27,654.52	$ 16,833.09	Sale Pending
Arrowhead Briquet Co. (Equip. for charcoal plant)	42,236.65	1963	42,236.65	None	No contract
Duluth Filter Co., Duluth	25,774.60	1964	25,774.60	2,742.30	Contract
H.C. Hill & Sons, Inc., Cook (Equip. originally purchased for McGregor Mfg. Corp.)	6,350.00	1957	3,118.67	935.58	Contract
Jet Ski Corp., Grand Rapids (Equip. originally purchased for McGregor Mfg. Corp.)	7,100.00	1957	3,550.00	2,326.50	Contract
Kimball's, Inc., Hill City	37,898.92	1966	37,898.92	315.83	Contract
Lookout Mt. Ski Lodge, Inc., Virginia	33,589.77	1958	33,589.77	8,517.96	Contract
Maple Syrup Proc. Plant, Grand Portage	12,642.34	1958	12,642.34	444.25	Yearly contract on request
Mesabi Grow Co., Inc., Central Lakes	45,762.64	1965	45,762.64	8,909.00	No contract
Mills Cash Sales, Inc., Grand Rapids	209,765.51	1945	117,126.90	26,950.00	Contract
Amt. paid by previous operators			92,638.61		
Minnesota P & O Mfg. Co., Inc., Virginia	75,000.00	1965	75,000.00	3,750.00	Contract
Rustic Fence, Inc., Northome	54,927.41	1963	54,927.41	6,920.16	No contract
Superwood Corporation (Multiply plant at Virginia)	600,782.94	1959	600,000.00	31,203.00	Contract
Typha Products, Inc., Northome	9,768.30	1964	9,768.30	None	Contract
Great River Veneer Co., Deer River	340,151.66	1948	70,000.00	2,975.00	Contract
Amt. paid by previous operators			20,609.47		
TOTAL	$1,529,405.26		$1,272,298.80	$112,822.67	

IRR&R Property Formerly Owned and Sold to 1967

Name of Project	Original Investment by IRR&R	Investment Date	Payments and/or Selling Price	Sold Date
The Chun King Corp., Duluth	$ 199,983.30	1951	$ 200,000.00	1957
Iron Powder Plant, Aurora	783,763.28	1945	114,101.23	1951
Land Clearing Machine (Sold to Wm. H. Ziegler Co., Inc.)	15,256.45	1945	11,000.00	1947
McGregor Mfg. Corp., McGregor (Equipment leased or sold to the following, some payments still being made)	43,479.60	1957	890.31	1958
Hill & Sons Co.			935.58	
Jet Ski Corporation			2,326.50	
Durkee Mfg. Co.			702.50	
Nick's Wood Products			1,300.00	
Keewatin Saw Mill			700.00	
McGregor Dev. Corp.			500.00	
Northern Woodcrafters			94.74	
Total McGregor Mfg. Corp.			7,449.63	
McLeod, Inc., Grand Rapids (Sold to Ameriply Veneer Co., Duluth)	15,000.00	1951	15,000.00	1966
Milkhouses	25,937.62	1943	18,819.39	1954
Nu-Ply Corporation, Bemidji	332,691.86	1954	332,691.86	1967
W. S. Moore Co., Gilbert	51,801.16	1963	7,000.00	1965
Peat Processing Plant, Floodwood (Sold to Formed Fiber Co.)	279,428.14	1944	19,424.74	1965
Superwood Corp., Duluth	367,500.00	1948	367,600.00	1959
Warehouses:				
Embarrass	19,661.10	1943	1,600.00	1955
Lakeland	6,193.54	1945	1,450.00	1955
TOTALS	$2,140,696.05		$1,097,027.16	

IRR&R Funds Appropriated for Iron Ore Projects

Fiscal Year	Occupation Tax Receipts	U. of M. Mines Exper't Station
1941-42	$ 159,680.50	
1942-43	419,981.34	$ 22,000
1943-44	411,622.60	22,000
1944-45	335,490.76	50,000
1945-46	316,799.53	50,000
1946-47	313,723.85	60,000
1947-48	318,620.65	60,000
1948-49	1,071,179.89	75,000
1949-50	651,873.36	75,000
1950-51	855,568.32	80,000
1951-52	1,199,834.72	80,000
1952-53	942,199.88	83,050
1953-54	1,379,095.05	83,050
1954-55	750,611.40	87,500
1955-56	1,233,214.65	87,500
1956-57	1,106,298.85	100,000
1957-58	1,314,442.06	100,000
1958-59	648,369.29	150,000
1959-60	1,300,865.62	150,000
1960-61	1,032,719.16	159,000
1961-62	652,548.38	165,000
1962-63	563,883.99	190,298
1963-64	555,749.37	197,686
1964-65	655,044.32	80,000
1965-66	784,015.37	80,000
	$18,973,432.91	$2,287,084

Total Legislative Transfer to the U. of M. for Beneficiation of Low Grade Ores..... $2,287,084.00

Total Fund for the Commission on Taxation and Production of Iron Ore..... 248,541.38

EXPENDITURES FOR IRON ORE RESEARCH PROJECTS

Zontelli Brothers	$ 73,568.12	
W. S. Moore Co.	51,801.16	
Cuyuna Range Mineral Res. Inc.	14,313.89	
Strategic-UDY Direct Reduction	2,531.00	
Mesabi Deep Hole Drilling	102,908.15	245,122.32
GRAND TOTAL		$2,780,748.00

IRR&R Funds Appropriated for Forestry Projects

Amount transferred by the Legislature to Dept. of Conservation, Forestry Div.		$3,010,667
Amount transferred by the Legislature to Interim Committee on Forestry		40,000
		$3,050,667
Cooperative County Land Development—Section Corner Post Relocation:		
Aitkin County	$ 5,974.13	
Becker County	956.92	
Cook County	7,662.82	
Crow Wing County	602.50	
Itasca County	193,227.33	
Koochiching County	25,547.57	
Lake County	6,452.53	
St. Louis County	191,441.64	
Wadena County	29.50	
Total through June 30, 1966	$431,894.94	431,895
Cooperative contracts with U. S. Forest Service from 1953-1962		80,539
Cooperative contracts with Quetico-Superior Wilderness Research Center from 1953-1962		12,166
TOTAL IRR&R funds used for Forestry projects through transfers and cooperative contracts		$3,575,267

IRR&R Funds Appropriated for Other Than Forestry and Iron Ore Projects

AGRICULTURE:		
Transfer to University for Legume Seed Production	$	60,000
Transfer to University for Legume through IRR&R contribution		216,673
		276,673
Transfer to State Department of Agriculture (White Pine Blister Rust Control)		50,000
Total Agriculture Projects	$	326,673
WATER POLLUTION CONTROL:		
Transfer to State Department of Health	$	100,000
STATE MAPPING ADVISORY BOARD:	$	28,000
STATE CONSERVATION DEPARTMENT:		
Division of Lands & Minerals	$	915,035
Division of Waters		12,240
Total transfer to Conservation Dept.	$	927,275
TOTAL Transfer of Funds		$1,381,948

Peat Research

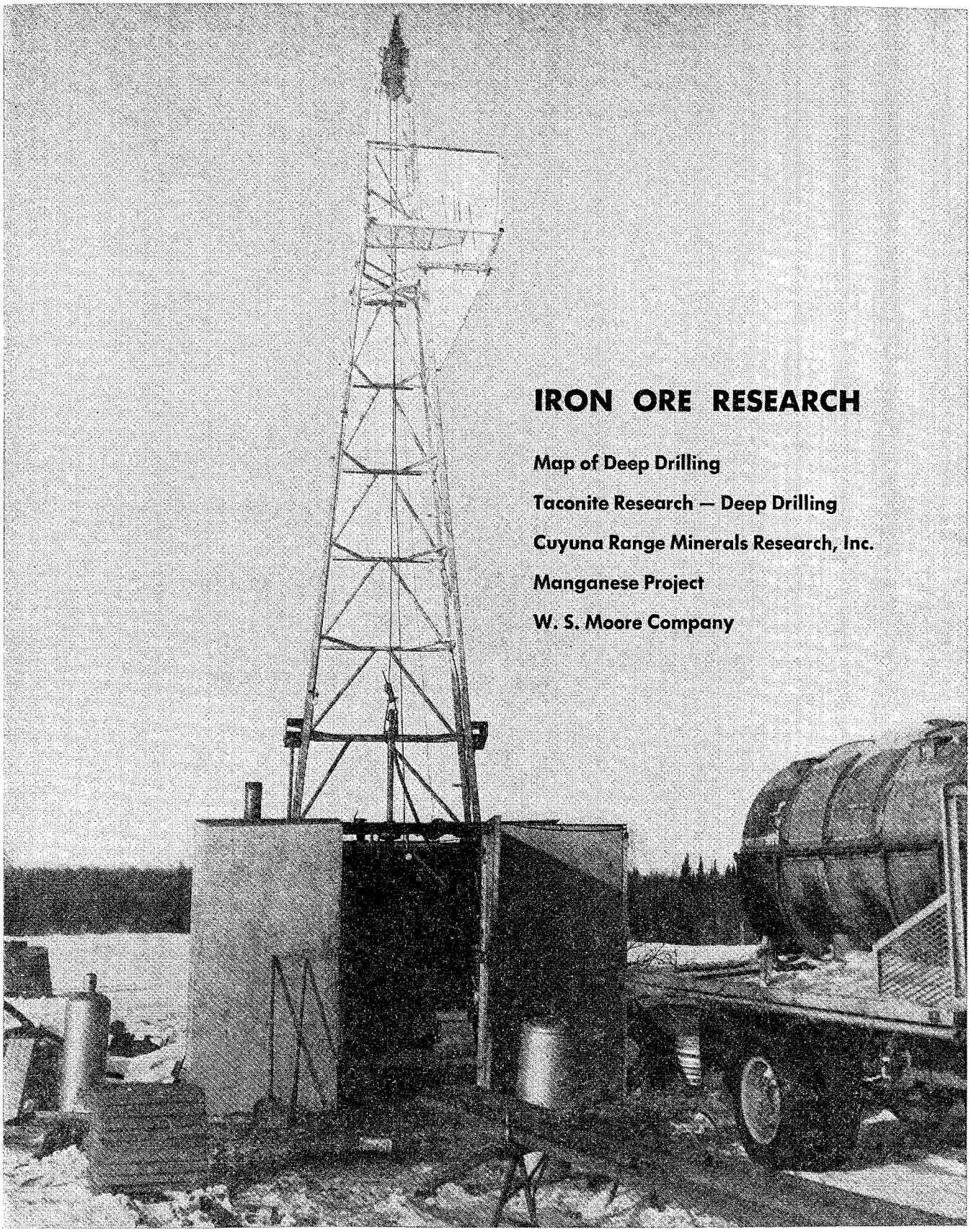
Coop. Contracts with University of Minnesota for peat research	$	316,306

Marl Survey

Coop. Contracts with University of Minnesota for marl survey..	$	15,361

U.S.G.S. Topographic Mapping & Water Survey

Coop. Contracts with U.S.G.S. for Water Survey	$	549,698
Coop. Contracts with U.S.G.S. for Topographic Mapping		540,929
Total U. S. Geological Survey		$1,090,627
TOTAL Cooperative Contracts		$1,422,294



IRON ORE RESEARCH

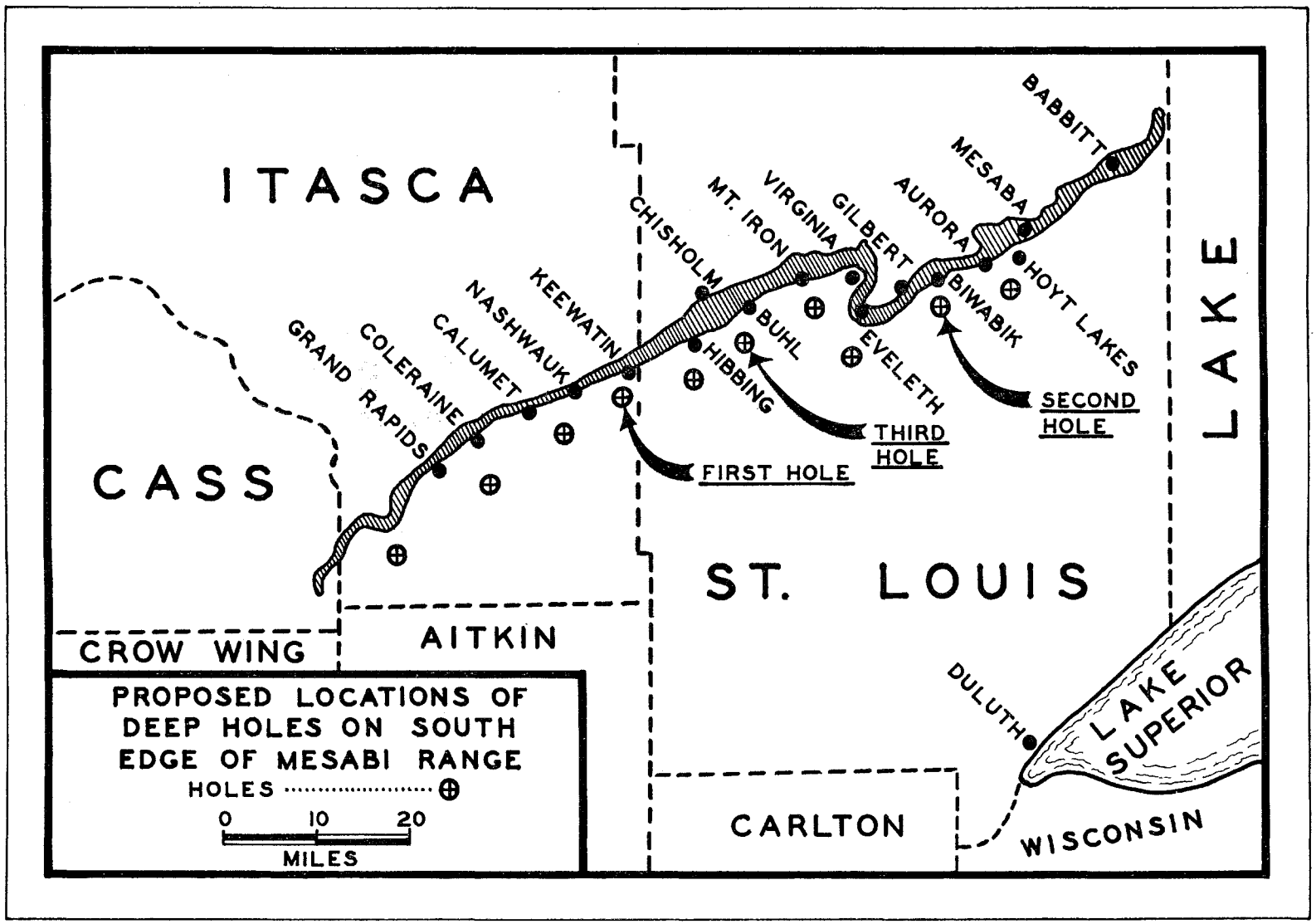
Map of Deep Drilling

Taconite Research — Deep Drilling

Cuyuna Range Minerals Research, Inc.

Manganese Project

W. S. Moore Company



INDEX MAP, MESABI DISTRICT

TACONITE RESEARCH–DEEP DRILLING

In June, 1966, the University of Minnesota School of Mineral and Metallurgical Engineering, Mines Experiment Station, was awarded a $100,000 grant by Iron Range Resources and Rehabilitation to conduct tests to determine the feasibility of underground mining of Minnesota taconite.

Contracts have been awarded for deep drilling of taconite at three locations on the Mesabi Range. The first phase of a long range program is under the direction of Professor Eugene P. Pfleider of the University of Minnesota School of Mines and Metallurgy, and Dr. E. W. Davis, who was prominent in the development of the taconite industry.

The possibility of extracting taconite from depths of 1,000 to 2,500 feet below the surface of Minnesota's Iron Range will be studied under a $300,000 program extending through the next biennium.

The purpose of the project is to explore taconite formations at depths of approximately 1,000 to 2,500 feet and determine the suitability of underground mining for taconite. At present, Minnesota taconite operations rely on surface bodies mined in open pits. The surface bodies carry taconite rock in which the iron content is from 22 to 25 percent.

Professor Pfleider, believes subsurface bodies have an iron content of at least 30 percent. This would mean that taconite plants could extract one ton of pellets from every 2½ tons of taconite rock mined underground. In surface operations, plants extract one ton of pellets from every three tons of rock mined.

Professor Pfleider maintains that the use of underground taconite would not be in competition to open pit mining but would supplement the now-existing supply of taconite. Large investors eventually will run out of surface taconite and the deeper they go in open pit operations the more expensive it becomes.

Deep drilling for taconite was first conducted about four miles southeast of Biwabik in 1909 but no records can be found of the grade of iron content found in that exploration. The drilling was done to a depth of 2,745 feet in which drills passed through 547 feet of underground taconite formations. Prof. Pfleider recently visited Sweden to inspect taconite underground mining being done there and learned that subsurface bodies contained a higher iron content than surface taconite.

The deep drilling project would extract test cores that would be studied by mineral and geological specialists to determine iron content, underground mining characteristics and feasibility for taconite beneficiation. Two factors which favor eventual underground taconite mining in Minnesota are desirable physical and geological structures and improved techniques in underground mining.

The $100,000 grant from the IRR&R will finance the study of test cores taken from previously drilled holes and the site preparation, drilling and core handling at three of the ten selected holes.

The drillings from ten test holes at the southern edge of the Mesabi Iron Range will be in taconite formations underlying state-owned property. The project will be carried out jointly by the IRR&R, University of Minnesota School of Mineral and Metallurgical Engineering, Mines Experiment Station and Minnesota State Geological Survey.

The University of Minnesota, Institute of Technology, School of Mineral and Metallurgical Engineering, has requested a continuation of this project for the 1967-69 biennium totalling $200,000 for the two years.

The 1967-68 schedule is for completion of holes # 4 through # 7 at an average depth of 1400 feet with geological, metallurgical and physical properties study of cores.

The 1968-69 schedule calls for completion of holes # 8 through # 10 at an average depth of 1700 feet, including one test hole 2000 to 2500 feet; geological, metallurgical and physical properties study of cores.

This $300,000 for 15,000 feet of total drilling compares with the estimate prepared by the IRR&R and the University of Minnesota for the Area Redevelopment Administration in 1962 of $252,100 for only 12,000 feet of drilling—10 holes at 1200 feet average depth.

CUYUNA RANGE MINERALS RESEARCH INC.

(Robert S. Adams)

Iron Range Resources and Rehabilitation participated in an Economic Development Administration iron ore research program concentrated on the Cuyuna Range and conducted by Cuyuna Range Minerals Research, Inc. of Duluth, Minnesota, under the supervision of Robert S. Adams. Total cost of the project was $96,500.

IRR&R appropriated $15,000 for the first phase of the project. According to Henry H. Wade, retired Director of the University of Minnesota Mines Experiment Station, IRR&R funds were used to provide for the selecting, acquiring and storing of large samples of three types of crude ore material occurring in Crow Wing County. A serious effort was made to obtain samples that were truly representative of large tonnages that would be available for mining.

Tests have demonstrated that manganese can be effectively extracted from manganiferous materials by leaching procedures. The need was however, to put together an illustrative flowsheet to indicate a procedure whereby all of the various types of low grade materials found in the area could be processed effectively to produce marketable products of good quality.

The three types of material gathered during the above program were classified as (a) "iron ore" including iron bearing material from several locations all of relatively low manganese content, (b) "brown manganiferous ore" which was also a composite of several materials generally of a brownish color and characterized by a phosphorus content of 0.20 percent or more and generally having a somewhat lower silica content than other Cuyuna materials of equal Fe + Mn content, and (c) "black manganiferous ore" which was characteristically rather high in manganese and silica content and with phosphorus analyses running close to 0.10 percent.

These carefully prepared samples are providing an excellent source of material for metallurgical testing. The Federal Government is presently providing funds for research and testing of these three types of material by Allis-Chalmers Manufacturing Company at their research facility at Oak Creek, Wisconsin. This work is proceeding favorably at this time.

Cuyuna Range Minerals Research, Inc. received an additional $12,000 for a monitoring contract on progress reports. This was followed by an additional $15,000 technical assistance grant for the complete project. Applications have been filed for additional funds to continue the research in these specialized ores.

Results of the project announced late in 1966 indicate that the new process for obtaining high-grade manganese from Cuyuna ores was accomplished. The ore contains approximately 40 percent iron and 7 percent manganese.

MANGANESE PROJECT

(University of Minnesota)

Demonstration of a process for upgrading and pelletizing nonmarketable ironbearing materials from Minnesota's Mesabi Iron Range was conducted at the University of Minnesota's Mines Experiment Station, Minneapolis, under a contract with the United States Department of Commerce, Area Redevelopment Administration, in cooperation with Iron Range Resources and Rehabilitation late in June 1964.

The project involved the operation of a small pilot plant at the University to demonstrate a process for upgrading and pelletizing nonmarketable iron-bearing materials. The process has been developed in the laboratories of the mines experiment station over the last two years.

The process is designed to concentrate these ores so that the resulting product will be sufficiently low in silica to be marketable, according to Professor James E. Lawver.

The 18-month initial phase of the program cost $235,000 of which the Area Redevelopment Administration provided $90,000. The University of Minnesota contributed $125,000, largely from special appropriations granted to the Mines Experiment Station through the Iron Range Resources and Rehabilitation Commission.

In addition, ore samples valued at $15,000 were provided by nine Minnesota mining companies—Cleveland-Cliffs Iron Company, Great Northern Iron Ore Properties, Hanna Mining Company, Jones and Laughlin Steel Corporation, Meriden Engineering Company, Northern Pacific Railway Company, Pickands Mather and Company, Pittsburgh Pacific Company, and United States Steel Corporation.

Transportation for the ore samples, valued at $5,000 was provided by the Great Northern Railway Company and the Duluth, Missabe and Iron Range Railway Company.

Manganese is used as a metal as an alloy with iron, copper or nickel; as a black powder dioxide it is used in dry-cell batteries; as a carbonate it is used to prepare chemicals for dyes or disinfectants.

The University project was concerned only with the technical feasibility of recovering manganese and not with any economic potential for the process.

The project began after an earlier government investigation of a method of reducing Cuyuna ores. It was found that a lot of manganese appeared in the tailings—waste products—of the method being tested.

It was speculated at that time that if manganese as well as iron could be recovered economically from Cuyuna ores, the tested method might be practicable on the Cuyuna range. It uses a rotary kiln instead of a blast furnace in ore reduction.

Scientists at the Mines Experiment Station dissolved the tailings with sulfuric acid and recovered metallic manganese and manganese dioxide by electrolysis and manganese carbonate by chemical precipitation. About 90 percent of the manganese was recovered.

The United States now imports manganese ore, principally from Brazil, Gabon and India. It is estimated that there are nearly 5 million tons of ore on the Cuyuna, scattered over a distance of 40 miles.

W. S. MOORE COMPANY

Gilbert, Minnesota

During 1962, the W. S. Moore Company, with the assistance of a grant from the Area Redevelopment Administration and the Department of Iron Range Resources and Rehabilitation, designed and constructed a pilot plant for the briquetting of Mesabi Range ore fines, utilizing the hot briquetting process designed by Dravo Corporation.

This plant was operated through the season of 1963 but failure to produce a satisfactory briquette for steel furnace useage caused the termination of the project in December, 1963. The equipment in the plant was finally disposed of in early 1965.

The briquetting project was an attempt on the part of W. S. Moore Company to satisfactorily agglomerate the fine ores of the Mesabi Range which were no longer acceptable for furnace feed as they were. Since this project proved unsatisfactory, the W. S. Moore Company has not continued along this line of research, and at present has no future plans for any processes utilizing the same type of agglomeration process.

At present, they are engaged in pilot plant work at Duluth, Minnesota, on a process covering the magnetic roasting of hematite ores. Final development and commercializing of this process would put the W. S. Moore Company in the production of iron ore pellets from the non-magnetic materials located on the Mesabi and Cuyuna Ranges, and hopefully would allow them to rebuild to their former employment status.

Had the process proved successful, W. S. Moore Company anticipated employing approximately 250 men. Great amounts of valuable information were accumulated however, and is on file.

The Federal government's investment in the contract was $208,000. Equipment purchased with Government funds was sold for $13,000. Iron ore produced by the project was sold by the W. S. Moore Company for $13,732.90. This amount was turned back to the Government according to contract terms. IRR&R's investment was $51,801. The State's equipment was sold along with the Federal equipment to Mercier Brick Company for $7,000 which was reimbursed to the State according to contract terms.

FORESTRY DIVISION

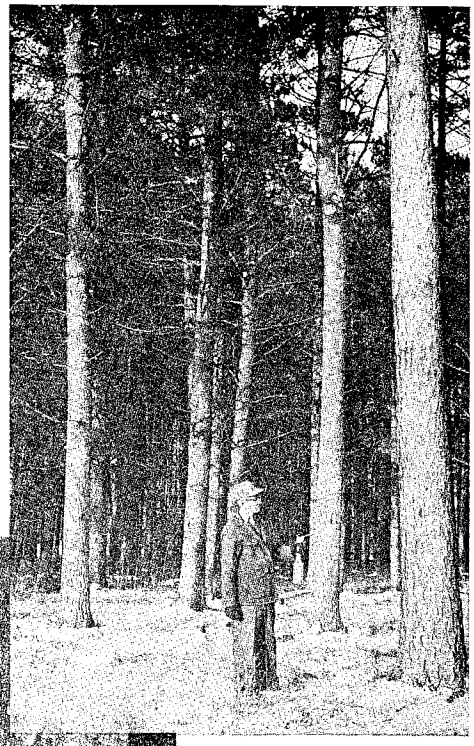
County Forestry Programs

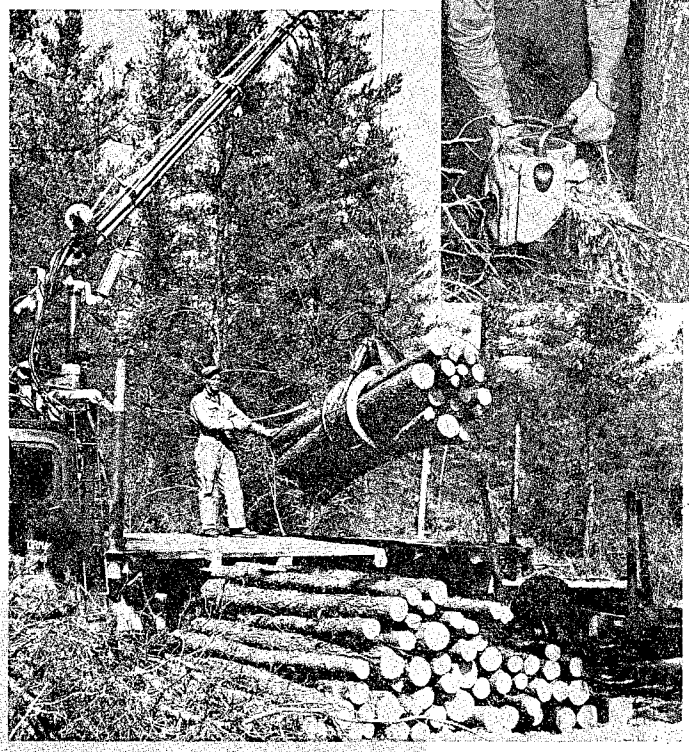
Forestry Research

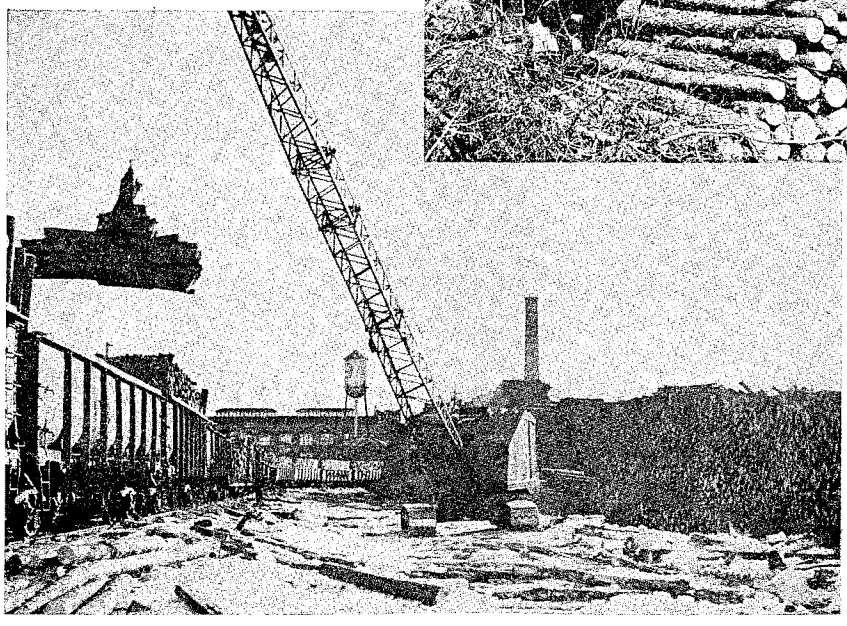
Corner Post Relocation

Forest Surveys

North Central Forest Experiment Station







FORESTRY DIVISION

The Forestry Division of the Department of Iron Range Resources and Rehabilitation includes 22 of the 35 employees listed as permanent personnel and expends more than 50 percent of the total budget earmarked for regular Department activities. The total budget for Forestry was $386,162.

The administrative costs for the same period was $125,887 while Mineral Research costs for the biennium was $84,122.

The service of the Forestry Division can be divided into several phases, most of which are devoted to assisting in the county forestry programs.

In some cases IRR&R foresters are assigned on a full-time basis with the county forestry program.

The eight counties with full-time personnel are Aitkin, Beltrami, Cass, Crow Wing, Itasca, Koochiching, Lake and St. Louis. Counties with part-time personnel are Becker, Clearwater, Hubbard and Wadena.

The following table shows projects carried on by IRR&R county personnel:

County	No. of Trees Delivered and Planted	Sprayed Acres	Furrowed Acres	Cruised for Land Sale Acres	Inventory Acres
Aitkin	555,000	—	200	—	13,000
Becker	85,000	—	40	—	—
Beltrami	250,000	—	300	9,500	11,500
Cass	290,000	170	80	8,000	14,000
Clearwater	525,000	20	85	—	33,280
Crow Wing	125,000	20	25	11,000	3,000
Hubbard	200,000	—	222	2,480	320
Itasca	693,000	325	170	16,500	70,000
Koochiching	727,000	100	150	1,000	28,280
Lake	125,000	—	85	480	14,520
St. Louis	1,789,000	—	339	30,609	85,000
Wadena	100,000	—	—	—	—

In addition the following special projects were undertaken:

Aitkin County — IRR&R forester assumed land commissioner duties. Teaching forestry at Long Lake Conservation Center. Administrative duties in Title IV ACP Programs. Preparation of comprehensive Outdoor Recreation Plan necessary to be eligible for Federal Land Water Conservation Funds.

Beltrami County — IRR&R forester assumed land commissioner duties.

Cass County — Forester assists land commissioner in all phases of office and field duties; supervised forest access trail construction; photo interpreted 25,000 acres for cover type classification.

Clearwater — Platting of lake shore property on four lakes.

Itasca County — IRR&R forester is in charge of one district; supervision of college youth program; administration of Title IV ACP Programs; assisting in laying out public access roads, camp grounds and developing leased lots.

Lake County — IRR&R forester assumed land commissioner duties.

Koochiching County — Aiding section corner restoration; assisted sheriff's department on manhunt; assisted Conservation Department on two prescribed burns.

St. Louis County — IRR&R forester in charge of one district; administration of Title IV ACP Programs; assisting land commissioner in office duties.

Forest Industry Promotion — Timber marketing development. Consulting duties same as listed in biennial report of 1960-62 and 1962-64. Reports from Minnesota wood-using industries and individuals have been very favorable.

Pricing Reports (Semi-annual) This project has met with very good reception. Consideration is now being given to extend coverage state-wide.

This would be in cooperation with the Department of Conservation.

Sawmill Survey — Survey of sawmills in a 23-county area in Northeastern Minnesota completed and directory published February, 1965. Assisted North Central Forest Experiment Station in sampling mills to obtain direct production figures by species to be used in a state-wide volume of lumber production report.

Cooperating with the Forest Marketing and Utilization Coordinating Committee to promote efficiency and avoid duplication.

Block forecast of wood available for harvest. Land ownership of 19 northeastern counties brought up-to-date.

Research — The following projects were completed. Due to lack of personnel, this division has been terminated as of June 1966. Results of projects undertaken are as follows:

Brush Bog Study (4-year study)

1. Fall planting on furrow slices show 68% seedling survival; Spring planting showed 83% survival.
2. Fall planting in furrows survival 35%; Spring planting 12%.
3. Fall planting in undisturbed peat survival 52%; Spring planting 50%.
4. Direct seeding on furrow slices a total failure.

Converting Poor Aspen Stands to Conifers (6-year study)

1. Survival of white spruce and balsam seedlings 95% and did not vary in different densities of aspen.
2. Growth rates did not vary in different densities of aspen.

Site Preparation Technique to Control Sprouting (6 years)

Results show furrowing gives much later and less sprouting than disking.

Basal Spraying with Herbicides

Sprayed areas too small and results insignificant.

Completed a Cooperative Study with Indian Service to Grade Softwood Logs

Letter acknowledged help dated November 24, 1964.

Major forestry projects completed for the largest forestry area counties include:

St. Louis County — Completed field and office work for Boise Cascade land sale. Ownership book brought up-to-date.

Koochiching County — Completed field work for Boise Cascade land sale.

Itasca County — Completed field and office work for mining company land sale; completed placing section corners on aerial photos.

Projects underway during the biennium but not complete:

Cruising for land sale; inventory for timber sales for St. Louis County.

Timber sales for Hubbard County.

Inventory notes for 25,000 acres in northeastern Cass County.

Tax-forfeited inventory up-to-date for Crow Wing County.

In other cases part-time services are offered, and in many cases complete forestry crews work to expedite sales of tax-forfeited lands and to make surveys by appraising land and timber volumes in preparing county land sales and exchanges.

These can be considered indirect contributions in the form of services to provide industry in the best interests of the area. In many cases personnel provided by IRR&R has played a very important part in the sale or exchange of lands requested by the mining companies or the timber industry. Often these sales are contingent upon immediate action which is possible only with the help of the IRR&R personnel. William J. Marshall, Land Commissioner of Itasca County, indicated by letter, "With the help of your IRR&R personnel the appraisal of the 8,800 acres of tax-forfeited land in Itasca County recently requested by Hanna Mining Company has been completed. We also appreciate the continued assistance on the corner location on our new aerial photography which has been handled so ably by Robert Johnson and Orlyn Olson of your department." Also a letter from R. V. Sutter, Land Commissioner of St. Louis County, "In the management and in the process of selling lands we have been dependent largely on the help of the Iron Range Resources & Rehabilitation Commission in appraising lands for sale. They have afforded us unlimited help in our long range forest management plans and in forest restocking for future needs. The IRRRC has helped us considerably in all phases of forest management and in our timber cutting operations on selling on a sustained yield basis. We have set

aside certain areas for public recreational uses. This phase in our recreational program is very important as we are sadly in need of public camp grounds, lake accesses, highway stops and picnic areas, etc. The IRRRC has been of great help to all of the northern counties in this respect."

Included in the county cooperative land development program is the section corner post relocation considered by the Conservation Department as well as officials of private industry, as one of the most significant projects conducted by the IRR&R. This service has proved valuable to all land-holders including federal, state and county governments especially when the sale or exchange of public land is involved in the location or relocation of industrial plants.

Section corner posts are actually equivalent to the street and avenue signs in the metropolitan area. In Northeastern Minnesota many of these section corners were installed years ago in the depths of extreme wilderness areas resulting in inaccurate and in many cases very poor markers. The object of this project is to correct, improve, and up date the corner posts with more reliable and durable markers.

Through June, 1966, $431,894 of IRR&R funds has been appropriated for this project. This means a total of $863,788 has been spent on corner post relocation by nine counties since the project originated, financed on a 50-50 cost basis with the cooperating counties. St. Louis and Itasca counties have accounted for more than 80 percent of the funds expended. Following are the counties that have received IRR&R funds listed according to amounts received:

Itasca	$193,227.33
St. Louis	191,441.64
Koochiching	25,547.57
Cook	7,662.82
Lake	6,452.53
Aitkin	5,974.13
Becker	956.92
Crow Wing	602.50
Wadena	29.50

This figure is the amount appropriated by IRR&R for the 50 percent of the total cost of the project.

FOREST SURVEY

The Forestry Division of Iron Range Resources and Rehabilitation played a significant part in the publishing of the Forest Survey of the State of Minnesota. The last reports were published in 1966.

The joint Forest Survey effort with IRR&R started in 1946 when representatives of State and Federal agencies and the forest industries met several times to plan a cooperative survey of Minnesota's forest resources, intensive enough to yield reliable figures for counties.

The previous survey by the Lake States Forest Experiment Station in the 1930's resulted in limited information for the counties. Major responsibilities were taken by the Lake States Forest Experiment Station under R. N. Cunningham and the IRR&R Commission under Lynn Sandberg, Supervisor of Forestry.

During the period 1946 to 1955 the entire state of Minnesota was covered by aerial photo and field examination at a cost of approximately $700,000.

IRR&R provided $440,000, LSFES provided $150,000 and other public agencies and forest industries $110,000.

Twenty-two reports were prepared cooperatively and published by the IRR&R. A state-wide report and 8 technical notes and papers were published by LSFES. These provided statistics used by industry to guide wood procurement and by the governmental agencies to evaluate and guide forestry programs. Expansion in the wood industry depends on detailed wood supply information. Minnesota pulpmills received 569,000 cords in 1946. This was increased to 912,000 cords in 1965 largely as a result of these reports.

The Third Forest Survey of Minnesota was started in 1960. Several agencies and two private companies provided data for their holdings but the LSFES and IRR&R provided most of the direct funds. Personnel of IRR&R Forestry Division cruised the private land in most of the northern 18 counties. LSFES cruised southern and western Minnesota and supervised the total job. Fieldwork was completed in 1963; computing and reporting continued until 1966.

The survey cost $688,000 of which IRR&R provided $235,000, LSFES contributed $300,000, and the National Forests $62,000.

The IRR&R published 20 reports and the LSFES issued the State Report and 5 Station Notes or papers. The LSFES, now known as North Central Forest Experiment Station, conducts Forest Surveys in 11 states on a ten-year cycle. Congress provides sufficient money to produce good statistics for the total state. Where accurate information by groups of counties or individual counties is needed, aid must come from other sources. Each National Forest makes surveys for management planning using NCFES's methods and computing programs as a basis for more intensive inventories. Similar arrangements may be worked out for surveying State Forests.

Survey training is now so expensive and computing so highly specialized that few organizations can afford to maintain their own forest inventory staff. In most cases the states are making financial transfers to NCFES enabling them to increase the number of forest plots that are measured.

The next Forest Survey of Minnesota should begin in 1971. Because of rising costs an inventory similar to the one just finished would likely require about $800,000. Assuming that $400,000 may be available from NCFES and National Forest funds, an additional $400,000 would have to come from other sources in order to publish complete reports. Without these additional funds less valuable results will be obtained.

Cooperation between the NCFES and State forestry organizations has been the general rule for inventories in the North Central States. Recent cash contributions by states are as follows:

Kansas	$ 46,000
Indiana	50,000
Missouri	94,000
Kentucky	129,000
Michigan	160,000

Wisconsin has elected to use its own field men for part of the job, at a cost estimated at $460,000 for a period of 2 to 3 years. It is the recommendation of the Commissioner that IRR&R should cooperate with NCFES and the State Division of Forestry on a financial plan that will produce highly useful statistics at a reasonable cost to each party. According to D. B. King, Director of NCFES, United States Department of Agriculture, Forest Service, St. Paul, in a letter to the Commissioner, "The IRRRC has made solid contributions to forest resource information over many years. It has been a popular program and the popularity is well deserved. I want to thank you personally and the men of your organization for your good work and wholehearted cooperation in the past."

MINERAL RESEARCH DIVISION

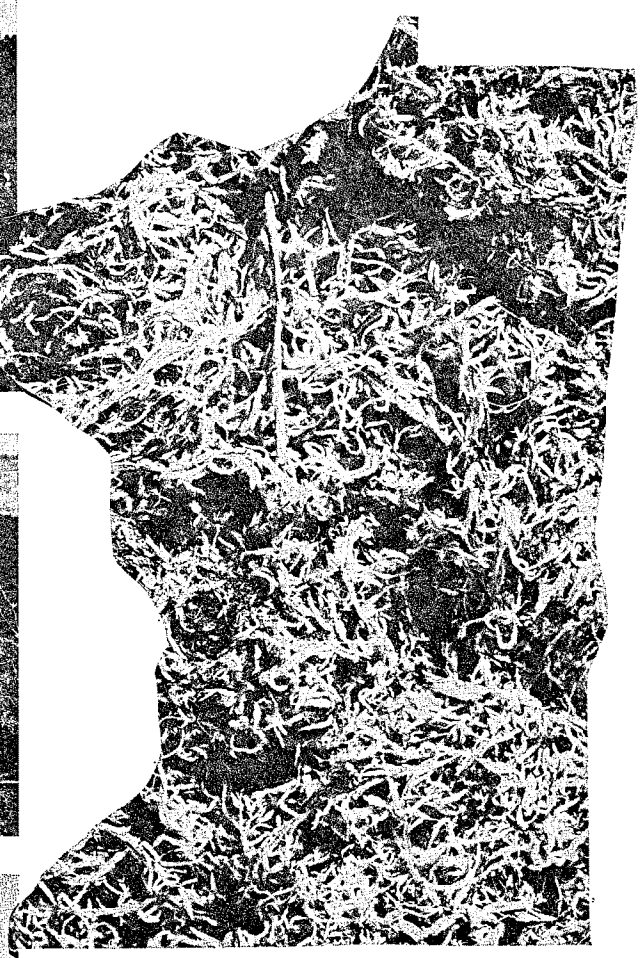
Peat Research

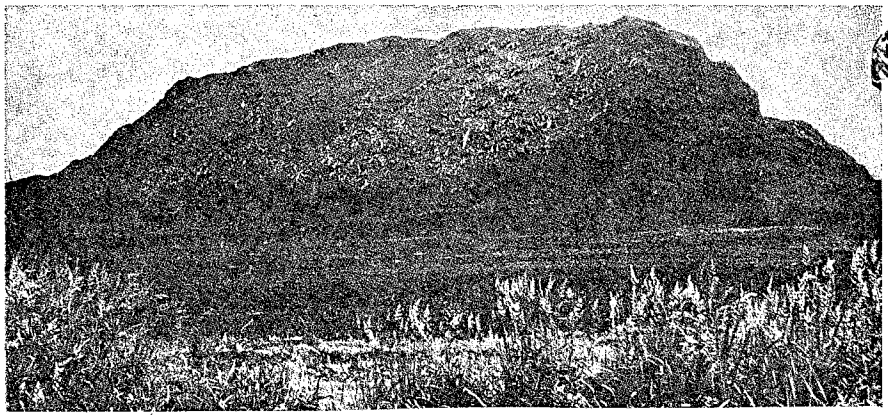
Peat Bog Waste Stabilization

Topographic Mapping

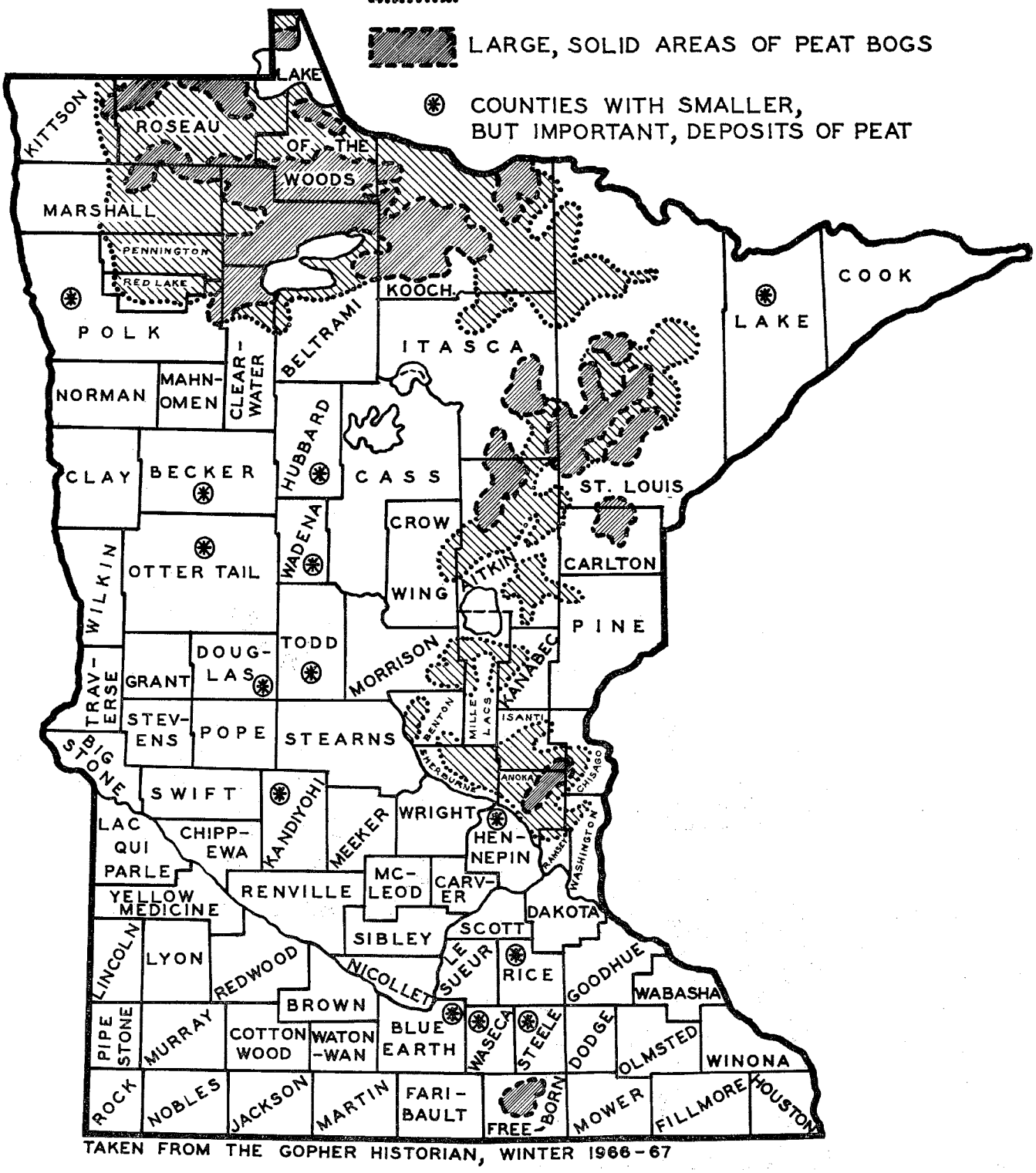
Land Ownership Maps

Water Drilling





LOCATION OF PEAT DEPOSITS IN MINNESOTA



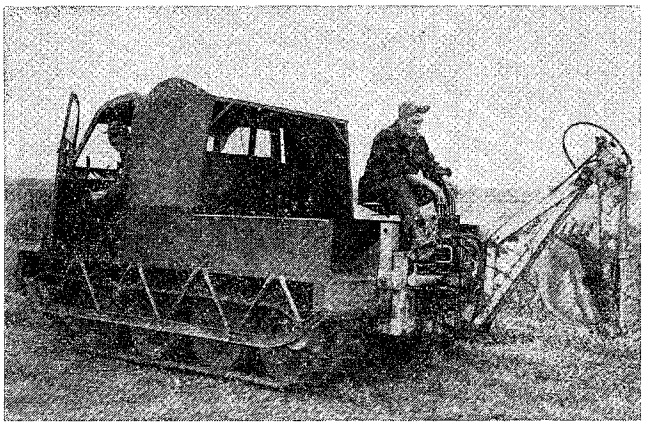
TAKEN FROM THE GOPHER HISTORIAN, WINTER 1966-67

MINERAL RESEARCH DIVISION

The Mineral Research Division of the Department has devoted practically its entire schedule to work on the peat research project with Dr. R. S. Farnham, Department of Soil Science, University of Minnesota, St. Paul. Federal funds were available for this work at Wilderness Valley Farms for 1965 and 1966 summer seasons.

This project included publication of peat inventories for three bogs including West Central Lakes Bog and Cook Bog, both in St. Louis County and Red Lake Bog in Beltrami County. Information on these bogs is of special value in the research project under the U.S. Department of Commerce project which was scheduled to be completed in 1966.

The Commissioner has submitted a request for a continuation of this project for one more season.

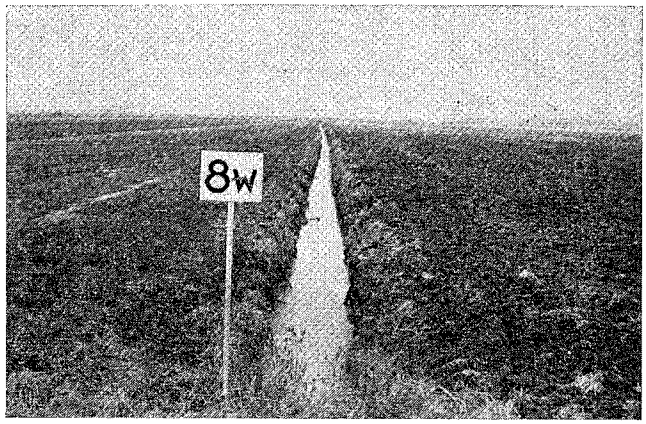


The IRR&R crew with bombardier and backhoe used on the project.

Dr. Farnham reported that all work to date was devoted to reed-sedge peat. A marketing and distribution study included in the contract prepared by W. B. Saunders & Company, Economic Consultants, Washington, D. C., favors information on sphagnum.

The project which was started in 1965 and continued in 1966 has yielded some valuable information concerning drainage of peat lands, field drying of peat, water relations in peat, marketing and distribution of peat produced in Minnesota and plant operating costs and projections were all covered in the research project to date.

Some basic research on dewatering peat using various mechanical devices has suggested further studies are necessary to work out the economics of such an operation.



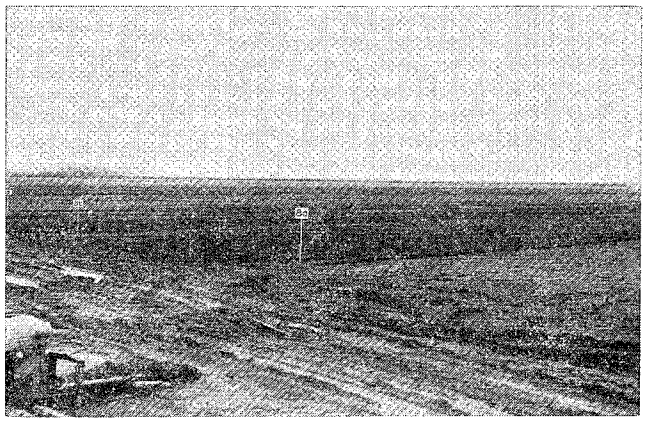
View indicating the type of experimental ditch systems in the peat field.

More data on draining peat harvesting fields requires further studies be made using a new design on ditch orientation and spacing. A new method of harvesting peat using a dredge or a hydraulic pump then dewatered mechanically is also suggested for trial.

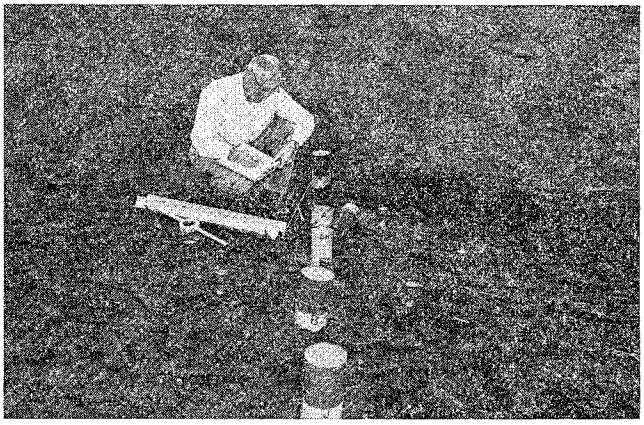
The preliminary results indicate that this method produces excellent quality peat which is readily compressed for baling.

Two publications in addition to the peat inventory reports that are included in the Federal research projects include Marketing and Distribution Opportunities for Minnesota Peat prepared by W. B. Saunders & Company, Washington, D. C.

The other publication is A Conventional (Field Harvester) Peat Operation by Robert M. Brower. Copies of these two publications as well as the bog inventories are available in the Iron Range Resources and Rehabilitation Department offices at St. Paul and Hibbing.



View of the peat fields included in the 80 acres of peat harvesting area at Wilderness Valley Farms.



A cluster of wells of various sizes and lengths being checked by project director.

There was a balance of $12,600 from the original $88,000 ARA-EDA appropriation. The request for an extension totals $40,000 which would mean an additional $27,400 of Federal funds to complete the project.

Four equipment companies are cooperating with IRR&R in this Federal research project and are offering services of their engineers and facilities for dewatering and pressing tests. Working in cooperation with Dr. Farnham, these firms are participating at no cost to the state. The firms involved are the Davenport Machine and Foundry Company, Davenport, Iowa; Nordberg Manufacturing Company, Milwaukee, Wisconsin; Bemis Bag Company, Minneapolis, Minnesota; and Great Northern and Northern Pacific Railroads.

In addition to the cooperative research project financed partially with Federal funds, the Mineral Research Division's peat survey crew is continuing the sampling of other bogs to provide material for the University of Minnesota. The IRR&R appropriated $10,000 to the University of Minnesota for this purpose. All of these funds were expended for salaries and supplies for laboratory work at the U of M campus in St. Paul.

Total peat reserves of the United States are estimated at 13,827,000,000 tons. Minnesota peat reserves are estimated at 6,835,300,000 tons, almost half of the U. S. supply. This information is from a report on the peat deposits of Minnesota made by E. K. Soper for a Minnesota Geological Survey bulletin.

PEAT SURVEY AND SAMPLING

The peat bog survey and sampling program was continued in cooperation with Dr. R. S. Farnham of the Department of Soil Science, University of Minnesota, St. Paul. Sampling, preliminary classification, vegetation study and mapping are done by the IRR&R crews with analyses and final classification conducted in the Soils Department Laboratory.

Preliminary studies are followed up by sampling with a hydraulic backhoe mounted on a muskeg tractor and using a pattern so as to best determine the amount and types of peat in each individual bog. Bog limits are checked, without samples in many cases, to aid in mapping and final determination of the amount of peat. This is also an aid in planning areas for plants and buildings for a commercial operation.

BOGS SAMPLED SINCE THE LAST BIENNIAL REPORT*

		Samples	Acres
1.	Meadowlands East (completed)—St. Louis County	201	4,240
2.	Canyon—St. Louis County	186	2,800
3.	Cotton—St. Louis County	135	2,160
4.	Zim-Fens-Sax Area—St. Louis County	1,033	18,960
5.	North Pine Island—Koochiching County	147	1,080
6.	Cotton East—St. Louis County	66	1,440
7.	Toivola East—St. Louis County	345	6,560
8.	Little Swan—St. Louis County	232	5,080
9.	Nakoda Bog—Koochiching County	192	4,320
10.	Cromwell N.E.—Carlton County	143	1,440
11.	North Cromwell—Carlton County	165	3,280
	TOTALS	2,845	51,360

*Previous bogs sampled are listed in the biennial reports of 1960-1964.

Aid was given to others involved in peat research work. This consisted of: assisting a professor from the University in collecting large samples from various bogs for a research project; transporting and assisting a group of water geologists and Dr. Farnham in the Red Lake Bog; and on two occasions, Canadian consultants were taken into surveyed bogs to obtain samples and data for their testing to aid their clients determination of a possible expansion of their peat operations to Minnesota.

IRR&R personnel aided the A.R.A. Technical Assistance Peat Research Program at Wilderness Valley Farms in numerous ways during the work in 1965 and 1966. Ditches were dug, existing ones cleaned out, recordings made and other related work performed as necessary. Assistance was also provided in preparing charts, graphs and progress reports. This was part of IRR&R's participation along with providing the land, buildings and equipment.

In connection with the A.R.A. project, twelve 55-gallon drums of three (3) types of peat were shipped to a testing laboratory in Davenport, Iowa for a mechanical dewatering and drying test. Representatives of the department were in attendance, observed the tests and obtained information relative to the use of their commercial equipment for a peat operation. Results were included in progress reports and a preliminary economic feasibility study was included in the last report. Preliminary results indicate that the right type of peat would provide a profitable operation and have many advantages over the conventional harvesting methods.

Inventory reports of the peat resources of the Cook Bog and the Red Lake Bog were published and distributed throughout the United States and Canada to interested parties and libraries. These are available through the IRR&R offices in St. Paul and Hibbing. A report covering the very large Zim-Fens-Sax area is being compiled which will be a study of the peat land for both agricultural (crop production) and horticultural use of the peat. Also being prepared is a general peat bulletin which will give a better understanding of peat and its uses.

It is hoped that the results of the technical assistance grant study and the inventory reports will help make Minnesota peat competitive and result in an expansion of the peat industry in the State. A complete report which includes an economic study of a conventional harvesting operation will be published on termination of the project.

PEAT BOG WASTE STABLIZATION

The IRR&R is an applicant for a U. S. Department of Interior, Research and Training Grant Program under the Federal Water Pollution Control Administration.

Total funds requested for this project for a three-year period is $213,795. Of this amount the Public Health Service will provide $182,795 and the IRR&R's share is $31,000. Application for these funds is in cooperation with Ruble Miller Associates, Inc. of Duluth, an experienced engineering firm.

For several years the Superwood Corporation's plant located at Floodwood, Minnesota, which was originally under contract with the IRR&R, has been discharging the process waste effluent into an adjacent peat bog. This was the practice of the preceding wet process peat recovery plant at this site.

In considering a method of disposal for a similar waste at a proposed plant at Virginia, Minnesota, a $600,000 investment of IRR&R's funds, the absence of any operational or esthetic problems from the disposal method employed at Floodwood prompted an investigation into the effectiveness of a peat bog disposal process.

The Minnesota Water Pollution Control Commission was reluctant about effluent from the Virginia plant in neighboring lakes or ponds because of the pollution problem which would affect the water source necessary in the taconite operations. It was suggested that if this effluent was filtered through the peat bogs the pollution problem would be solved.

The Water Pollution Control Commission granted a temporary permit under the condition that tests would prove that the peat bog was effective in eliminating the undesirable elements in the water which would contaminate the source in which the mining companies were concerned. The data of two independent samplings indicated a marked reduction in the raw effluent B.O.D.

These data suggested that peat may contain some unknown quality or substance which may make peat suitable as a very low cost means for reducing water pollution. In order to positively confirm the foregoing described observations, a comprehensive sampling program was planned.

The data presented in tests completed in November 1965 indicate that a peat bog has some strange capability for reducing B.O.D. from 52 to 84 percent under loadings far greater than have ever been possible by land disposal methods heretofore.

On the basis of these findings, the IRR&R submitted an application through Ruble Miller Associates, Inc., for a research grant to conduct a complete investigation of the possible role of peat in the stabilization of organic wastes.

The giant reserves of peat in Northeastern Minnesota make this area an ideal place to conduct such an investigation, particularly because of the potential benefit to this region if practical ways can be found to promote widespread use of peat for the treatment of wastes with the resulting water pollution reduction which may be brought about.

The available peat area presently on the plant site property is approximately 20 acres. There is more peat land adjacent to the plant site property which could be acquired for waste treatment if necessary. The loading on the available plant site property would be approximately 143 pounds B.O.D. per acre per day. Such loading should result in a 97 percent reduction in B.O.D. if conditions at the Multiply plant are comparable to those at Floodwood.

TOPOGRAPHIC MAPPING

Although IRR&R did not provide funds for topographic mapping during the past biennium, the Department was represented on the State Mapping Advisory Board and participated in meetings with the committee from Minnesota Outdoor Recreation and Resources Commission which provided State funds to match the Federal funds available for continuation of the projects.

It was indicated during the sessions that Northeastern Minnesota had been well covered in the State mapping program because of IRR&R funds which were available from July 1, 1949 through June 30, 1962.

A total of $540,929.13 of IRR&R funds was appropriated for the mapping program for northeastern Minnesota. According to the U. S. Geological Survey, a total of 107 maps were credited to the IRR&R as a result of funds made available for maps during that period of time.

An inventory of the topographic maps that cover the northern part of Minnesota is maintained in the offices in Hibbing. These are available without charge to public and governmental agencies. A record of mapping progress and availability is also maintained. A master file of all U.S.G.S. maps published for the State is kept in the office of the Commissioner, Room 60, State Office Building, St. Paul, Minnesota 55101.

Matching funds for topographic surveys per cooperative agreements wth the U. S. Geological Survey from July 1, 1949, through June 30, 1962:

Year	Amount
1949-50	$ 21,451.70
1950-51	30,000.00
1951-52	30,000.00
1952-53	40,000.00
1953-54	40,000.00
1954-55	54,000.00
1955-56	50,000.00
1956-57	50,000.00
1957-58	50,000.00
1958-59	50,000.00
1959-60	25,502.37
1960-61	49,975.06
1961-62	50,000.00
TOTAL	$540,929.13

U. S. Geological Survey Topographic Maps published with Iron Range Resources and Rehabilitation matching funds.

Name of Quadrangle	Date Published
Alice Lake	1960
Basswood Lake	1957
Beth Lake	1960
Biwabik	1950
Biwabik NE	1951
Biwabik NW	1951

Name of Quadrangle	Date Published
Bovey	1952
Brimson	1957
Britt	1951
Brule Lake	1960
Buhl	1951
Calumet	1952
The Cascades	1960
Casco	1951
Central Lakes	1951
Chad Lake	1956
Cherokee Lake	1960
Cohasset East	1953
Cohasset West	1953
Conners Island	1959
Crab Lake	1956
Cramer	1955
Crocodile Lake	1959
Cross Lake	1960
Deer Yard Lake	1958
Devil Track Lake	1960
Dutton Lake	1959
Eagle Mountain	1960
Eagles Nest	1956
Ensign Lake	1957
Ester Lake	1959
Eveleth	1951
Farquhar Peak	1960
Finland	1956
Forest Center	1957
Gabbro Lake	1957
Gilbert	1951
Gillis Lake	1959
Good Harbor Bay	1958
Grand Marais	1960
Grand Portage	1959
Grand Rapids	1953
Greenwood Lake	1954
Gunflint Lake	1960
Hibbing	1957
Hovland	1960
Hungry Jack Lake	1959
Illgen City	1956
Isabella	1955
Jenkins	1959
Kadunce Creek	1960
Kawishwi Lake	1960
Keewatin	1952
Kelso Mountain	1960
Kekekabic Lake	1959
Kinney	1951
Kirk	1951
Lake Polly	1960
Lima Mountain	1959
Little Marais	1956
Long Island Lake	1960
Lost Lake	1956
Lower Whitefish Lake	1959
Lutsen	1959
Makinen	1951
Markham	1957
Mark Lake	1960
Marr Island	1960
McKinley	1950
Mineral Center	1959
Munker Island	1959
Nashwauk	1952
Nisswa	1959
Northern Light Lake	1959
Ogishkemuncie Lake	1959
Palo	1951
Pelican Lake	1959
Pengilly	1952
Perent Lake	1960
Pigeon Point	1959
Pine Lake East	1959
Pine Lake West	1959
Pine Mountain	1959
Pine River	1959
Pine River SW	1959
Sawbill Camp	1960
Schroeder	1955
Silica	1952
Silver Bay	1954
Sioux Pine Island	1956
Siseebakwet Lake	1953
Soudan	1956
South Fowl Lake	1960
South Lake	1960
Split Rock Point	1956
Split Rock Point NE	1956
Stephen	1954
Tait Lake	1960
Tofte	1955
Tom Lake	1959
Tower	1956
Trommald	1959
Vermilion Dam	1956
Virginia	1951
Warren	1955
Whyte	1953
Zim	1951
Total number of maps	107

LAND OWNERSHIP MAPS

The land ownership map program, which has been very popular based on the continuing demands for copies, was continued through the past biennium.

These maps are prepared in color indicating state, county, federal and private lands. The map on page 33 indicates the status of the program as of July 1, 1966, showing counties that have been completed, those in the printing process, and counties scheduled for future publication.

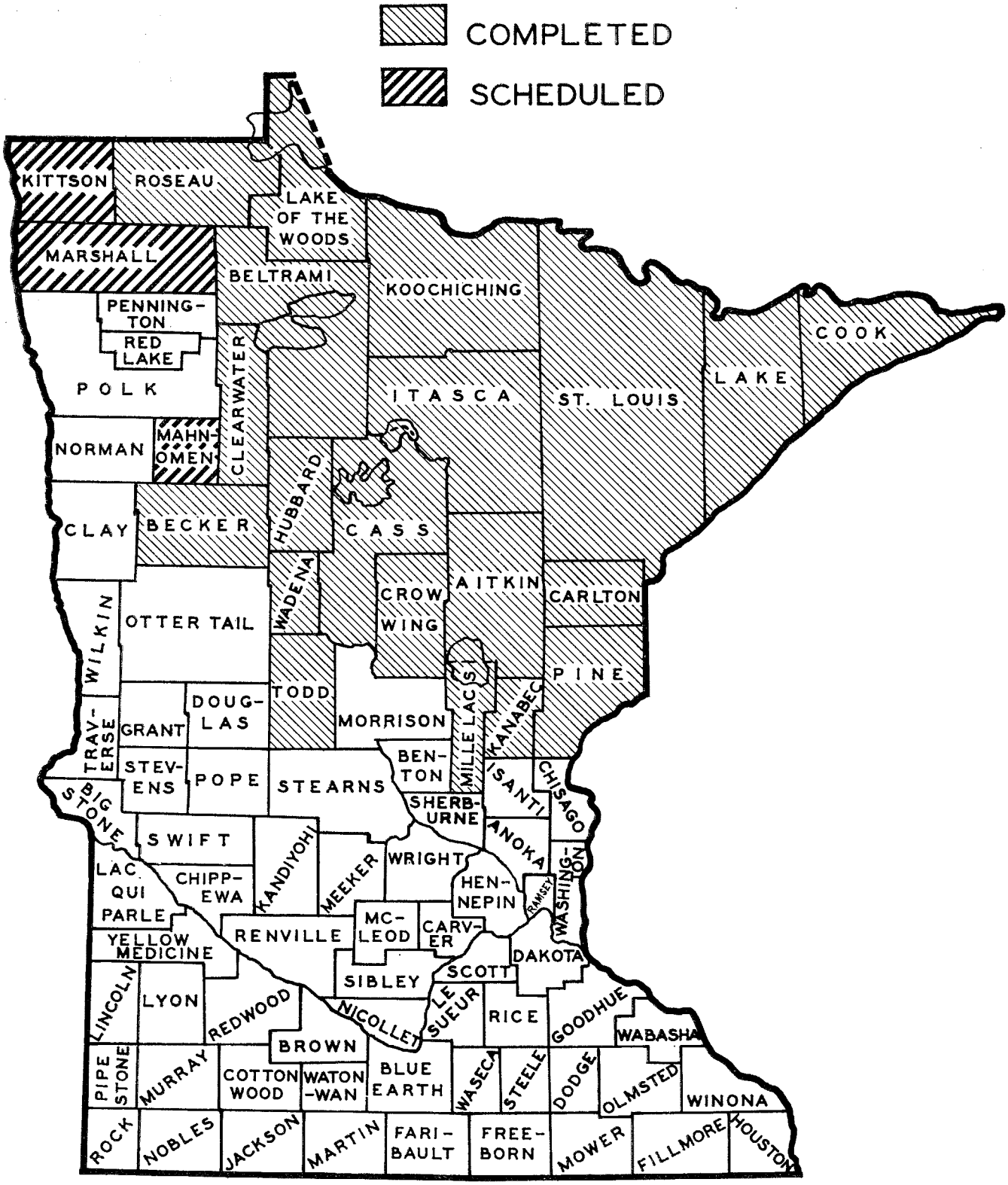
Both the St. Paul and Hibbing offices have received so many requests for these maps that in many cases the first printing supply has been exhausted and second printing orders were necessary. Whenever possible the Department made changes in the second printing to include any land transactions in which title had changed from the original map.

The following counties have been covered in the project: Aitkin, Becker, Beltrami, Carlton, Cass, Clearwater, Cook, Crow Wing, Hubbard, Itasca, Kanabec, Koochiching, Lake, Lake of the Woods, Mille Lacs, Pine, St. Louis, Todd and Wadena. New county maps scheduled are: Cass, Wadena, Roseau, Kittson, Mahnomen and Marshall.

Land Ownership Maps Printed

County	1st Printing	2nd Printing	3rd Printing
Aitkin	1963	1964	1966
Becker	1964		
Beltrami	1963		
Carlton	1964		
Cass	1963	1966	
Clearwater	1964		
Cook	1963		
Crow Wing	1963		
Hubbard	1965		
Itasca	1962	1964	1966
Kanabec	1966		
Koochiching	1963	1966	
Lake	1964	1965	
Lake of the Woods	1966		
Mille Lacs	1966		
Pine	1964		
Roseau	1967		
St. Louis	1963	1966	1967
Todd	1966		
Wadena	1964	1966	

OWNERSHIP MAPS PROGRESS



WATER DRILLING

Faced with the problem of having to close the FFA-FHA Camp at Arrowhead Lake due to a poor water supply, the State Department of Vocational Education requested aid in finding a new water supply for the camp. The IRR&R water survey crew was assigned to the project and after considerable testing in the area, put in a new well and developed it for their use. Later, in search of another source of water, other areas were checked by additional drilling.

At the request of the Eveleth-Virginia Boy Scout Council, the water survey crew was assigned to drill a well at the Scout Camp at Pleasant Lake, located south of Eveleth. Difficult drilling conditions were encountered but an aquifer was discovered at 200+ feet and a well with a sufficient water supply was established and the project terminated.

The Aitkin County Park Commission requested aid in obtaining a source of water at their park site in Aitkin County near Jacobson. The IRR&R crew checked the area with approximately 600 feet of auger drilling but no source of water was found and the project suspended until a later date.

The crew was sent to Ely to check the site and soil conditions of the proposed airport development. The plans are not definite and the project is in waiting.

Consulting services were provided to the cities of Chisholm and Gilbert as water problems arose during the biennium. Assistance had been given to these cities in the past in the location of new water supplies.

PARTICIPATING AGENCY PROJECTS

U. S. Department of Commerce
Economic Development Administration
(formerly-Area Redevelopment Admin.)

U. S. Department of Labor
Neighborhood Youth Corps

Board of Education, City of Duluth
Farm Management Program for N. E. Minn.

U. S. Department of the Interior
Geological Survey — Water Survey

Minnesota Department of Conservation
Division of Game and Fish
Wild Rice Production at Upper Rice Lake, Clearwater County

University of Minnesota
Institute of Agriculture, Department
of Soil Science—Peat Research Project

ECONOMIC DEVELOPMENT ADMINISTRATION

(Formerly—Area Redevelopment Administration)

Since the inception of Area Redevelopment Administration in 1961, the Iron Range Resources and Rehabilitation Department has participated in the area rehabilitation which today is known as the Area Redevelopment Act Public Law #89-136.

A total of $381,531 was appropriated by IRR&R as the applicant's portion of research projects conducted with State and Federal funds. In many cases it was the original investment by the IRR&R for a starting phase of the project which encouraged and made possible the additional investment by the Federal government of considerably more funds. Reports on the results of these studies are available through IRR&R or the ARA-EDA offices in the State of Minnesota through the Department of Business Development.

The IRR&R provided participating funds as well as manpower and equipment for two ARA-EDA projects which are operating with a total of $459,000. Four projects requesting technical assistance grants from ARA-EDA are pending in which the IRR&R has participated $109,000. Federal funds available for these projects as grants to the sponsors total $498,740.

Following is a breakdown of the projects mentioned above.

I. IRR&R Participating Funds with Federal ARA-EDA Technical Assistance Grants

Name & Description	IRR&R Funds	Federal ARA-EDA Funds
Arrowhead Charcoal Co. Mfg. charcoal briquets	$ 42,000	$182,000 (denied)
Arrowhead Briquet Co. Mfg. charcoal briquets (New application submitted by IRR&R for R. A. Matthews — see list of Pending Grants)	—	—
Carey Lake Recreation Area Feasibility study for recreation area	6,000	3,000 (complete)
Cuyuna Range Minerals Research, Inc. (Robert S. Adams) Feasibility of processing non-magnetic iron ores	15,000	82,000 (first phase complete)
W. S. Moore Co. Develop blast furnace feed from fine-sized ore	52,000	208,000 (complete)
Strategic-Udy — Ford, Bacon, & Davis Study Strategic-Udy process on low-grade Mesabi iron ores.	2,531	14,000 (complete)
University of Minnesota — Mines Experiment Station Beneficiation of low-grade ore (IRR&R share is part of Legislative transfer which was used for matching funds for the ARA-EDA project.)	160,000	90,000 (one phase complete)
Wilderness Valley Farms Study to investigate the feasibility of reducing production and distribution costs of Minnesota peat to a competitive level	30,000	88,000 (complete in 1967)
Zontelli Brothers — Southwestern Engineering Study of Krupp-Renn process on low-grade iron ores and test western Mesabi iron ores	74,000	65,000 & 175,000 (complete)

II. IRR&R Participation in Projects with Federal ARA-EDA Industrial Loans

Name & Description	IRR&R Funds	Federal ARA-EDA Funds
Sturgeon Lake Industries		
Establish sawmill & charcoal industry	*	58,000 Federal
*IRR&R furnished labor & equipment		18,000 State
H. C. Hill & Sons		
Expand wood-working plant	*6,350	293,000 Federal
*IRR&R furnished equipment		90,000 State

III. IRR&R Participation in ARA-EDA Technical Assistance Grants Pending

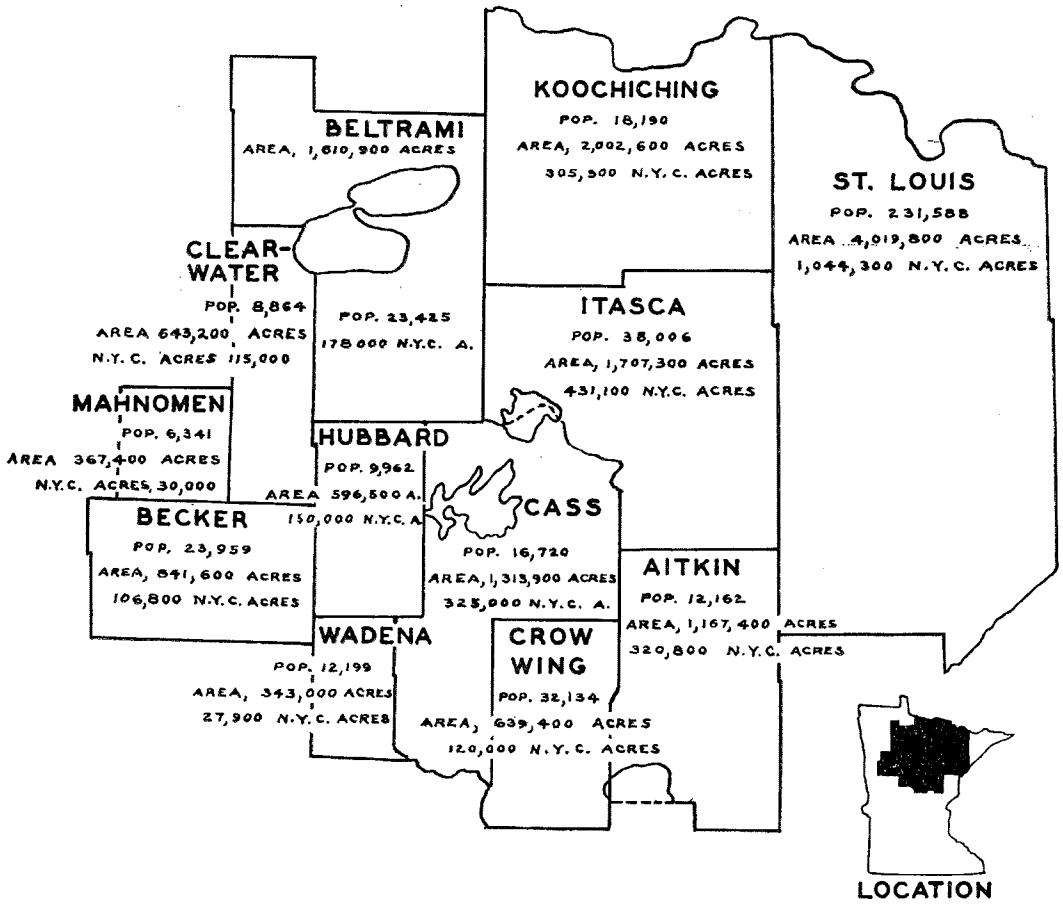
Name & Description	IRR&R Funds	Federal ARA-EDA Funds
R. A. Matthews		
Charcoal-peat briquet feasibility study	$ 20,000	$ 81,645
Manomin Development Co.		
Research and Development of agronomic types of wild rice seed	*49,000	185,000
*(IRR&R appropriated this amount for wild rice research in a State Conservation Dept. project at Upper Rice Lake.)		
Ruble Miller Associates, Inc.		
Peat bog waste stabilization study	30,000	182,795
(This has been resubmitted to the U. S. Dept. of Interior, Federal Water Pollution Control Commission at the suggestion of EDA.)		
Typha Products, Inc.		
North Star Research & Dev. Institute feasibility study on utilization of Typha plant for food and industrial purposes.	*10,000	49,300
*Machinery at Northome plant and research grant for U. S. Bedding Co.		

STATE OF MINNESOTA

IRON RANGE RESOURCES & REHABILITATION

NEIGHBORHOOD YOUTH CORPS PROJECT

12 COUNTY STATISTICS



TOTAL AREA, 15,253,000 ACRES

TOTAL N. Y. C. ACREAGE, 3,154,900

TOTAL POPULATION, 433,550

U. S. DEPARTMENT OF LABOR

Neighborhood Youth Corps

The Iron Range Resources and Rehabilitation participated in the Economic Opportunity Act of 1964, Public Law #88-452, by sponsoring a 12-county NYC project which provided employment for approximately 250 youths from 16 to 21 in forestry orientated projects.

The first NYC project was for a total of $510,980 of which the Federal government made available $381,520 and the IRR&R $129,460.

Approximately 90 percent of the Federal funds was expended for wages for the enrollees and the crew leaders who were hired through the offices of the Minnesota State Employment Service in the respective counties involved.

This started as a 6-month project but was extended for 3 months because of the intense interest in the active participation of the counties involved.

The second NYC contract was for 12 months but having a reduced number of enrollees. The total was dropped from 250 to 150 because of improved economic conditions of Northeastern Minnesota which cut down the number of available enrollees who would qualify to the financial criteria required by the law.

The following counties participated in the projects which were operated in cooperation with the Land Commissioner of the respective counties: Aitkin, Becker, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Itasca, Koochiching, Mahnomen, St. Louis and Wadena.

This represents a total area of 15,253,000 acres and a total of 433,550 persons. Total tax-forfeited land in these counties available for projects under the IRR&R-NYC contract is 3,154,900 acres.

BOARD OF EDUCATION, CITY OF DULUTH

The Farm Management Program for Northeastern Minnesota

During the past biennium, the Department has assisted in conducting the Farm Management Program for Northeastern Minnesota. This cooperative venture has been made possible through close cooperation with the Minnesota Department of Education, Vocational Division; the University of Minnesota, Department of Agricultural Education; and the Duluth Area Institute of Technology. Robert G. Anderson, Vocational Agriculture Coordinator and Record Analyst for the school, has served as Supervisor of the project.

The current Farm Management Program has been in existence in Northeastern Minnesota since 1956. Financial assistance has been provided by Iron Range Resources and Rehabilitation for the years 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1964, 1965, and 1966. No report was sponsored in 1960 by IRR&R but a report was published by the Duluth Area Institute of Technology on a very limited basis. It is interesting to note that when the financial assistance was withdrawn the number of cooperating farmers dropped to 21, the lowest it has been in the ten-year life of the program.

Below is listed the participation by counties in 1964 and 1965 (Record keeping years):

1964 Record — Printed in 1965

13 Vocational Agriculture Instructors.

2 County Agents cooperating in 12 counties.

Becker	3	Koochiching	4
Beltrami	4	Lake of the Woods	3
Carlton	1	Pine	3
Cass	5	St. Louis	9
Hubbard	12	Todd	14
Itasca	1	Wadena	1
		Total	60

1965 Record — Printed in 1966

14 Vocational Agriculture Instructors

3 County Agents cooperating in 13 counties.

Becker	8	Lake of the Woods	5
Beltrami	4	Ottertail	6
Cass	13	Pine	3
Crow Wing	1	St. Louis	4
Hubbard	10	Todd	41
Itasca	1	Wadena	25
Koochiching	2	Total	123

The past two years have been quite important regarding progress toward a more efficient method of handling analysis procedures. The records for 1964 were analyzed by data processing procedures at Agriculture Records Coop at Madison, Wisconsin. Though there were many problems during this initial year, the experiment with this method was successful. As a result the records for this past year, 1965 record, were also analyzed electronically. It appears that there will be many other avenues of possibilities opened to us by this method.

Since a large number of cooperators are located in Todd County, Bill Guelker, Vocational Agriculture Coordinator for the Staples Area Vocational School, has been doing some preliminary transcribing of information from the account books from that area. This has greatly speeded up the details of the analysis work.

Production of reports over the past two years is as follows:

1964-65

800 copies of the "Annual Report"

500 copies of the "Supplementary Report"

Miscellaneous teaching aids for area teachers.

1965-66

800 copies of the "Annual Report"

500 copies of the "Supplementary Report"

1000 copies of the "Ten Year Study"

Miscellaneous teaching aids for area teachers.

50 copies of "Annual Report for 15 MDTA Cooperators at Eagle Bend, Minnesota.

Clerical help for the program has consisted of one girl, Sandra Wrenfrow, about ½ time in 1964-65 and about ¾ time in 1965-66. There has been no charge for the supervisory services of Robert G. Anderson, Vocational Agriculture Coordinator.

Each year the top two farm families in the program, based on their record book and a visit to the farm by a judging committee, have been honored at the August Agricultural Council of the Duluth Chamber of Commerce. This has added much interest and good public relations to the program.

1964 Winner — Warren and Audrey Jacobson, Clarissa, Minnesota

1965 Winner — Gordon and Gale Martin, Pillager, Minnesota

In November, 1965 and February, 1966, a series of 5 television programs on farm management were presented over KDAL, Duluth, and KCMT, Alexandria. At this time the participation of IRR&R in the total program was explained and appreciation shown.

It appears that interest in the farm management program for the future continues to look very bright. It is anticipated there will be about 175 cooperators this year. This means that electronic methods of computing the analysis will become even more important in the conservation of time and in accuracy attained.

Without the support of the IRR&R many farmers in this area would not be able to participate in this most important program. Successful farmers throughout the area are realizing more and more the value of complete records and the need for positive decision-making made possible by the analysis reports. Letters received from time to time and comments by the participating farmers at the analysis meetings point up the appreciation there is for IRR&R's important part in this program.

U. S. GEOLOGICAL WATER SURVEY

The Geological Survey's program with the Department of Iron Range Resources and Rehabilitation during the biennium July 1, 1964, through June 30, 1966, consisted of completion of data analysis and a report of a project on the groundwater resources of the Hibbing, Minnesota, area. Funds expended were $3,118.37 in 1965 F. Y. and $7,957.13 in 1966 F. Y. One-half of this amount was from U. S. Geological Survey matching funds.

The project was completed and the report written by Gerald Lindholm, geologist, stationed in the Grand Rapids, Minnesota, field office. Assistance and supervision in the project were provided by William Miller and Edward Oakes of the Grand Rapids field office. Final technical review was given in the St. Paul office of the Geological Survey. A review copy of the report has been presented to the city of Hibbing for their use in planning water resource development. Published copies of the report will be distributed nationally as soon as printing is completed.

The report describes the occurrence and movement of ground water in the area surrounding Hibbing and indicates areas where it is most feasible to develop additional supplies for municipal growth and industrial purposes. Pumping tests performed on the major water-bearing rock units indicate that relatively large supplies of good quality water are available in selected locations for substantial development. The report indicates that these larger supplies lie along narrow trends away from the central area and that well development might logically follow these trends.

The report provides Hibbing with a comprehensive broad-based water resource report which will serve as a reference for water management. This documented information on water resource availability near Hibbing should materially assist the community in obtaining manufacturing and industrial plants for which a large, high-quality water supply is a requirement.

At present, the Survey is cooperating with the IRR&R in order to complete a report on the Grand Rapids, Minnesota, area similar to that which was completed for Hibbing. The Grand Rapids study will complete all individual municipal investigations that were underway when the cooperative program was reduced in 1963.

They suggest that consideration be given to compilation of detailed quantitative reports on the water resources in each of the Iron Range areas where development of large taconite plants will make utilization of all possible sources of supply necessary and where disposal of waste water may create un-anticipated complications. The investigations completed by the Geological Survey on water resources of the Iron Range have been widely used by the iron companies and municipalities in developing sources of supply for existing plants, and the information will continue to be used extensively as these plants are expanded.

The completed reports, however, indicate only areas where large quantities of water may be obtained and do not place maximum limitations on the supplies that can be developed. Nor do these reports consider the complex movement of ground water in the area and the effects both of extensive development and of waste disposal. A detailed analysis of these factors would do much to assure the Iron Range of an orderly economic development in this period of expanding utilization of taconite ores.

MINNESOTA DEPARTMENT OF CONSERVATION DIVISION OF GAME AND FISH

Wild Rice Production at Upper Rice Lake, Clearwater County

Iron Range Resources and Rehabilitation appropriated $49,000 to the Minnesota Department of Conservation, Division of Game and Fish, for a wild rice project on the State-owned property known as Upper Rice Lake in Clearwater County.

During the drought of the 1930's and early 1940's, this lake, located ten miles Southeast of Bagley, contained a fine stand of wild rice estimated at from 500 to 800 acres. In recent years, however, the water level of the lake has been too high for substantial wild rice production. In 1966 there were only about 50 acres of wild rice available.

The Department of Conservation contends it is necessary to have water level controls to maintain suitable levels for wild rice crops. The Bureau of

Engineering Services has designed a control system which will improve the rice production. After lowering the level, the lake will produce 500 acres of wild rice. An annual yield of 100 pounds of "green" or non-processed rice can be expected. This would mean at least $50,000 a year for the harvesters at present prices.

In addition to the value of wild rice harvested, there would also be benefits to waterfowl production and hunting. This lake may also provide a site for rearing and winter rescue of northern pike for stocking in other waters as is now done in some other wild rice lakes by the Department of Conservation.

Approximately $2,000 of the total project will be necessary to purchase or obtain easements for use of about 15 acres of privately owned lands by three owners along the ditch and at the site of the dam.

UNIVERSITY OF MINNESOTA, INSTITUTE OF AGRICULTURE, DEPARTMENT OF SOIL SCIENCE

Minnesota Peat Research Project

Dr. R. S. Farnham reports the cooperative peat project (IRR&R and University of Minnesota, Department of Soil Science) was continued during the past biennium. This project involves sampling selected bogs, exploratory studies and laboratory characterization of peats sampled. The Department of Soil Science of the University of Minnesota has taken the responsibility of directing the sampling party, analyzing the samples and classification of the peat. In addition some fundamental studies on formation of peat have been continued.

As a result of these studies the Department of Soil Science has proposed a new classification system for organic soils (peat) which has been accepted by the United States Department of Agriculture, Cooperative Soil Survey. This system has been tested by several states in the United States and several provinces in Canada. It is presently being reviewed and modified by classification experts and will be published and adopted by the Soil Survey of the United States Department of Agriculture for field use.

The following analyses from several bogs sampled have been made since the last biennial report. Analyses include pH, per cent ash content, per cent waterholding capacity, and classification:

Central Lakes Bog	96 Samples	(Completed)
Wilderness Valley Farms	447 Samples	(Completed)
Floodwood Bog	160 Samples	(Completed)
Peterson's Bog	255 Samples	(Completed)
International Falls Bog	105 Samples	(Completed)
Meadowlands East Bog	273 Samples	(Completed)
Pine Island Bog	100 Samples	(Completed)
Porter Ridge Bog	109 Samples	(Completed)
Hill City SE Bog	321 Samples	(Completed)
Canyon Bog	186 Samples	(Completed)
Cotton Bog	135 Samples	(Completed)
McGregor So. Bog	128 Samples	(Completed)
McGregor No. Bog	49 Samples	(Completed)
McGregor Bog	48 Samples	(Completed)
Floodwood NW Bog	271 Samples	(Completed)
Zim-Fens-Sax Bog	1,033 Samples	(Completed)
North Pine Island Bog	147 Samples	(Completed)
Cotton East Bog	66 Samples	(Completed)
Toivola East Bog	345 Samples	(Continued)
Nakoda Bog	137 Samples	(Incomplete)

WILDERNESS VALLEY FARMS

Fens, Minnesota

WILDERNESS VALLEY FARMS

Late in 1964 Iron Range Resources and Rehabilitation accepted a gift from The Chun King Corporation, Duluth, Minnesota, of the Wilderness Valley Farms complex at Fens, Minnesota.

This includes 520 acres of land, 22 buildings and considerable equipment estimated at a value of $250,000.

The property includes farm land area (378 acres), peat harvesting area (80 acres), wild rice area (64 acres), and a cultured sod area.

The general terrain of this area is level and consists of peat bogs and mineral islands in the form of sand and gravel. On this land is high-quality reed-sedge peat that is above 90 percent organic material in comparison to 50-60 percent organic material found in peat in other parts of the State. This high-quality peat is the basis for the research projects being conducted by IRR&R in cooperation with the University of Minnesota with participating Federal funds.

The farm land area is improved with 22 structures including offices, shop, boiler, wells, mushroom houses, packing, residence, and miscellaneous storage buildings.

IRR&R receipts for sale of sod, stumpage, equipment rental, etc., totaled approximately $12,000 for two seasons. This includes $30.00 a month rent for the residence which is occupied by a watchman employed by the Department.

The Commission approved a long-range program proposed by the Commissioner for research in peat, wild rice, cultured sod, and small fruits and vegetables with participating funds from Federal agencies including the U. S. Department of Agriculture, Department of Commerce, and the Department of Interior.

Federal funds were available in peat research and use of peat for waste stabilization because of the property and facilities and machinery available at Wilderness Valley Farms. Applications have been filed for research in harvesting and improving wild rice, cranberries and small fruits and rare vegetables including mushrooms.

These research projects are being proposed with the cooperation of Harold Andrews, a graduate Agronomist, and Dr. Rouse S. Farnham, Assistant Professor, University of Minnesota Institute of Agriculture, Department of Soil Science.

Prospects for approval of these projects and additional Federal funds to carry out the research programs at Wilderness Valley Farms look favorable because of the fact that the State owns this property and the IRR&R has equipment and trained personnel to offer as its share of the cost of the proposed projects. These are important factors in the approval of the grants obtained during the biennium for the peat research projects.

COOPERATIVE PROJECTS WITH PRIVATE INDUSTRY

Rustic Fence, Inc., Northome

Minnesota P & O Mfg. Co., Inc., Virginia

Mesabi Grow Company, Inc., Central Lakes

Mills Cash Sales, Inc., Grand Rapids

Kimball's, Inc., Hill City

H. C. Hill & Sons, Inc., Cook

Superwood Corporation, Duluth

Multiply of Virginia, Inc., Virginia

Formed Fiber Products, Inc., Floodwood

Onamia Garment, Inc., Onamia

Arrowhead Seed Growers Co-operative, Cook

Nu-Ply Corporation, Bemidji

Great River Veneer Company, Deer River

Jet Ski Corporation, Grand Rapids

Duluth Filter Company, Duluth

PROGRESS REPORTS of IRR&R PROJECTS

RUSTIC FENCE, INC.

Northome, Minnesota

This project was started in 1961 with a $55,000 appropriation for construction of a plant and installation of machinery to manufacture cedar fence posts. The original operator, Mr. D. D. South of Arlington, Texas, had financial problems and arranged for refinancing of the operation in 1963.

During 1964 the plant had been operating with some 8 to 12 persons in the factory and from 8 to 20 peelers in the yard along with one office secretary. The new firm, however, experienced considerable difficulty in 1965 because of severe weather conditions and lack of timber. The contract was terminated on May 10, 1966, because of failure to comply with contract terms.

A committee of the Chamber of Commerce of Northome is negotiating with a firm to operate the plant as a combination wood products and cattail complex. The Chamber of Commerce has requested that the plant be made available to them on a lease-purchase contract similar to the one used by the two previous operators. Payments to date total $6,920.

Iron Range Resources and Rehabilitation's investment in a Typha research project in Northome totaling $9,000 will be combined in this operation. The equipment and research results from the Northome Typha project are under contract to the same persons interested in the wood products plant.

MINNESOTA P & O MFG. CO., INC.

Virginia, Minnesota

The Minnesota Prosthetic and Orthotic Mfg. Co., Inc., a subsidiary of the United States Manufacturing Co., Glendale, California, manufactures wooden component parts used in artificial limbs which are manufactured in the California plant.

The firm took over the former State Highway Department building on June 1, 1964. By July 1, 1964, six persons were employed at the plant which was using approximately 8,000 board feet of aspen lumber per month purchased from loggers in the area. In 1965, however, the firm was having problems with the quality of lumber being purchased for this specific purpose. Mr. B. M. Erchul, General Manager, indicated in order to continue operation the firm would have to get assurance of a good supply of high-quality aspen for this operation. Limited operations were carried on in 1965 for this reason.

The firm is also faced with the problem of locating a new building. The State of Minnesota had agreed to sell the building to the City of Virginia which was expected to materialize in the 1967 season. The Virginia Chamber of Commerce offered to cooperate with the P & O Manufacturing Company to find a new location to continue the operation in Virginia.

MESABI GROW COMPANY, INC.

Central Lakes, Minnesota

Operators of Mesabi Grow Company, Inc., the peat packaging plant at Cotton, Minnesota, were negotiating for a transfer of the lease-purchase contract to a new owner toward the end of the fiscal year. The building and much of the equipment is owned by Mesabi Grow Company but the State of Minnesota has an investment in some of the equipment at the packaging plant.

The plant is operating and employs from 7 to 10 workers during the packaging season and from 2 to 5 men in the peat fields in addition to part time clerical workers in the business office in Virginia.

During the biennium Mesabi Grow Company shipped approximately 170 carloads of peat totaling more than 8,500 tons. Shipments were made to the Twin Cities area as well as outstate loads mostly to states in the Southwestern United States.

MILLS CASH SALES, INC.

Grand Rapids, Minnesota

Mills Cash Sales, Inc. is using the former IRR&R rutabaga warehouse building for storage of the firm's lumber supplies. They have a lease-purchase contract with the State and are current in their monthly payments. They employ from 2 to 4 persons in the facility on a year-round basis.

KIMBALL'S, INC.

Hill City, Minnesota

Kimball's, Incorporated have reorganized and elected new officers including Mr. A. H. Kimball of St. Paul as President. The basic product, a fireplace log made of peat and wax, has been well received on the market but lack of promotion and marketing has limited sales.

The new officers have requested a new contract with more lenient payment terms in order to make more funds available for operating capital. Kimball's Incorporated have tied-in their regular operation with Christmas holiday season supplies along with the fireplace log project.

H. C. HILL & SONS, INC.

Cook, Minnesota

H. C. Hill & Sons has some equipment on a lease-purchase contract from the IRR&R. The firm has recently expanded with a Federal loan under the ARA-EDA program of $292,500 plus the $90,000 loan from the State ARA.

The IRR&R equipment is a small part of the woods product operation but according to the operators, is necessary for the firm's operation. This machinery was originally purchased by IRR&R for the ski plant at MacGregor, Minnesota.

SUPERWOOD CORPORATION

Duluth, Minnesota

Superwood Corporation's hardboard facility at Duluth continues to operate and was expanded with the addition of a fourth production line during the period November 1964 to January 1966. This additional capacity raised the Duluth mill wood requirements approximately 30 percent, and at peak capacity they now use around 240 cords of aspen daily.

Production was increased by an equivalent amount and now reaches over 600,000 feet^2 (⅛ inch adjusted basis) daily. Competitive conditions dictate operations on a 24-hour, 7-day per week basis.

The additional capacity (the first at Duluth since 1957) was put in solely because of a new Area Redevelopment Administration financed hardboard plant erected in Superior, Wisconsin.

This new plant, owned by Superior Fiber Products, Inc., produces a 5-foot wide board which Superwood did not have the equipment to make. Accordingly, Line No. 4, a 5-foot line, was built. Experience since then has been clouded by the increased capacity available throughout the domestic hardboard manufacturing industry. Employment jumped from around 180 to over 220 while actual production did not increase markedly over that experienced with only three lines, as previously was the case. Customer demands for service caused the higher employment, not greater output.

As a result of the above, Superwood's future planning in hardboard production is somewhat uncertain. They have been investigating other product areas as a result.

MULTIPLY OF VIRGINIA, INC.

Virginia, Minnesota

Multiply of Virginia, Inc., an affiliate of Superwood Corporation of Duluth, occupies a State-owned IRR&R plant in Virginia, Minnesota. The plant was built to produce medium density building board from aspen "flakes". Significant changes in the competitive softwood plywood market as well as product problems due to the dry process utilized there resulted in a shutdown of the facility early in 1964.

Since that time attempts have been made to find new uses for the Virginia plant and as much of the on-site equipment as possible. Investigations in this area are promising and Superwood Corporation is hopeful that some expanded mill trials now pending will aid their conclusions. It is their feeling the Multiply of Virgina could be employing as many as 100 men and utilizing over 100 cords of aspen pulpwood daily, with one of the processes they are interested in starting up at the Virginia site.

FORMED FIBER PRODUCTS, INC.

Floodwood, Minnesota

In November 1965 Superwood Corporation of Duluth, Minnesota, offered to purchase the Formed Fiber Products, Inc. plant at Floodwood from Iron Range Resources and Rehabilitation. They paid $3,683 which was the balance due from the original purchase price of $19,000. Approximately 30 men are employed at the plant which manufactures formed fiber automobile parts and filters.

ONAMIA GARMENT, INC.

During the past year Iron Range Resources and Rehabilitation funds were made available for a

garment factory at Onamia in Mille Lacs County, which employs 100 persons in the area, producing military garments for the U. S. government.

The plant is so equipped that if military contracts are no longer available the operation can be converted to civilian production to assure continued employment in the area.

These new jobs were a significant contribution to the area which was not enjoying improved employment conditions along with other parts of the State. Employees come from the Crow Wing, Aitkin, and Mille Lacs County area, including residents of the Mille Lacs Indian Reservation.

This investment by the IRR&R in a garment factory comes twenty years after a similar project in Northeastern Minnesota. In 1946, IRR&R provided funds for the start of the Arrow Company at Eveleth. Today Arrow has shirt factories at Eveleth, Gilbert and Virginia in addition to a pajama factory at Eveleth.

This complex employs an average of 775 persons annually with a payroll in excess of $2,500,000 and draws employees from a thirty-mile radius of the three towns involved.

The Onamia firm will reimburse the State of Minnesota $58,000 for the machinery made available on a lease-purchase contract. An additional $20,000 was allowed the firm in the form of a grant to pay part of the salaries of the instructors, similar to the program offered the Arrow Company in 1946.

ARROWHEAD SEED GROWERS CO-OPERATIVE

Cook, Minnesota

The past two years of operations of the Arrowhead Seed Growers Co-operative have been just average and in some cases below average volume in dollar sales. Due to bad weather conditions during the past two spring seasons, the usual seedings were not completed and so depressed sales. The rainy weather the past two falls has set the farmers back a great deal in the local area but this fall has been ideal with good grain harvest. The volume of grain offered for sale has dropped off a great deal. The Arrowhead Seed Growers have been able to purchase and resell all the oats, rye and barley that have been offered and this has been used by local feeders. They purchased all of the oats and barley offered the summer of 1965 and this was used in the dairy feeds and poultry feed right in the area. This amounted to about 18,000 bushels of oats and 5,500 bushels of barley. Last fall they shipped out of their elevator about two carloads of spring wheat or approximately 5,600 bushels for sale at terminal markets in Superior, Wisconsin. Had room been available, they could have handled two carloads of rye for shipment.

This year the grain looks good but it is late due to late spring seeding. This past year, 15,000 bushels of oats, 800 bushels of barley and 4,500 bushels of spring wheat were purchased from local farmers. They feel that the fact that they have the elevator, seed plant and feed mill has been a determining factor in keeping all the grade A milk farmers going in this north St. Louis County area.

Though the seed production has gone down from three years ago, they continue to buy and process almost all the seed from the whole northeast area of Minnesota. This year they will process and sell about 24,000 pounds of red clover. This could not have been done without the complete seed plant provided by Iron Range Resources and Rehabilitation. They have continued to operate the feed mill which provides all the necessary machinery for processing or manufacture of custom mixing as well as registered feeds for the local farmers. It is a mill of a size which cannot be found within a radius of 40 to 50 miles with grain storage of approximately 15,000 bushels.

They have continued to employ four people with one and two extra employed occasionally. Feed production has gone down the same as seed production but they still grind and mix feed for the farmers, about 1500 to 1800 tons of feed per year.

Future plans are now sure for an F. H. A. loan which will involve the expenditure of about $33,000 for an addition of a 50′ by 30′ warehouse, an additional bin space of 80 tons, a new 3-ton feed mixer, a 25-ton grain dump truck scale and a new 1500-bushel 80′ elevator leg. This will be an additional aid in handling bulk feed which they have already gone into, with a bulk feed truck now part of their equipment. With these additions, they will be able to expand their help and service to farmers in the whole area.

Total investment by IRR&R for Arrowhead Seed Growers was $27,654 in 1947. Payments remaining at the time the firm requested the option to purchase were $16,833, which was pending approval by the Farm Home Administration.

NU-PLY CORPORATION

Bemidji, Minnesota

During the two year period, July 1, 1964 through June 30, 1966, Nu-Ply Corporation op-

erated on a three-shift, seven-day a week basis, (except for a few weeks when there was a pulpwood shortage) with eight hours out of each week for maintenance and two weeks out for annual vacations.

Payroll averaged 75 men	$ 438,000 Annually
Pulpwood cutters and haulers (est.)	45 Men
Pulpwood purchases—Locally	$ 215,000 Annually
Gross Income in Sales (All areas)	$1,934,000 Annually
Income from outside Minnesota	$1,740,000 Annually
Expenditures in Bemidji, including local taxes, payroll, power, etc.	$1,520,000 Annually
Outgoing Shipments—Highway	500 Truck loads
Outgoing Shipments—Railway	290 Car loads
Incoming Shipments—Highway	140 Truck loads
Incoming Shipments—Railway	25 Car loads

Only a small part of the sales are in Minnesota, so some 85 percent or more of the money received for the products on Nu-Ply is money brought into the area from other states. Of the total expended by Nu-Ply, it is estimated that over 70 percent is spent in Bemidji.

During the past several years the capacity of the plant has been increased to the extent that pulpwood consumption now exceeds 90 cords a day. Debarking and new chipping equipment has been installed.

Equipment has been engineered to remove the dust from the air discharged by the plant. It is about 75 percent effective at present with plans underway to complete cleanup within a year.

Payments to the State have continued according to the contract. The original total of $350,000 has been reduced to $138,000 as of this date. The firm was expected to negotiate for the purchase of the plant in January, 1967.

Expansion of the plant continues with a goal of another 25 percent within the next year.

GREAT RIVER VENEER COMPANY

Deer River, Minnesota

The Great River Veneer Company leased the State-owned plant from the Department of Iron Range Resources and Rehabilitation in August, 1964.

They have had on their payroll an average of twelve men steady for the past two years and hope to increase this as the operation grows.

They have purchased lumber and logs from more than fifty operators in the area over this period in the amount of 3½ million board feet and the demand is increasing steadily.

This operation will be sustained over a long period because of the accelerated growth in aspen, ash, elm, birch and basswood timber which will reach a maturity gradually and for which there is a demand for in low grades by the pallet and box business and for the high grade in other industries such as the cabinet and furniture trade.

Because of the present day market and competition it is necessary from time to time to change their methods of operations and so must make improvements on the present facilities and add new facilities when needed.

They have up to this point made extensive repairs on the present equipment especially the boiler room, dry kilns, and the planing mill and loading facilities. The roadways have been improved and gravel added to them.

A more modern method of feeding the waste to the boilers is needed and also modern lumber handling equipment, such as a sorting chain, stacker and breakdown stackers.

Considerable money was expended to repair and improve the veneer plant to put it back into operation but after operating for six months, they shut it down because of the need for more modern and up-to-date equipment such as a fast dryer and an automated short log lathe operation to be used with the existing type of veneer log which is available today.

Their plans for the future are to add improved methods and machinery to enable them to utilize the full product of a tree. That is, pulp and wood chips, low grade pallet and crating lumber and high grade lumber for the cabinet and furniture trade. This can be attained with the continued assistance from the IRR&R which has been made available to them for the past two years.

JET SKI CORPORATION

Grand Rapids, Minnesota

Jet Ski Corporation has under lease-purchase contract with the State of Minnesota the use of a Raybond high frequency generator. According to

Roger L. Jetland, Vice President, this machinery has been very helpful during the current biennium in the operation of this plant. The plant has been working on a 24-hour basis for over two years, employing twenty persons with the possibility of an increase to thirty employees at the peak of production.

DULUTH FILTER COMPANY

Duluth, Minnesota

During the period from July 1, 1964, until the present, Duluth Filter Company has gone through a period of mild growth and extensive product development, along with changes in a Board of Directors and financial re-organization.

Due to the amount of time and money spent on product improvement and research, the growth of the Company, as measured by sales, has been relatively slow. When Duluth Filter Company was purchased from the original stockholder in 1960, customers of the Company were represented mostly by mining companies on the Mesabi Iron Range. However, as iron mining was rapidly declining at this time, Duluth Filter was forced to seek other markets. These markets quickly developed into users of stationary diesel powers, such as municipal electric power plants and pipeline pumping facilities. Because of the fact that such installations are not geographically concentrated in this area, a sales and service problem was created. This is noted by the fact that Duluth Filter has installations as far east as Long Island, New York, as far south as Key West, Florida, and as far west as Seattle, Washington, as well as many in the Midwest.

During the period since July 1, 1964, until the present, Duluth Filter has increased its annual sales from $45,000.00 to $150,000.00. This has been accomplished by concentrating sales during this period to original equipment manufacturers of heavy diesel engines. With increased efforts along these lines, it is expected that sales will grow rapidly within the next few years. Conservative projections for 1967 show 93 percent increase in filter cartridge sales. This represents approximately $162,000.00, which along with additional cash sales would show a very substantial increase in the immediate future and continuing on a long range basis.

Extensive research into developing an improved filter cartridge has resulted in the "throw away" replacement filter cartridge, which was placed on the market in October, 1964. Shortly after this, the company brought out its DT series filter case, which was designed to complement the "throw away" filter cartridge. The filter cartridges are marketed under the registered trade name of "Redi-Pac" and "DF". The design and mechanical characteristics of the filter cartridges are covered by United States and Canadian patents. Raw materials for the media used in the filter cartridges consists of 50 percent Minnesota Jackpine wood fibers and 50 percent cotton linters. A dependable supply of this media in a quality form has been increasingly more difficult to obtain through present suppliers. For this reason, the company is not only actively seeking other sources of supply in Minnesota, but is undertaking a feasibility study for installation of machinery to manufacture media from wood chips or pulp in their own plant. This study will be financed by an Economic Development Administration grant. Preliminary approval of this grant has been received by the company.

At present, Duluth Filter Company is testing an all-wood fiber media. While the media would remain 50 percent Minnesota Jackpine, the cotton linters would be replaced by an Alfa cellulose (wood fiber) material, hopefully available in this area.

MISCELLANEOUS GRANTS

State Vocational Education Camp, Inc., Britt

St. Louis County 4-H Club Camp, Lake Eshquaguma

Long Lake Conservation Center, Aitkin

Carey Lake Area Recreation Development, Hibbing, Chisholm, Buhl

Minnesota Arrowhead Association, Duluth

Iron Range Planning

Aase's Wild Rice Project, Gilbert

Maple Syrup Processing Plant, Grand Portage

STATE VOCATIONAL EDUCATION CAMP, INC.

Britt, Minnesota

The State Vocational Education Camp, under the sponsorship of the State Department of Education, has worked with the Department of Iron Range Resources and Rehabilitation in setting up a number of work projects at the camp in Britt, Minnesota. During the 1965 camping season much was accomplished with help and equipment from the IRR&R. The Health Department required a new sewage system for the camp and this was accomplished with man power and machinery from IRR&R. Following the completion of the sewer system, a new well was drilled in a new location to the depth of forty-five feet.

After the completion of the water and sewer systems, dead trees were removed from the lawn and it was leveled. Next the men moved sod from Wilderness Valley Farms and laid it. Also an extension was made on the recreation play field, and many of the dead trees in the area were pushed over.

ST. LOUIS COUNTY 4-H CLUB CAMP

Lake Eshquaguma

The Iron Range Resources and Rehabilitation cooperating with the St. Louis County Club during the summers of 1965 and 1966, provided a crew of area youth to help establish the recreational area surrounding the St. Louis County 4-H Club Camp on Lake Eshquaguma.

In 1934, St. Louis County won the National 4-H Club County Progress Award for having the most outstanding 4-H Club program in the United States. This award, which was given by the Sears Roebuck Foundation, was $10,000 cash.

When the 4-H Camp needed improvements for the increasing use of the facilities and demand for more recreational area, the St. Louis County Club turned to the IRR&R for help to enlarge the recreational area surrounding the Camp.

The IRR&R provided a corps of workers to come in during the summer months of 1965 and 1966 to cut, clear and burn several acres of brush and dead trees in the wooded area surrounding the 4-H Campsite. This was followed by establishing a well-planned one-half mile nature trail which was worked out with the aid of the County Extension Forester. All the different species of native shrubs, trees and geological formations were singled out and marked with an all-weather marker so that they could be identified and studied by those using the trail and recreational area. The trail was covered with six inches of sawdust to make it a carpeted noiseless walk to permit the users of the trail to study the bird life and other habitat of the area.

This past summer a spraying program was carried on by IRR&R workers. This spraying was done on the previous year's clearing where the young brush had come up. By so doing a complete kill was made of all brush under the stand of timber. The result of these two years' work by the Youth Corps has opened up a new recreational area of some 20 acres. This has been a definite contribution to civic improvement for a much needed recreational area.

LONG LAKE CONSERVATION CENTER

Aitkin, Minnesota

In cooperation with the Minnesota Department of Conservation as well as several agencies including the Aitkin County Park Commission, U. S. Forest Service, University of Minnesota, and the Agricultural Extension Service, the IRR&R has contributed funds for the salaries of instructors and workers at the Long Lake Conservation Center in Aitkin County.

This camp includes dormitory housing, sanitary dining room and kitchen facilities, classrooms, a combination headquarters and library building, recreational areas, nature study areas and waterfront. It covers 640 acres of land surrounding Long Lake in Aitkin County.

The Center's purpose is to build conservation leaders within the new generation; to imbue youth with the realization that, even in the Space Age, all life depends upon the nourishing breast of our planet earth.

The camp is open for boys throughout the State interested in conservation and natural resources. Camp officials indicate that financial aid from IRR&R made the 1966 season the most successful in their history, resulting in an enlarged and improved schedule for future camp sessions.

CAREY LAKE AREA RECREATION DEVELOPMENT

Hibbing-Chisholm-Buhl, Minnesota

The feasibility study of the Carey Lake Area for Recreation Development near Hibbing was sponsored, in part, by Iron Range Resources and Rehabilitation. The study, completed in November

of 1964, would greatly expand the volume of tourist business for northern Minnesota not only for the short summer season, but on a "year-round" basis. Recently, a land exchange agreement between the State of Minnesota and E. I. du Pont de Nemours & Company has encouraged local interests in Hibbing, Chisholm, Buhl and the Town of Stuntz to continue seeking ways to develop proposals as detailed in the ninety-page feasibility study.

The monies provided by the IRR&R to prepare the study assisted the firm of Aguar, Jyring, Whiteman and Moser, consisting of eleven employees, an opportunity to spend over 700 hours from July, 1964 through November, 1964, on this important Iron Range project. (The IRR&R appropriation for the Carey Lake project covered a period from December, 1963 to November, 1964.)

If this project should be developed, as many as 53 seasonal employees would be given work in addition to 18 full-time employees on a year-round basis. Construction costs over a five-year period could amount to 1.8 million dollars employing many more people.

MINNESOTA ARROWHEAD ASSOCIATION

Duluth, Minnesota

Minnesota Arrowhead Association, with financial assistance from IRR&R, made a survey of the tourist travel industry in the 19 counties of northern Minnesota. The survey provided a tool and gave factual information on how important the tourist travel industry is to the economic development of northern Minnesota.

In the past few years, the Association has continued to increase the amount of money the vacation traveler spends in our 19 county area $32,000,000 to $43,500,000, which in turn increased the impact on our economy. One hundred twenty eight million dollars to $174,000,000 all reflects back to larger payrolls, increased purchasing power and allows the resorter to improve and expand his facilities to meet this growing tourist demand. This has been the biggest travel year in history, and during the next five years plans are to expand the advertising and promotion program, which the Association feels will double the tourist travel in this area.

IRON RANGE PLANNING PROGRAM

Even though no monies from Iron Range Resources and Rehabilitation were used for planning purposes from July 1, 1964 through June 30, 1966, the IRR&R was instrumental in providing the local share for Phase I and II of the Iron Range Planning project. On November 5, 1966, over 200 participants met in Virginia at an Iron Range Planning Symposium to discuss the program. Soon a Regional Planning Board, the first of its kind in Minnesota, will be organized representing 32 communities within the region.

Such coordinating effort will promote understanding between units of government, eliminating duplication and advance a plan for the region's future.

AASE'S WILD RICE PROJECT

Gilbert, Minnesota

A wild rice project was sponsored by the Department of Iron Range Resources and Rehabilitation at the Aase Evergreen Farm on Bass Lake near Gilbert, Minnesota. A total of $3,500 was appropriated for a pilot project to be conducted by Mr. H. J. Aase, a retired St. Louis County Agent, and Mr. James H. Aase, his son, an engineer.

After several years of studying the growing habits of wild rice, the Aase's have experimented with a new method that has proven very successful. By applying scientific agricultural practices, they have proven through small test plots, that wild rice can be grown on upland fields in artificially-made paddies. These have produced good yields and larger kernels in which insect and plant diseases can be better controlled. Harvesting of the crop is also greatly simplified.

The next phase of this pilot project is to determine the economic feasibility of producing a commercial crop under this method. They hope to expand their present operations by using larger equipment in the preparation of the fields and paddies. They are simplifying their irrigation system and methods of harvesting the grain.

At the same time they will keep selecting and planting superior strains of wild rice. The plant breeding and problems of genetics is an important phase in wild rice perfection which the Aase's feel can best be administered by the research specialists at the State experimental stations. They are cooperating with the University of Minnesota, Department of Agriculture, in selecting promising strains of wild rice from their stands.

MAPLE SYRUP PROCESSING PLANT

Grand Portage, Minn.

The Iron Range Resources and Rehabilitation has approved a recommendation of the Commis-

sioner to transfer the State-owned Maple Syrup Processing Plant at Grand Portage, Minnesota, to the U. S. Department of Interior, Bureau of Indian Affairs. The matter has been referred to the Attorney General's office to determine the legal procedure required in making this a gift to the Bureau of Indian Affairs from the State of Minnesota.

Mr. Darrell Fleming, Acting Area Director of the Bureau of Indian Affairs, Minneapolis Area Office, indicated by letter in early June, 1966, that his agency is acutely interested in this reservation industry and offered assistance to keep the plant in operation.

According to Mr. Fleming, he would be authorized by Congress to accept such a gift (Chap. 171 — 71st Congress) for the use and benefit of the Indian people. Negotiations between the Attorney General's office and attorneys for the Bureau of Indian Affairs were pending at the end of the biennium.

The IRR&R's original investment for construction of the building and equipment was $12,642 in 1958. It was operated that year by Chippewa Products Association. The Association experienced considerable financial difficulty and operated at a deficit. The plant was idle in 1959 and 1960.

In 1961, the Commissioner arranged for operation of the plant by a private firm, Mr. Ray Cash of Onamia. Contract terms were a fee of $1.00 per gallon to be paid to the State. Total receipts for the 1961 season for the IRR&R were $290.25.

In 1962 and 1963, contracts were executed with Mr. Paul LeGarde representing Chippewa Products Association. They failed to operate however, during both of these seasons.

In 1964, Mr. Ira Van Gorden of Hinckley operated the plant and paid the State $52.00.

In 1965, the State received $85.00 from Mr. James Hendrickson of Grand Portage. In 1966, the plant was operated by Mr. Noble Carlson of Hovland whose reimbursement to the State was $17.00.

Total receipts to the State by this operation were $444.25. This leaves a balance of $12,198.

It has been the policy to allow the operator the first fifty gallons without charge to pay for the cost of insurance on equipment and machinery used in the operation.

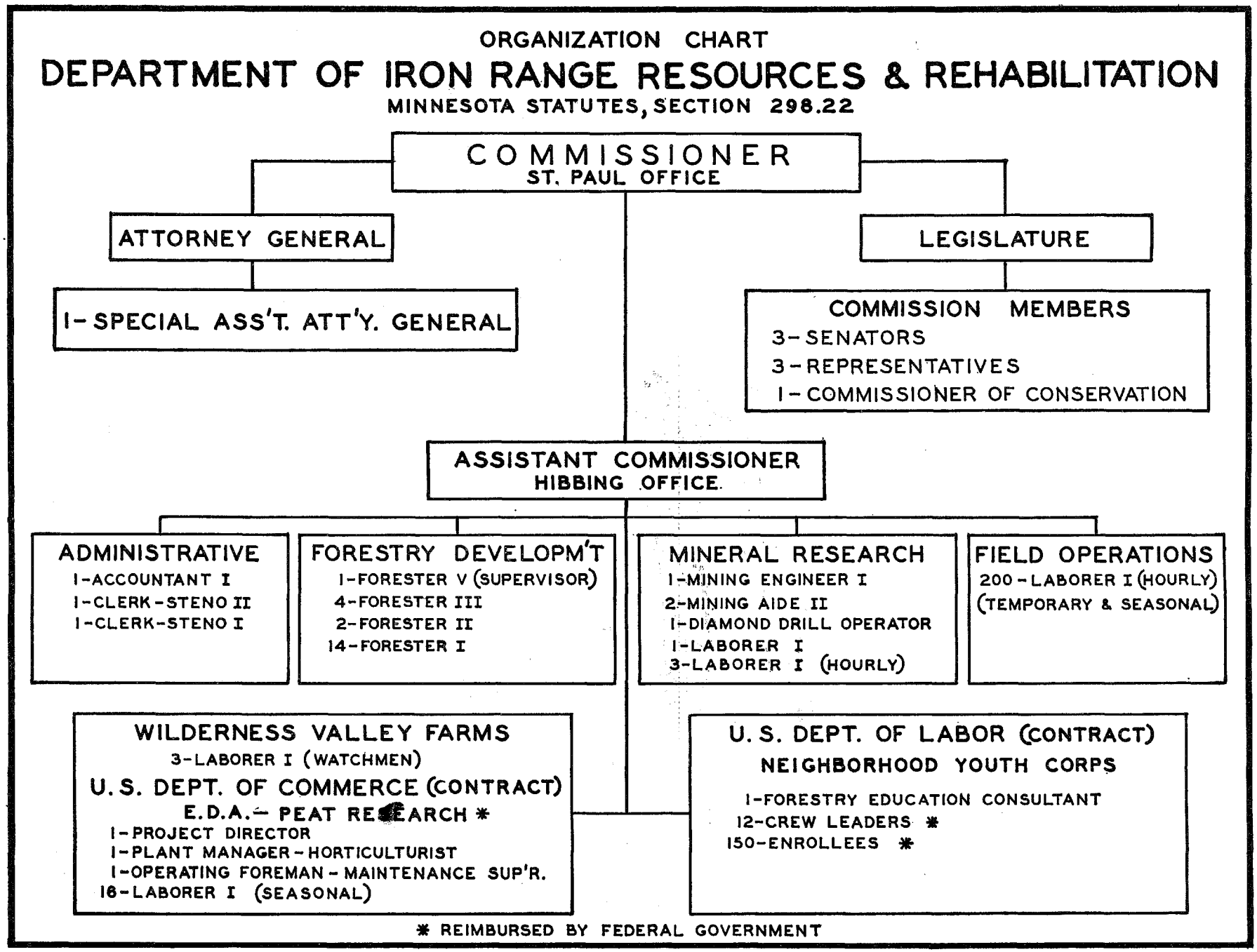
RECEIPTS, TRANSFERS, AND EXPENDITURES

RECEIPTS:	1964-65	1965-66
Balance brought forward July 1	$636,768.64	$ 697,848.95
Receipts from IRR&R Revolving Fund	40,228.61	43,049.36
Misc. refunds from prior years' expenditures	—	8.30
Reimbursements from Federal Government:		
Dept. of Commerce—ARA-EDA (Peat Research Project)	—	56,000.00
Dept. of Labor—Neighborhood Youth Corps	—	305,464.00
Total Receipts	$676,997.25	$1,102,370.61
EXPENDITURES:		
Transfers Out (By Legislative Action):		
University of Minnesota (Beneficiation of low-grade ores)	197,686.00	80,000.00
Commission on Taxation & Production of Iron Ore	—	10,000.00
Dept. of Administration (Utilities)	558.68	425.91
Total Transfers Out	$198,244.68	$ 90,425.91
Projects:		
Administration	65,125.05	57,783.17
Agriculture:		
Farm Management for N. E. Minn.	2,156.86	3,000.00
Itasca County Land Clearing	1,246.05	—
Forestry Development:		
Forest survey, county management, research, consulting, marketing, county development, farm forestry education	178,167.53	168,416.93
Cooperative County Land Development; Section Corner Post Relocation	38,895.04	40,191.15
Misc. conservation work projects	98,538.51	26,808.36
*See also Neighborhood Youth Corps	—	*
Maple Syrup Plant, Grand Portage	1.00	1.00
Mesabi Grow Co., Inc.	1,074.17	—
Mineral Research:		
Peat bog sampling, water drilling	39,893.11	44,228.61
Minnesota Arrowhead Association	1,000.00	—
Minnesota P & O Mfg. Co., Inc.	2,021.46	—
Peat Research (Univ. of Minnesota)	5,000.00	4,787.12
U. S. Dept. of Labor, Neighborhood Youth Corps:		
Funds reimbursed by Federal Gov't	—	331,580.28
*IRR&R funds (work performed by forestry personnel)	90.00	*39,714.03
Water Survey (U. S. Geological Survey)	2,000.00	3,908.56
Wilderness Valley Farms:		
Funds reimbursed by Federal Gov't for peat research project	—	55,691.07
IRR&R funds for farm maintenance	739.16	16,822.49
Total Project Expenditures	$435,947.94	$ 792,932.77
Total Transfers Out & Project Expenditures	634,192.62	883,358.68
Balance June 30	42,804.63	219,011.93
	$676,997.25	$1,102,370.61
Receipts from 5% of Occupational Tax on Iron Ore, June 30	655,044.32	784,015.37
Unexpended balance June 30	42,804.63	219,011.93
Brought forward July 1	$697,848.95	$1,003,027.30
Transfer Out to University of Minnesota for year 1966-67		(80,000.00)
Total available for expenditure for year 1966-67		$ 923,027.30

ORGANIZATION CHART

DEPARTMENT OF IRON RANGE RESOURCES & REHABILITATION

MINNESOTA STATUTES, SECTION 298.22



* REIMBURSED BY FEDERAL GOVERNMENT