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FINAL
ENVIRONMENTAL IMPACT STATEMENT
on
OGLEBAY-NORTON'S PLANNED EXPANSION PROJECT

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STATE OF MINNESOTA

January, 1976

FINAL
ENVIRONMENTAL IMPACT STATEMENT

on

OGLEBAY-NORTON'S PLANNED EXPANSION PROJECT

Prepared By:

The Minnesota Department of Natural Resources
and The Minnesota Pollution Control Agency

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January, 1976

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Final

INTRODUCTION

A draft environmental impact statement (EIS) on Oglebay-Norton's Expansion Project was completed in November 1975. Under regulations established by the Minnesota Environmental Quality Council, a public meeting must be held to explain the project and receive public comment on the draft EIS. Following the public meeting, the draft EIS must be revised to reflect the points raised by the public and interested agencies. This final EIS may take the form of a completely rewritten document or may involve a supplement to the draft EIS which addresses the inadequacies.

The Department of Natural Resources and the Pollution Control Agency held a public meeting to receive comments on the Oglebay-Norton draft EIS in Eveleth, Minnesota on December 29, 1975. In addition, written comments were received until January 19, 1976.

The Final Environmental Impact Statement on Oglebay-Norton's Taconite Expansion Project, as originally proposed, will consist of the Draft EIS and this document. However, following the release of the Draft EIS, several modifications outside the scope of the original proposal were made by the company in order to eliminate several impacts which were reported

in the draft. One of these modifications will include the use of land areas which were not studied during preparation of the draft. Much of this land is owned by the state and would require a land exchange if it were to be used by the company. This land will be appraised by the DNR which will provide an addendum to the Environmental Quality Council when the investigations are complete. In addition, within the past few weeks a request has been made to the Minnesota Public Services Commission to investigate the necessity of a grade separation between County State Aid Highway #7 and the DM & IR railroad spur line entering the Fairlane Plant. The authors of the Draft feel that the Environmental Quality Council should be advised of the developments regarding this issue and will address the resolution of the proposal in the addendum. Also, recent developments in the Reserve Mining Company hearings relating to fugitive dust from the tailings basins have made it necessary to review those area sources which emit fugitive dust, including Oglebay-Norton's tailings basin. This review will involve projecting ambient air quality levels due to the impact of the Oglebay-Norton's proposed tailings basin site. Because this analysis will require some time to complete, the Pollution Control Agency is not able to provide an immediate report. The DNR and MPCA feel that the information relating to the land exchange, the highway overpass and the fugitive dust analysis deserve the attention of the Environmental Quality Council. This information will be contained in an addendum to the Final EIS and will be presented as the required

data becomes available. It is the intention of the authors of the Final EIS to provide the Environmental Quality Council staff with quarterly reports on the issues until the addendum is complete.

DESCRIPTION OF THE ACTION

Upon initiation of the writing of the Draft EIS it was apparent that several details involving Oglebay Norton's actual mining plan had not been fully developed. In order to prepare the impact statement the State requested much information about specific details of the mining operation, such as location and size of stockpiles, size, location and method for construction of the tailings basin, quantity and quality of mine water discharges, as well as several other details which were necessary for an overall understanding of the proposed action. Although much of the company's efforts at the time had to be directed toward continued operations at the Thunderbird Mine and the actual physical construction of the expansion facilities many of the company officials and several consultants devoted hundreds of hours to the development of a mining plan covering the next 80 plus years of operation. The company upon offering this plan indicated that the planning of a project as dynamic as a mining venture, for such an extended period of time was extremely difficult and subject to a great deal of change. Although the preparers of the Draft EIS would have desired something more concrete it was obvious that this request was reasonable, and has since been proven accurate; as the plans have undergone many changes.

During the weeks which followed the submission of this mining plan, several meetings were held between the State and company officials to discuss the project in relation to the information which was being gathered. During these meetings several revisions and modifications were designed to mitigate environmental effects which had become evident during the study, while others were made to further clarify the plans. It was these revised plans which were presented in the description of the action in the Draft EIS.

Although, as just stated, many revisions were made in the original plans in an effort to minimize many environmental effects, there were several impacts which remained (see sections EFFECTS OF THE PROPOSED ACTION ON THE ENVIRONMENT, IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF NATURAL RESOURCES, AND THE RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY in the Draft EIS.) The company, upon reviewing the draft, has determined that still further modifications could be incorporated which it feels would help minimize still further the environmental effects. These revisions were first presented at the public discussion of the Draft EIS in Eveleth on December 29, 1975, and have since been incorporated by the company into its plan.

The following paragraphs of this section will describe the new modifications, explain why the changes were considered and include any new impacts which might be expected because of the changes.

The first modification incorporated by the company involves the relocation of the inter-mine haul road. This road will initially lie adjacent to the plotted portion of Eveleth but will be relocated to an area farther from the city within 5 years. This revision was made in response to the observation that the haul road would be a distracting source of noise and dust to the people of Eveleth and should be moved as soon as possible. In addition to the actual physical road relocation the company intends to construct a ridge of waste rock between the city and the new road. This ridge not only provides a noise and dust barrier but also create a more attractive view from the city. No additional environmental impacts are expected to accompany this modification.

The second modification involves a change in the company's mine dewatering and water appropriation plans. The original plans involving mine water included the dewatering of the two working taconite pits and several of the surrounding abandoned natural ore mines. Most of this water was, at various stages of the

mine life, to be pumped into 4 different natural water courses which would carry the water away from the area (see DESCRIPTION OF THE ACTION in the Draft EIS.) In addition, the plans required the appropriation of between 28,000 and 75,000 gallons per day of this water for use by the operation (road watering, cooling water, etc.) at the Expansion Pit but neglected the use of these waters for similar purposes at the Thunderbird Mine. Rather than using the mine water the company had intended to purchase as much as 145,000 gallons per day from the Eveleth municipal water supply. Since most of the uses do not require potable water the Draft EIS suggests that water which was appropriated during the dewatering process be utilized in place of the treated city water. The company accepted this suggestion and has reduced its planned water purchases to 95,000 gallons per day from Eveleth. This has been accomplished by placing a water collection system downstream of the Thunderbird Mine water discharge, thereby reclaiming the needed process water. This modification will help reduce the impact which the original plan would have created however since there will still be a net increase in the purchase of water some undesirable impact can still be anticipated. The consultant for Oglebay Norton has not yet formalized the plans for water use at the Thunderbird Mine so perhaps further reductions in this amount are possible. This should be investigated during any water appropriation permit hearings.

The third modification incorporated by the company involves the tailings basin. The original plans presented by Oglebay Norton were revised before the draft was completed in order to eliminate the problem of immediately covering a commercial peat deposit. The revised plans, while eliminating that problem, did not in the opinion of the DNR and PCA mitigate as much as possible certain other problems. Because the revised plans would have left a large portion of the tailings basin unvegetated and therefore subject to wind erosion for a longer period than was desirable the Draft EIS included a suggestion that the large basin be replaced by a series of smaller basins. Since this plan would not only

reduce the area from which dust might blow, but would also reduce the volume of water impounded behind the dams, thus reducing the potential for damage in the unlikely event of a dam failure, the company has chosen to incorporate the suggestion into its proposal. No additional impacts are expected because of this modification.

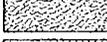
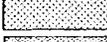
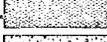
To this point the modifications have merely involved changes in timing or staging of events. The land areas, the structures and the processes involved with these modifications have not been substantially changed from what was presented in the Draft (with the exception of the additional pump station added at the Thunderbird Mine.) The fourth modification however, in part, involves new land areas and structures for which no information has been developed. The fourth modification involves a revision of the areas and methods utilized for waste rock and surface overburden deposition. In the latest plans, the deposition of waste rock and surface overburden by commingling, or mixing the two materials together, has been abandoned. While this method would have allowed the finer particles of soil to fit between the coarser pieces of rock, thereby requiring less volume, the dilution of the iron-bearing rock by the surface material may have prevented its future use. In order to make up for this volume loss, the company proposes the use of some additional stockpile areas to the west of the expansion pit.

Since this plan was only presented within the past three weeks no thorough investigation of the land areas has been made. A preliminary search of the land ownership indicates that the area contains a mixture of private (ranging from mining company controlled to residential tracts) and public lands (including 200 + acres of trust fund and 600 + acres of tax forfeited.) A portion of the private, but none of the public land is under the control of the mining company. Oglebay Norton is currently attempting to purchase lands in the area and has just (January 26, 1976) contacted the DNR with a proposal for an exchange of

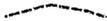
public lands in the area. Because such an exchange could involve fairly substantial acreages it would constitute a major governmental action. Therefore, a thorough investigation of any impacts involving the exchange should be added to this Final Statement. It is felt that the report of impacts involving the exchange and the use of these lands could be handled by developing an addendum to this EIS, to be submitted when the investigation is complete.

This completes the Description of the Action. Maps provided by the company, locating these modifications follow.

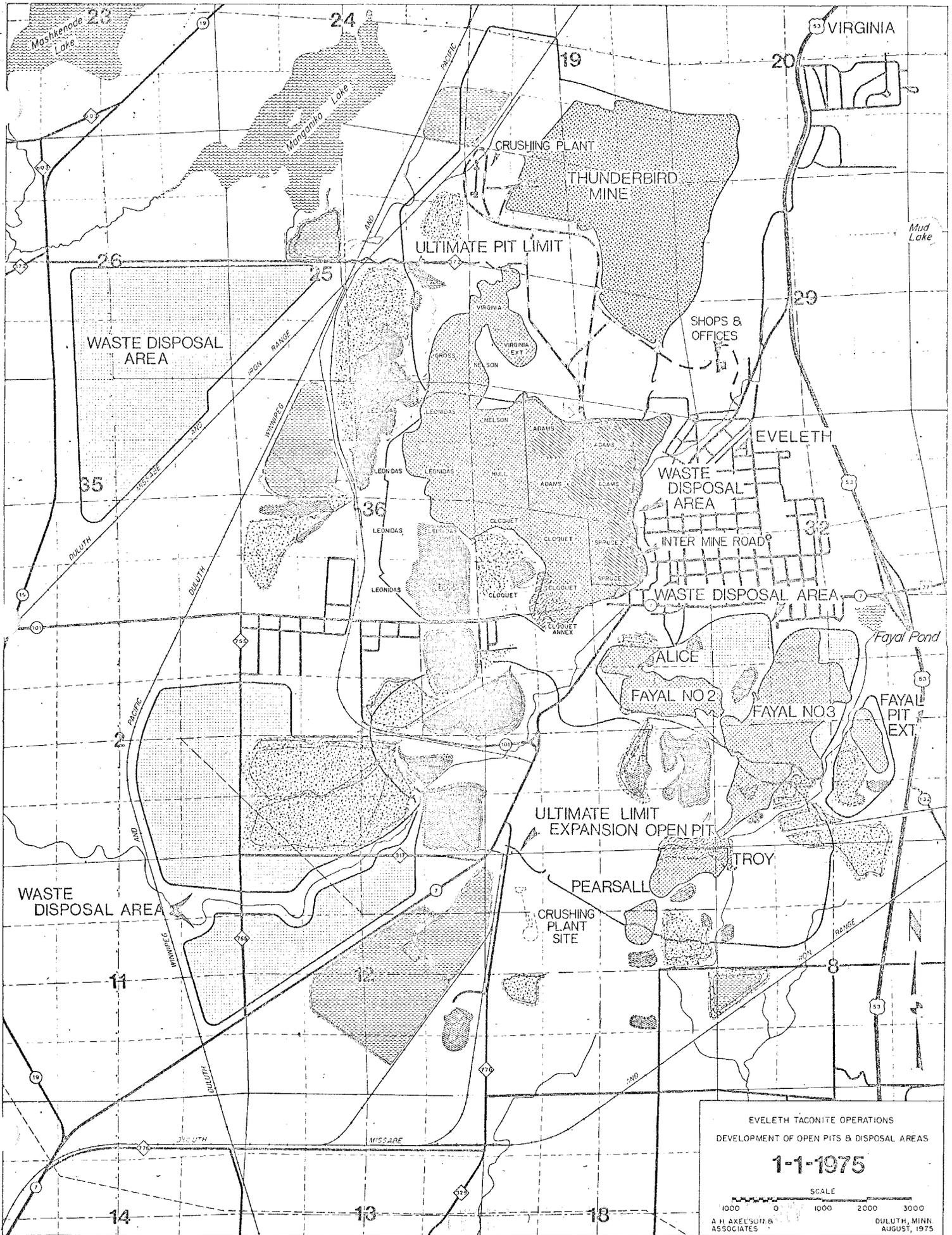
LEGEND EXHIBIT M-4

Mine Roads.....	
Streams	
Proposed Stream Diversion.....	
Pipe Lines.....	
Mine and/or Plant Facilities.....	
Lakes and Settling Basin.....	
Taconite Open Pits.....	
Taconite Waste Stockpile.....	
Waste Disposal Area.....	
Natural Ore Deposit.....	
Natural Ore Mines.....	
Natural Ore Rock and Lean Ore Stockpile.....	
Surface Dumps.....	
Tailings Basins Natural Ore.....	

LEGEND EXHIBITS M-5 THROUGH M-9

Mine Roads.....	
Streams.....	
Proposed Stream Diversion.....	
Pipe Lines.....	
Mine and/or Plant Facilities.....	
Lakes and Settling Basin.....	
Taconite Open Pits.....	
Taconite Waste Stockpile.....	
Natural Ore Deposit.....	
Waste Disposal Area.....	

NOTE: The configuration and location of the natural ore mines, stockpiles and tailings basins, to the extent that they remain as of the date on the map, are shown but are not conventioned.



EVELETH TACONITE OPERATIONS
 DEVELOPMENT OF OPEN PITS & DISPOSAL AREAS
1-1-1975
 SCALE
 1000 0 1000 2000 3000
 A H AXELSON & ASSOCIATES DULUTH, MINN AUGUST, 1975

M-5 Exhibit M-4 modified to show the status of mine development as of Sept. 1, 1976. This exhibit and the four which follow are color-coded or conventioned as follows:

The land areas included within the crest of stripping for the Thunderbird Mine and the Expansion Open Pit as of the title date on each of the exhibits are shown in yellow.

The Ultimate Limits of both the Thunderbird Mine and the Expansion Open Pit are depicted by heavy black lines on the exhibits.

The land areas tentatively planned for disposal of waste and/or save materials during the life of the Eveleth Taconite operation are shown by the cross-hatched areas on the exhibits.

The configuration and location of unmined natural ore deposits in the Spruce and Fayal-Troy areas are shown by either a light brown or pink coloration.

Existing mine-site facilities are shown in green - the additions to or additional facilities required for the expanded operation are colored red on the exhibits.

Mine roads are shown in purple while public streets, roads and highways are colored red.

Lakes, streams and settling basins are colored blue.

The configuration and location of the natural ore mines, stockpiles and tailing basins to the extent that they remain as of the date on the map are shown but not colored.

The 9/1/76 map shows the completion of the Inter-mine road with its reinforced grade crossing and underpass of County-State Aid Highway. The grade crossing is now in place thus permitting extension of the Inter-mine road to the crushing plant site. The underpass will be constructed when weather permits in 1976 and completed after permission is obtained to effect a minor stream diversion of the unnamed stream flowing southwesterly and westerly to Elbow Lake.

Dewatering operations would be underway with Pump Station No. 1 on the clear water pool in the Fayal No. 3 Pit, Pump Station No. 2 in place on a sump in the pre-production sinking cut in the iron formation, and, in anticipation of early mining of the natural ore deposit in the Cloquet and Cloquet Annex Properties, Pump Station No. 3 installed on the Spruce Shaft. Pump Stations Nos. 1 and 2 would be discharging their pumpage into the Troy Mine from which it would flow by gravity to the Pearsall Mine and from the Pearsall to the unnamed stream flowing southerly to join the flowage to the St. Louis River in Long Lake Creek. Pump Station No. 3 would be discharging clear water to the unnamed stream flowing to Elbow Lake. Pump Station No. 5 in the Expansion Open Pit area and No. 6 in the Thunderbird area will have been installed with 1000 GPM pumps withdrawing water from the Pearsall Mine and old Skubic Plant Lower Settling Basin respectively, to fill 5,000 gallon tank trucks with mine process water to cool the burners of the jet-piercing blast hole drills and for spraying of mine roads.

Pre-production stripping operations would have removed approximately 5 million cubic yards of surface overburden as of that date with deposition in the northern portion of the Fayal No. 3 Open Pit to prepare a base for stockpiling "save" rock and lean ore to be encountered in the mining operation.



EVELETH TACONITE OPERATIONS
 DEVELOPMENT OF OPEN PITS & DISPOSAL AREAS
9-1-1976
 SCALE
 1000 0 1000 2000 3000
 A. H. AXELSON & ASSOCIATES
 DULUTH, MINN.
 AUGUST, 1975

M-6 From 1/1/75 through to 1/1/82 the Thunderbird Mine will have produced about 2.3 million cu. yds. of surface, 3.2 million cu. yds. of save rock and 8.6 million cu. yds. of waste rock to make available its yearly requirement of 8.2 million tons of crude ore. The surface and waste rock will have been disposed of, but not commingled, in the Spruce Mine and the save rock stockpiled on the footwall within the open pit on the cross-hatched area shown on the Exhibit.

During that same period, the Expansion Open Pit will have produced 23.3 million yards of surface, 1.8 million cu. yds. of save rock and 6.9 million cu. yds. of waste rock. The save rock will have been stockpiled on the prepared base in the Fayal No. 3 Open Pit while a portion of the surface and all of the waste rock having been utilized to extend the stockpile base, to fill the Alice, Fayal No. 2 and Fayal Expansion Open Pits and to increase the height of and contour the surface to create a screening hill and buffer zone between the platted portion of Eveleth and the open pit and between T.H. No. 53 and the open pit. The contoured dump areas will have been seeded, mulched and planted with seedlings to promote root growth and expedite revegetation.

Surface overburden, surplus to that required for reclamation of the open pit and underground cave area north of the Expansion Open Pit will have been trucked to the Spruce Mine for disposal. Dumping will have been controlled to first provide a base for realigning the Intermine Road to the west to provide room for a buffer zone on the west edge of the platted area of Eveleth and then to contour and revegetate a hill within that buffer zone.

Hopefully, the Cloquet-Cloquet Annex natural ore operation will be completed during 1982 with haulage of the ore to either a plant or a loading pocket in the Leonidas area via the haul road in the pit bottom exposed by the dewatering operation.

Pump Station No. 4, located on the Leonidas shaft will have been utilized to assist Pump Station No. 3 during the dewatering of the Spruce Mine. Pump Station No. 4 will discharge clarified waters into the unnamed stream flowing northerly to Manganika Lake. Pump Station No. 3 is not shown on this exhibit for it would have been removed and the Spruce Shaft destroyed by the Cloquet-Cloquet Annex stripping operation during 1981.

In the Expansion Open Pit the easterly extension of the stripping limit would have removed the surface overburden to ledge on the west sides of the Troy and Pearsall Mines thus precluding any further use as settling basins for mine water clarification and the settling basin constructed to replace them for that purpose. Pump Station No. 1 will have been retired from use and No. 2 will be accomplishing the dewatering operation. No. 5 will have been relocated to take waters from the newly constructed settling basin and to pump it to the standpipe or elevated tank for mine process water.

Mining operations at the Thunderbird will have served to drop the pit bottom to a point where Pump Station No. 7 will have to be installed to dispose of mine waters collected in a pit sump. The waters so collected would be pumped out of the pit to the ditch leading to the old Skubic Bros. tailings pond lower settling basin for clarification prior to flowage via the unnamed stream to Manganika Lake. Pump Station No. 6 will still be utilized as a source of mine process water for mine use.

The unnamed stream flowing from Fayal Pond southerly to Mud, Horseshoe and Long Lakes must be relocated prior to 1/1/82 to permit the easterly extension of the stripping limits. The relocation will place the stream channel just east of the easterly ultimate limit of the open pit as shown on the Exhibit, thus freeing up the area under and east of the present alignment shown by the dashed blue line.



EVELETH TACONITE OPERATIONS
 DEVELOPMENT OF OPEN PITS & DISPOSAL AREAS
1-1-1982

SCALE
 0 1000 2000 3000

ARTHUR D. BAKER & ASSOCIATES
 DULUTH, MINN.
 AUGUST, 1975

M-7 From 1/1/82 through to 1/1/98, the Thunderbird Mine will produce 4.7 million cu. yds. of surface, 8.2 million cu. yds. of save rock and 19.6 cu. yds of waste rock. Again the surface and waste rock will have been deposited into the Spruce, Hull-Nelson, Leonidas Mine (again without comingling) and the save rock dumped back into the mined out portion of the open pit (within the area cross-hatched on the Exhibit). During this same period the Expansion Open Pit will have produced 26.4 million cu. yds. of surface, 25.1 million cu. yds. of Save rock and 33.6 million cu. yds. of waste rock. In addition, natural ore mining operations will have mined out the Fayal No. 4, Security, Troy and Troy Extension Ore body. If the ore is unmerchantable it will be stockpiled at a location acceptable to the fee owner. The save rock will be stocked in the Fayal save rock stockpile while the waste rock and/or surface will have been used to backfill the Cloquet-Cloquet Annex Pit immediately upon exhaustion of that ore body. Upon completion of the backfill, the west Eveleth Access Road will have been constructed with a grade separation structure to carry the relocated Inter-Mine Road over the public highway. Completion of this construction will then permit vacation of those portions of County-State Aid Road No. 101, County Roads Nos. 755 and 317. These vacations then free up the area for the final diversion of the unnamed stream flowing southwesterly to Elbow Lake and the construction of the haul road leading to the stockpile site in Sections 1, 2, 11 & 12 Township 57 North Range 18 West.

Dewatering of the open pits is by Pump Stations 2, 4 & 7 with Pump Station 5 and 6 continuing to furnish process water for mining operations.

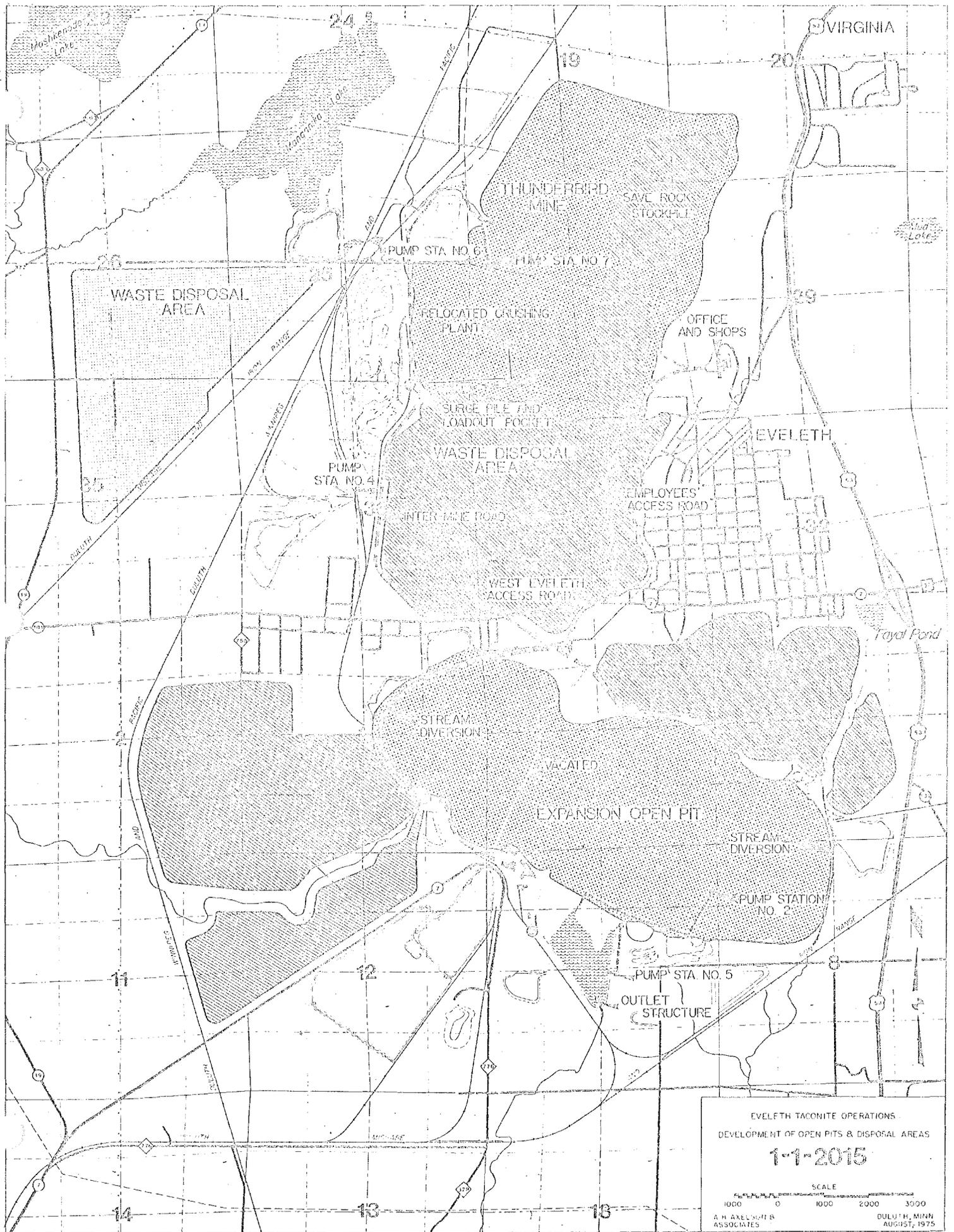


M-8 As indicated by this Exhibit, the crushing plant, surge pile and load-out pocket serving the Thunderbird Mine will have been relocated prior to January 1, 2015 to permit expansion of the mine to its ultimate limit and to effect a savings in the haulage cost of the crude ore. From January 1, 1998 through to January 1, 2015 the Thunderbird Mine will have produced 4.9 million cu. yds. of surface, 11.4 million cu. yds. of save rock and 20.5 million cu. yds. of waste rock. Again the Save Rock will be added to the pit stockpiles on the footwall, bringing the total save rock stocked in the pit to 22.8 million cu. yds. Again the surface and waste rock will be dumped into the Spruce & Hull-Nelson, Leonidas Open Pit without comingling into a stockpile area in the western half made available by relocation of the Inter-mine road to its final location on the west edge of the waste disposal area.

During this same period, the Expansion Open Pit will produce 17.1 million cu. yds. of surface, 9.1 million cu. yds. of save rock, and 34.2 million cu. yds. of waste rock. The save and waste rock will have been stocked in the westerly disposal area and the surface hauled to the Spruce area for contouring of the completed portions of the waste disposal area.

That portion of County-State Aid Road No. 7 crossing the mine area would have been vacated shortly after January 1, 1998 thus permitting an orderly deepening of the west side of the pit with drainage back to Pump Station No. 2 located in a mined out portion of the pit.

Pump Stations No. 2, 4, & 7 will be utilized for mine dewatering and Pump Stations 5 and 6 to furnish process water for mine operations.



EVELETH TACONITE OPERATIONS
 DEVELOPMENT OF OPEN PITS & DISPOSAL AREAS
 1-1-2015

SCALE
 1000 0 1000 2000 3000
 A. H. AXELNITZ & ASSOCIATES DULUTH, MINN. AUGUST, 1975

M-9 Although this Exhibit is dated 1/1/2062, in actuality the Expansion Open Pit would have been depleted of its minable reserve of proven and probable ore by January 1, 2045. From January 1, 2015 through to that depletion date, the Expansion Open Pit would have produced 8.6 million cu. yds. of surface, 4.1 million cu. yds. of save rock and 38.3 million cu. yds. of waste rock. Again, the save rock would have been stocked on the save dump in the south-westerly disposal area while the surface and waste rock would have been hauled to the Spruce, Hull-Nelson, Leonidas disposal area for contouring of the area.

From Jan. 1, 2015 through to depletion of the Thunderbird Mine as of Jan. 1, 2062 the mine would have produced 19.9 million cu. yds. of surface, 41.2 million cu. yds. of save rock, and 53.9 million cu. yds. of waste rock. The surface would have been utilized to provide a base for the stockpile area across the D.W.&P. tracks and to complete the contouring of the Spruce, Hull-Nelson, Leonidas waste disposal area. The save rock would have been stockpiled back into the pit bringing the total pit save rock stockpiles to 41.2 million cubic yards and the waste rock would be deposited on the stockpile base across the track.

Dewatering of the pits through to their depletion would have been by the No. 2 Pump Station for the Expansion Open Pit and Nos. 4 and 7 for the Thunderbird. (No. 2 Pump Station may be kept operational for some time after depletion of the Expansion Open Pit to assist in dewatering the Thunderbird Mine)



EVELETH TACONITE OPERATIONS
 DEVELOPMENT OF OPEN PITS & DISPOSAL AREAS
1-1-2062
 SCALE
 1000 0 1000 2000 3000
 A H AXELSON & ASSOCIATES DULUTH, MINN AUGUST, 1975

ENVIRONMENTAL SETTING

Soils - Peat

Page 76 of the Draft EIS inaccurately indicated that sedge-reed type peat is not favored as a soil conditioner. There is more sedge-reed type peat produced and utilized for soil conditioning in the U. S. than sphagnum moss peat.

Soils - Tailing Basin Foundation

Page 78 of the Draft EIS states that soil sampling in the area of the proposed basin would be completed and reported in the Final EIS. The soil sampling was completed and the results indicate the area is covered with a varying thickness of peat overlaying glacial till (found in three of the holes) and by Lacustrian type deposits (found in the fourth.) The company has retained a dam designer to review the submitted conceptual dam design as well as the foundation information. There has been no report on his progress. Preliminary analysis by the DNR and PCA personnel indicates that more information on the extent of the Lacustrian soils will be required before permits on the dams can be considered.

Vegetation - Plant Site and Tailings Area

The figure included for value of the timber is incorrect and should read \$1,265.00.

Water Levels

A question was raised concerning the relationship between the lake levels in Ely and St. Mary's Lakes. This subject was investigated by the regional hydrologist who indicates that there is no physical connection between the Lakes. However, it is believed that these lakes are connected by ground water flows.

TRANSPORTATION

The Minnesota Highway Department has indicated that Figure 44, a year 2020 concept plan of circulation facilities for a regional planning area, has no official status and is not in conformance with trunk highway improvement needs in the regional area as presently determined by the Minnesota Highway Department. This figure should not be interpreted as proposed highway improvement plans.

In addition, the Minnesota Highway Department revealed that the entire route of T.H. 169 is not scheduled to be upgraded to expressway standards in the future as the draft EIS implied. Trunk Highway 169 is presently constructed to expressway standards from Pengilly to Chisholm and from Kinney to Virginia. Only the segment of T.H. 169 from Chisholm to Kinney is scheduled to be improved to expressway standards within the next 25 years.

Although the draft EIS indicated that long range plans of the Highway Department were to improve T.H. 53 to expressway standards from north of Virginia to Cook, the Highway Department has not yet determined the T.H. 53 improvement needs from north of Virginia to International Falls. Preliminary studies indicate that T.H. 53 should be improved to expressway standards to at least as far north as Orr.

EFFECTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

Dewatering Discharges - pages 233-237 Draft EIS

Local residents have confirmed the opinion of Oglebay Norton's consultant that many of the streams which will be utilized for mine dewatering may not be capable of handling the flow during periods of peak runoff. The company has expressed its willingness to replace any culverts or other structures which would obstruct the flows and if necessary remove silt which has accumulated in the stream bed.

Dam Failure - page 273

Some understandable concerns have been raised about the effects of a dam failure. The answer to this question is extremely difficult since the effects would be dependent on the size of the rupture and its location along the dam. The recently incorporated modification involving the use of smaller basins will reduce the volume of water that could be released if a failure would occur, thereby reducing the hazards. However, the only acceptable mitigation is to assure that stable basin will be constructed. This can only be achieved when a complete dam design is provided.

FUGITIVE DUST

More attention is being given to area sources as potential emitters of harmful particulate matter. Models have been refined such that projected emissions from area sources can now be calculated. While many assumptions must be made in the process of applying the model to the area source problem, the basic dispersion model approach is the best analytical tool available to project impact from an area source.

The Tailings Basin Fugitive Dust Problem

Mine dumps, tailings basins, raw ore pit areas are all potential sources of fugitive dust. If proper mitigating measures are not utilized during the active period of a source, such as a tailings basin, large quantities of fugitive dust can be emitted which can violate ambient air quality standards and jeopardize public health.

Further, the tailings basin should be stabilized at the end of its useful or active life in order to prevent fugitive dust.

During the course of the Environmental Impact Statement and Permit Hearings on the Reserve Mining Company Milepost & Tailings Basin Application, considerable effort has been expended upon projecting fugitive dust emissions. Conclusions from this work which may apply to the Oglebay-Norton tailings basin proposal are:

- 1) During construction, concentrations of particulate

matter generated as fugitive dust, can exceed ambient air quality standards at the property line. Depending upon the location of receptors (dwellings, businesses, recreational areas, rest homes, etc.) ambient air standards may be violated where human activity occurs.

- 2) During operation, concentrations of particulate matter generated as fugitive dust, can exceed ambient air quality standards at the property line and at receptor points.
- 3) The basis for attainment/non-attainment of the ambient air quality standards will in large degree depend upon the tailings basin design, the degree of construction and operational activity within the basin, and mitigating measures used to minimize fugitive dust emissions.

As an example, ambient air quality standards, for the alternative tailings basin sites considered in the Reserve Mining Company Milepost 7 Permit Application, are projected to be barely attained or slightly exceeded during construction periods at the property line. During the operational period, standards are predicted to be attained at all locations. The tailings basin design was refined to help insure standards compliance.

The Oglebay-Norton Tailings Basin Fugitive Dust Problem

The Oglebay-Norton Tailings Basin design and the property line receptor considerations are different when compared to the Reserve Mining Company design (as of January 29, 1976).

For these reasons, the Minnesota Pollution Control Agency feels that the CDM (Climatological Dispersion Model) should be applied to the proposed tailings basin design (for both the construction and operational phases of the project).

Ambient air quality data taken by the consultant for Oglebay-Norton will be of value in determining attainment/non-attainment of ambient air quality standards. These data can serve as estimates of annual background information.

Unfortunately, it is doubtful that this same ambient air quality data can be of much use in calibrating the model unless the assumption is made that the existing tailings basin contributes 100 percent of the total suspended particulate monitored at four of the eight monitoring sites. (It is extremely difficult to determine the source contribution difference between the existing tailings basin, the Fairlane Taconite processing plant, mine dump areas, and mine areas).

The ambient air quality data taken by Oglebay-Norton's consultant shows no ambient air quality violations for time period August 12 - November 28, 1975 (see Table 1). The highest 24-hour value was 149.7 ug/m^3 at site 1 and the highest geometric mean was 32.0 ug/m^3 at site 4. (See Figures 1 and 2).

In the application of the CDM dispersion to the Oglebay-Norton tailings basin, the following considerations should be made:

- 1) apply appropriate meteorological information (suggest Hibbing, International Falls, Twin Cities data).
- 2) Apply appropriate emission factors to each sub-area which is a part of the whole fugitive dust problem (roads, dam faces, beach areas, dry tails areas, etc.).
- 3) Apply appropriate emission factors to each sub-area which is impacted by mechanical activity (bulldozing, trucking, spigotting, grading, etc.).
- 4) Predict concentrations of total suspended particulates as a function of distance from the tailings basin and as a function of time from the beginning of the project.

Once Oglebay-Norton's consultant has completed its modeling analysis, the information will be analyzed and reported in a supplement to the environmental impact statement.

TABLE 1.

TOTAL SUSPENDED PARTICULATES ABOUT EVELETH FACILITIES
FOR PERIOD AUGUST 12 - NOVEMBER 28, 1975

SITE	1	2	3	4	5	6	7	8
NO. SAMPLES	37	36	24	34	32	34	36	35
GEOMETRIC MEAN	27.9	29.6	27.9	32.0	29.3	29.6	20.5	18.3
HIGHEST 24-HOUR VALUE	149.7	71.9	64.5	102.5	81.3	78.0	109.3	55.9
HIGHEST SECOND 24-HOUR VALUE	80.7	68.3	58.2	97.6	77.0	77.4	54.7	42.7

PRIMARY ANNUAL STANDARD -	75 $\mu\text{G}/\text{M}^3$ (GEOMETRIC MEAN)
SECONDARY ANNUAL STANDARD -	60 $\mu\text{G}/\text{M}^3$ (GEOMETRIC MEAN)
PRIMARY 24-HOUR STANDARD -	260 $\mu\text{G}/\text{M}^3$ (NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR)
SECONDARY 24-HOUR STANDARD -	150 $\mu\text{G}/\text{M}^3$ (NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR)



Figure 1. Location of Suspended Particulate Sampling Stations Around the Thunderbird Mine



Figure 2. Location of Suspended Particulate Sampling Stations Around the Fairlane Plant

WATER QUALITY

Several comments were received on the Water Quality section of the draft environmental impact statement. They are repeated and answered in this addendum.

Comment

The conclusion that nutrients in pit water are less than the receiving lakes in the Long Lake chain cannot be made with the data provided in one grab sample at station K.

Answer

Although station K analytical results did not substantiate elevated nutrient levels at the outlet of Long Lake, it is suggested on page 250 of the draft EIS that biological productivity of the lake may be utilizing the available nutrients during the peak growing season. The Clean Lakes Inventory File at the MPCA indicates that surveys on Long Lake showed total nitrogen levels of 0.6 mg/l in 1955 and 1.3 mg/l in 1958. Horseshoe Lake phosphorus and nitrogen levels averaged .031 mg/l and 0.93 mg/l respectively. In 1955 Long Lake had 74 dwellings and in 1970 that number increased to 138. The number of dwellings on Horseshoe Lake has also increased. Since no central sewer systems have been provided to dwellings on the lakes, it is not expected that the quality of the Long and Horseshoe Lake chain has improved.

By this information we believe that the mine pit water which has phosphorus and nitrogen levels of 0.01 mg/l and 0.03 mg/l respectively will not adversely impact the

lakes through increased nutrient input but may indeed have a flushing affect.

Comment

Concentrations of nitrate up to 23 mg/l would possibly increase plant growth in the lakes and high concentrations of nitrate should prompt in the EIS a discussion of public health affects.

Answer

The analysis on 5/24/74 indicating 23 mg/l of nitrate should not have been included in the data provided. It is obviously an error either in sampling, analysis or a typographical error.

Comment

Water quality data and aquatic population data need to be updated. Aquatic population data presented is from the mid-1950's.

Answer

The water quality data available was collected in 1974 and 1975. It provides a general idea of the existing water quality. The aquatic population data is the only available data. Regulation MEQC 26(g)(3) allows the responsible agency 120 days to complete a draft EIS. The period in which the draft EIS was prepared did not allow for pre-operational monitoring adequate to fully evaluate water quality variations and aquatic populations. Where past data was available, it was used. Water quality data was collected to the extent possible

prior to the printing of the EIS. Additional data is being collected to establish a pre-operational water quality analyses. However, that data could not be provided for the draft or a final EIS.

Comment

Will pumping from pits be continuous or seasonal?

Answer

Pumping will be continuous but the rate of pumping may depend on the quantities of water needed to be removed at any one time to facilitate mining activities in the pits. Generally, pit water pumpage does not significantly vary on a yearly average basis.

Comment

The EIS should discuss pumping discharges in relation to Public Law 92-500. Eveleth and Virginia sewage treatment plants will be required to provide staged clean up in 1977 and 1983. Will the mine pit discharge have a degrading effect in light of the municipal sewage clean up?

Answer

Since municipal effluents and mine pit water have different pollutant characteristics no degradational effect is expected in the lakes above what will occur by the pit discharge regardless of the clean up of municipal discharges.

Comment

Toxic effects of heavy metals should be discussed in view of the fact that Long Lake has lower concentrations.

Answer

Toxic metals are generally discussed on page 243 of the draft EIS. Since the specific chronic and acute toxic level of any metal or combination of metals is determined by individual bioassays on a particular effluent, no specific numbers for toxic levels were given. The concentrations of heavy metals is well below any toxic level which might be of concern, therefore, bioassay work has not required. The fact that the lake chain has an outlet to the St. Louis River satisfies any concern regarding a buildup over time of heavy metals.

ALTERNATIVES TO THE PROPOSED ACTION

The modifications to the action described earlier in this Final EIS were developed mainly in response to the suggested alternatives included in the Draft EIS. The only alternative which was not incorporated involves the use of the Long, Horseshoe, and Mud discharge of mine water. However, the company has stated that it is willing to use this water route if it meets with the approval of the shoreline residents and the permit granting agencies.

COMMENTS REGARDING THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
OF
OGLEBAY-NORTON'S
PLANNED EXPANSTION PROJECT

Route # 1
Dovey, Wn. 99709
Jan. 13, 1971

Mr Paul Hojar
345 Centennial Building
St. Paul, Wn.

Dear Mr. Hojar:

Following are some comments on the draft EIS for Ogleby Nortons planned expansion project.

Basically the draft was a fine effort. It was, however, in my estimation, too detailed. Many of the data presented could have been more briefly presented without detracting from the authoritativeness of the draft. Furthermore many of the data presented seem to be beyond the purview of the DNR and the RCRA.

Following are some page by page comments you may wish to consider.

Page 90. Two feet of peat! It seems to be far too much. This material can blow also when dry. A lesser amount incorporated with the coarse tails appears to be more practical.

Page 110. Footnote 2. Please spell my name ARMSTRONG.

Page 115. The discussion of the Sweeth and Virginia sewage treatment systems was incomprehensible to me and I'm sure to all other laymen who reviewed the draft. I believe a more simplified discussion would be in order.

Page 121 to 204. This section concerned itself with the demography of the region. Much of this information could have been left out or summarized with a more detailed discussion in the appendix.

Page 209. Data presented on air pollution could also have been made more understandable if some simple examples could be given to relate the amounts of emissions to understandable expressions. Perhaps tons per square mile or something similar.

Page 213. Somewhere earlier in the draft it was stated that the mine worked fourteen shifts per week. The second sentence of the second paragraph indicates three shifts per day. No way can fourteen be divided by three. Do we have an inconsistency?

Page 221. An opportunity was missed in the section on aesthetics to indicate that reclamation procedures could make the area more attractive in the vicinity of the old

mines.

Page 258. It seems to me that the riparian owners have a responsibility in this regard. It should be pointed out in the Final that these owners must comply with the provisions of the 1969 Shoreland Management Act.

Sincerely,
John G. Armstrong
John G. Armstrong



January 7, 1976

Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

RECEIVED
JAN 12 1976

MINN. POLLUTION
CONTROL AGENCY

Re: Eveleth Taconite Company
DRAFT EIS - Hearing 12-29-75

Unnamed creek to Elbow Lake (County Road #755)
SW-NW and NW-SW, Sec. 12-57-18

Creek Flooding

This is to advise you that we have for the past 30 or more years had a serious flooding problem due to the above creek.

Because of the continual silt buildup through the years, the creek bottom has risen to the point where the water is not contained within the creek banks and surrounding areas have become submerged.

During the winter months, due to flooding and ice buildup, and rainy periods in the summer, this road has had to be closed to traffic. At this time the Maki farm is completely isolated, posing a problem in case of an emergency. Others must find a roundabout way of travel. There are five homes and three farms on this road.

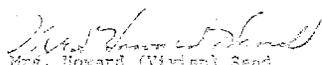
Although we have contacted the City of Eveleth, County and other officials at various times, nothing has ever been done to straighten, deepen or widen this creek to better handle the ever-increasing flow of water from Eveleth. Fred Tomassoni, a member of the Town of Clinton Board, has examined the road area at different times. He also has taken photographs of the area at flood stage. Kindly contact him to get more information on this problem. (Phone - 749-1184 - Iron.)

In view of the above, I ask that consideration be given not to use this creek for mine water and/or office and shops. This creek definitely cannot handle any additional water. If in fact Eveleth Taconite insists on using this creek, it should then be deepened, widened and straightened, or its course altered so as to avoid any additional inundation of farmland and County Road #755.

Wildlife

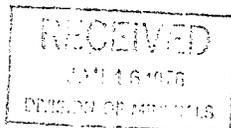
There is also a serene wooded and pastoral area, which provides good habitat for wildlife. Besides the deer, bobcat and "rodents" mentioned in the Draft EIS, we have observed some moose, numerous fox, coyotes, timber wolves, bear, lynx, beaver and muskrat, woodchuck, porcupine, partridge, different species of hawks and owls, eight to ten types of waterfowl and numerous types of song birds.

We have created a wildlife pond area with the aid of the Conservation Department. It would be calamitous to see this area raked of its forest, only to make way for rumbling trucks and machinery, and eventually barren, dusty rock dumps & something which is already taking place not too far from this area.


Mrs. Howard (Vivian) Sand
Route 1, Box 309-B
Iron, Minnesota 55751

/vnc

January 13, 1976
P. O. Box 743
Eveleth, Minnesota 55734



Mr. Paul Pajer
Division of Minerals
Department of Natural Resources
345 Centennial Office Building
St. Paul, Minnesota 55135

Dear Mr. Pajer:

I attended the Environmental Impact Statement hearing regarding Oglebay Norton expansion which was held at Eveleth City Hall at 2 P.M. under the chairmanship of Mr. Russell Hamilton. I am a property owner and resident in one area which Oglebay Norton has designated for future waste dumps. Attached is a copy of Page 28, Figure 8, of the EIS on which I've indicated in red the areas in which I reside and have ownership or interest of other lands.

Presently my lands are zoned rural residential and I want them to remain so while I still have possession or interest in the property. The quantity of land in question is 245 acres. Since Oglebay Norton has stated in their EIS that this land would not be utilized by them until the year 2045 this property in the interim, under rural residential zoning, could be developed into residential building sites. I realize the zoning is the concern of the City of Mt. Iron, however I did want to call your attention to the fact that this acreage is still privately owned and lived on (see attached Page XIV of EIS).

Another area I feel that warrants further investigation is the tremendous amount of wildlife on this land. Lake Manganika is the habitat for possibly the largest concentration of duck in this vicinity. Game Warden Gerald Hughes can confirm this information for you. There are a large number of white-tail deer in this area. Two years ago 13 deer were taken during hunting season by one hunting party alone in a one square mile area.

Still another area of concern to me is the responsibility assumed by Oglebay Norton for damages to property caused by expansion operations and mining. I have sustained damages in the form of cracks in my concrete block garage and the basement of my home. These cracks did not exist until approximately two years ago when quite intense blasting was begun in my residence area and has continued to present. Oglebay Norton denies any responsibility. I wonder if this is an indication of the manner in which they will handle other liabilities and responsibilities, such as land reclamation, in the future.

I realize that the taconite industry is Minnesota's primary industry and a necessity for our economic survival and that people and industry have to cooperate with one another. However, I am most upset with Oglebay Norton Company and their method of working with private residents, particularly in their effort to have property that doesn't belong to them zoned regardless of the effects

Mr. Paul Pajer
January 13, 1976
Page 2

it would have on resident or private land owner. This is a case, I feel, of a large industry or company trying to negate the rights of the private citizen to suit the company's own interests. Oglebay Norton, in my opinion, bears close watching in all phases of their expansion and mining operations.

Very truly yours,

William L. Spolarich
William L. Spolarich

STATE OF MINNESOTA

103

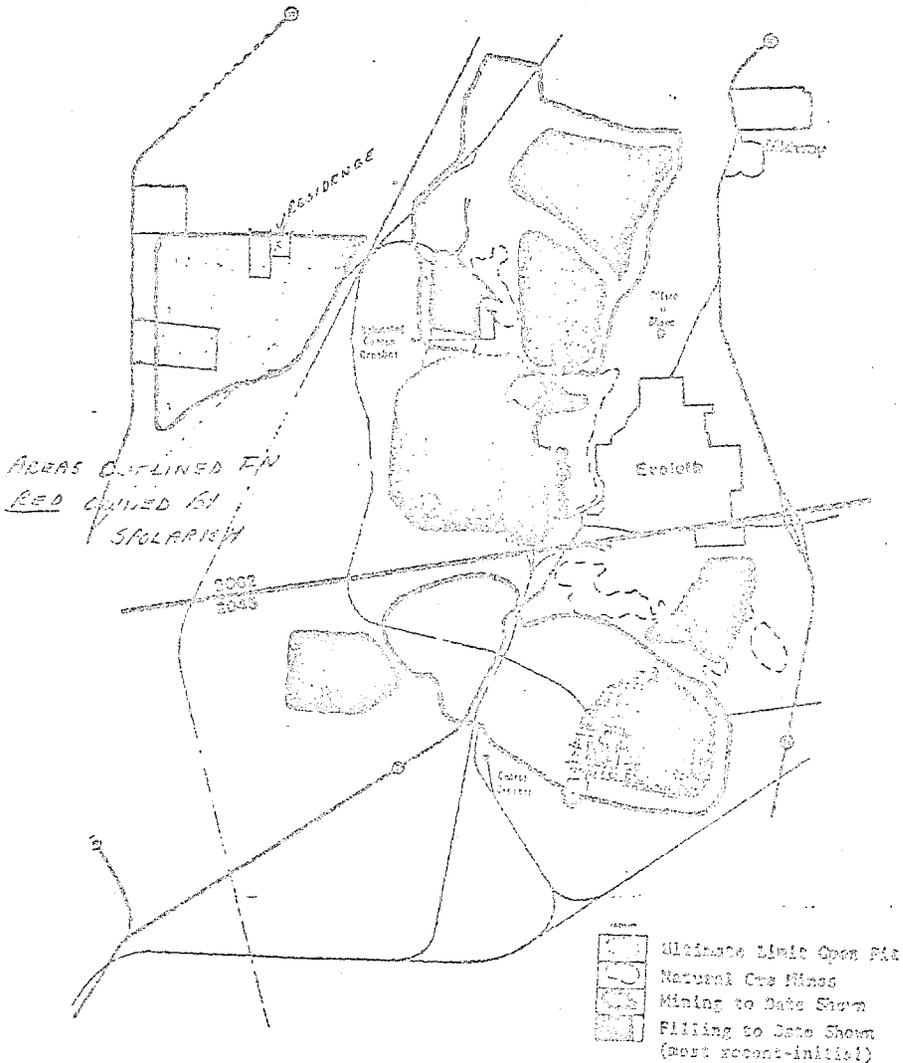


Figure 2 Mine Areas 2062 North, 2043 South

the project is anticipated to be slightly in excess of \$200,000,000.

The Minnesota Environmental Quality Council regulations pertaining to environmental impact statements were adopted April 4, 1974, but the status of an action as existing under the regulations, and thus exempt from the EIS requirement, is determined as of January 1, 1974. Pursuant to the request made by Oglebay by letter to Council Chairman Gerald Christenson dated June 10, 1974, which was accompanied by an Environmental Assessment prepared by A. W. Axelson & Associates, Inc., acting as consultants to Oglebay, the EQC determined on July 9, 1974, that the project was an exempt action on the basis of MEQC 26(c)(4)(bb), which provides that:

"Land on which the action is located is purchased or leased and any necessary zoning change is approved before January 1, 1974, and physical construction is commenced before January 1, 1978;"

In December, 1974, it came to the attention of the EQC that certain lands west of Eveleth which were designated on the maps submitted by Oglebay as "Waste Dump" and had been largely zoned "Open", had been automatically rezoned residential when the Town of Nichols was merged into the City of Mountain Iron in 1972, and thus required further rezoning for use by Oglebay; and that a part of these lands had not yet been acquired. Although these lands would have been acquired for use in connection with Eveleth Taconite Company's Thunderbird Mine regardless of the expansion project, it became clear that some members of the EQC technical committee and staff felt that the determination that the project was exempt from the EIS requirement had been imprudently made and that an EIS should be prepared with respect to the project. Oglebay then waived the exemption previously granted, and on February 5, 1976, the EQC resolved that an EIS should be prepared, designated the Department of Natural Resources and the Pollution Control Agency as responsible agencies, and resolved that physical construction of the project shall be permitted to continue through the preparation, review and acceptance of the EIS.



STATE OF MINNESOTA
 IRON RANGE RESOURCES AND REHABILITATION
 HWY. 13 SOUTH - P. O. BOX 578
 EVELETH, MINNESOTA 55734

PHONE: (612) 740-1110

January 12, 1976

Mr. Paul Pojar
 Page Two

January 12, 1975

Mr. Paul Pojar
 Division of Minerals
 Department of Natural Resources
 345 Centennial Office Building
 St. Paul, MN 55155

Dear Mr. Pojar:

In regard to the Draft Environmental Impact Statement on Oglebay Norton's Planned Expansion Project.

First, I would like to congratulate you on a detailed and well prepared Draft EIS. As I was involved in the inventory of the peatlands which are adjacent to the present tailings basin and will be used in the expansion, the parts pertaining to this type of particular interest to me.

I would like to make a few comments on the peat information in the statement. On page 76, when it is stated that "reed-sedge peat is not favored as a soil conditioner" - there is more reed-sedge peat produced for use as a soil conditioner in the United States than there is Sphagnum Peat. Examples of operations would be the Power-O-Peat Company and Northern Peat Company in Minnesota and the Michigan Peat Company in Michigan. It is my personal opinion that reed-sedge peat should have a monetary value placed on it and be treated as such, not only in this case, but in all land sales, leases, etc. in the State of Minnesota. I have brought this up to the DNR and hopefully we will be moving in this direction in the near future.

Again on page 76, the royalty of \$1.2 million which would be paid to the State on the Sphagnum Peat and a retail value of \$200 million for this known resource. It would be a terrible waste of a natural resource if this was never developed and be allowed to be covered with tailings and lost forever. (Page 304, if not developed in 35 years this would be done). Where would someone ever cover up \$200 million (present value) to be lost forever?

On page 75 it is stated that this is 10% of the State's resource of high quality accessible Sphagnum Peat. I realize that the company has made a change in their original plans and has made the peat available for approximately 38 years (page 224). It is also stated that development should not interfere with their operations and liabilities (page 76). I am hoping that a strong effort will be made to encourage development of this peat resource or to remove it for future use.

We did have some interest in these peatlands by Canadian and United States Peat Producers in the 1960's, but the mining ownership and length of availability seem to discourage development. Perhaps the new time availability will be an aid in creating new interest. Also the peat study being directed by the DNR and carried out by NRI should be an aid in evaluating our peat resources and in the development of the same.

In closing I would like to refer to page 78 where it is stated that soils testing is to be done in the basin area. I am hoping that this will be done in the near future and that every precaution will be taken so that Tailings Basin No. 2 will not endanger or contaminate the peat resources of the area. It will also be interesting to find out just what foundation characteristics the peat does have.

I hope that my concern and feelings will be shared by others in the state.

Sincerely,

Sincerely,

DONALD M. GRUBICH
 Research Supervisor

cc: Dr. E. S. Farnham

RECEIVED
 JAN 13 1976
 DIVISION OF MINERALS

AN EQUAL OPPORTUNITY EMPLOYER
 11-2



STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
ST. PAUL, MINN. 55155

Conale Esmanga
January 15, 1976
Page 2

We thank you for affording us this opportunity for review. If you have any questions regarding our comments please contact J. T. Pawlik, District Engineer, at (218) 723-4803.

Sincerely,

Frank D. Maguire
Frank D. Maguire
Commissioner

cc:
Paul Pojar
Division of Minerals,
Department of Natural Resources
345 Centennial Office Building
St. Paul, Minnesota 55155

January 15, 1976

RECEIVED
JAN 19 1976
MINN. POLLUTION
CONTROL AGENCY

Conale Esmanga
Office of Environmental Analysis
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, Minnesota 55113

Re: Ogilby - Norron's Proposed
Expansion Project
Draft Environmental Impact Statement

Dear Ms. Esmanga:

Our Department has reviewed the above referenced proposal, and we wish to offer the following comments:

Figure 44, page 133 is a year 2020 concept plan of circulation facilities for a regional planning area. This concept plan has no official status and is not in conformance with trunk highway improvement needs in this area as presently determined by the Minnesota Highway Department. The use of Figure 44 in the report is questioned as it could be interpreted as proposed highway improvement plans.

Page 122, lines 13 and 14 indicate that the entire route of T.H. 169 from Grand Rapids to Ely is to be upgraded to expressway standards in the future which is not true. T.H. 169 is presently constructed to expressway standards from Pennington to Chisholm and from Kinney to Virginia. The only other segment of T.H. 169 that is scheduled to be improved to expressway standards in the next 25 years is from Chisholm to Kinney.

Page 134, lines 4-6 indicated that long range plans of the Highway Department are to improve T.H. 53 to expressway standards from north of Virginia to Cook. The Department will soon begin a planning process to determine T.H. 53 improvement needs from north of Virginia to International Falls. Preliminary studies indicate that T.H. 53 should be improved to expressway standards to at least as far north as Coon.

COMMENTS From
Wayne E. Knitnen

These comments were written on his registration form.

"I am unable to attend the entire meeting. If at all possible a written response would be appreciated. Thank you.

(Mr. Knitnen's signature)

"It seems that from the testimony given by the O-N representative, that at all stages of expansion there will be sufficient if not excessive, quantities of water which could be utilized by the company for the purpose of road watering and jet piercing drills.

(1) With all of this ground water produced, why is it not being productively utilized? This would seem the most logical conclusion to alleviate the pressure on St. Mary's Lake.

(2) At what point will O-N cease for drawing water from St. Mary's Lake if the water level drops drastically?

(3) What is the relationship of the water tables at St. Mary's and Ely Lake?

(4) Does O-N plan to re-cycle any of its water and what percentage?

Thank you

(signature)
13 Ely Lake Drive
Eveleth, Mn. 55734

MAILING LIST FOR DRAFT ENVIRONMENTAL IMPACT STATEMENT
ON OGLEBAY NORTON'S PLANNED EXPANSION PROJECT

FEDERAL AGENCIES

Senator Walter F. Mondale
172 Federal Courts Bldg.
Minneapolis, MN 55401

Senator Hubert H. Humphrey
462 Federal Courts Bldg.
Minneapolis, MN 55401

Representative James L. Oberstar
Room 231 Federal Bldg.
Duluth, MN 55802

Representative Doug St. Onge
R.R. 4, Box 387
Benidji, MN 56601

Representative Glen Sherwood
Star Route 60
Pine River, MN 56474

Representative Peter X. Fugina
5 Merritt Drive
Virginia, MN 55792

STATE SENATORS

Senator Norbert Arnold
Route 1, Box 93
Pengilly, MN 55775

Senator Gerald L. Willet
207 Mill Road
Park Rapids, MN 56470

Senator George F. Perpich
314 NE 5th Ave.
Chisholm, MN 55719

Senator A. J. Perpich
4 Lakeside Drive South
Eveleth, MN 55734

Senator George Solon
616 W. Third St.
Duluth, MN 55806

Senator Ralph R. Doty
4107 Dodge St.
Duluth, MN 55804

Representative John J. Spanish
2202½ 11th Ave.
Hibbing, MN 55746

Representative Joseph R. Begich
1001 W. 2nd St.
Eveleth, MN 55734

Representative Douglas H. Johnson
Box 14
Cook, MN 55723

Representative Willard Munger
1121 S. 70th Ave. W.
Duluth, MN 55807

Representative Mike Jaros
162 W. Palm St.
Duluth, MN 55811

Representative Gary Doty
116 Parkland Ave.
Duluth, MN 55805

Representative James Ulland
Route 6, Box 181
Duluth, MN 55804

STATE REPRESENTATIVES

Irvin N. Anderson
909-13th St.
International Falls, MN 56649

Representative Norman Prael
Box 8
Keewatin, MN 55753

STATE CONSTITUTIONAL OFFICERS

Governor Wendell R. Anderson

Lieutenant Governor Rudy Perpich

Secretary of State Joan Anderson Growe

State Auditor Robert J. Mattson

State Treasurer Jim Lord

Attorney General Warren Spannaus

MINNESOTA STATE AGENCIES

Environmental Quality Council Members

Richard Magnuson

Wesley Ohman

Charles Reinart

Barbara Lukerman

Minnesota Department of Agriculture

Minnesota Department of Economic Development

Minnesota Department of Health

Minnesota Department of Labor and Industry

Minnesota Department of Natural Resources

Minnesota Energy Agency

Minnesota House of Representatives

Minnesota Highway Department

Minnesota Pollution Control Agency

Minnesota Senate

Minnesota State Planning Agency

Legislative Committee on Minnesota Resources

Legislative Reference Library

Arrowhead Regional Development Commission

Water Resources Board

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Marshall Southwest State University
Moorhead State University
St. Cloud State University
Winona State University

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Austin
Brainerd
Ely
Fergus Falls
Hibbing
Inver Grove Heights
Itasca
Lakewood
Mesabi
Metropolitan
Normandale
North Hennepin
Rainy River
Rochester
Thief River Falls
Willmar
Worthington

LOCAL UNITS OF GOVERNMENT AND AGENCIES

Iron Range Resources and Rehabilitation Department
Room 206, MEA Building
55 Sherburne Ave.
St. Paul, MN 55155

St. Louis County Planning & Zoning Department
Court House
Duluth, MN 55802

Fred Cina
Iron Range League of Municipalities
16 Third Ave. North
Aurora, MN 55705

Wilfred Doig, Land Commissioner
St. Louis County Tax Forfeited Land Dept.
Duluth, MN 55802

City Clerk
City Hall
Eveleth, MN

Recreation Commission
Hippodrome Bldg.
Eveleth, MN

Water Department
City Hall
Eveleth, MN

City Clerk
City Hall
Virginia, MN

Administrator
Village of Mt. Iron
Mt. Iron, MN

Samuel Davey
10 Elba Ave.
Fayal Township
Eveleth, MN

FEDERAL AGENCIES

Mr. Benjamine O. Davis, Jr.
Assistant Secy. for Environment
Safety and Consumer Affairs
Department of Transportation
400 - 7th St. SW
Washington, D.C. 20591

Dept. of Health, Education & Welfare
Asst. Secy. for Health and Service Affairs
HEW North Building
Washington, D.C. 20202

Department of Commerce
Economic Development Administration
Midwestern Regional Office
32 West Randolph Street
Chicago, Illinois 60601

U.S. DEPARTMENT OF INTERIOR

Bureau of Sports Fisheries & Wildlife
316 North Robert St.
St. Paul, MN 55101

Bureau of Mines
Fort Snelling
Twin Cities, MN 55111

Bureau of Outdoor Recreation
Lake Central Regional Office
3853 Research Park Dr.
Ann Arbor, Michigan 48104

Jack Hemphill, Director
U. S. Fish & Wildlife Service
Federal Building
Twin Cities, MN 55111

PUBLIC INTEREST GROUPS

Ralph Keyes, Executive Secy.
Association of Minnesota Counties
55 Sherburne, Suite 203
St. Paul, MN 55103

Ecological Society of America
Minnesota Chapter
5505-28th Ave. So.
Minneapolis, MN 55417

Izaak Walton League, Minn. Div.
63 South Fourth St.
Minneapolis, MN 55401

League of Women Voters of MN.
555 Wabasha St.
St. Paul, MN 55102

Minn. Assoc. of Commerce & Industry
1600 Pioneer Bldg.
St. Paul, MN 55101

Minn. Assoc. for Conservation Education
5400 Glenwood Ave.
Mpls., MN 55422

Minn. Chapter, The Nature Conservancy
329 West Fifteenth St.
Mpls., MN 55403

Mr. E. C. Bray
Minn. Committee for Environmental Information
P.O. Box 14207
Mpls., MN 55414

Minnesota Conservation Federation
4313 Shady Oak Road
Hopkins, MN 55343

Minn. Environmental Control Citizens Assoc.
Central Manor, 26 East Exchange St.
St. Paul, MN 55101

Steve Chapman
MPIRG
3036 University Ave. SE
Mpls., MN 55414

Quetico Superior Foundation
2400 First National Bank Bldg.
Mpls., MN 55402

Northern Environmental Council
600 Christie Bldg.
Duluth, MN 55802

Sierra Club (North Star Chapter)
P. O. Box 80004
St. Paul, MN 55108

Save Lake Superior Assoc.
1709 South St.
Duluth, MN 55812

Environmental Protection Agency
Regional Administrator, Region 5
1 North Wacker Drive
Chicago, Illinois 60606

Deputy Assistant Secretary
Department of Commerce
Office of Environmental Affairs
14th & Constitution Avenue
Washington, D.C. 20230

OTHERS

Frederick O. Rouse, Chairman
Great Lakes Basin Commission
P. O. Box 999
3475 Plymouth Road
Ann Arbor, Michigan 48106

Ken VanEss
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