The Establishment of a Permit to Mine Administration and Application Fee Schedule

Report to the senate and house committees with jurisdiction over environment and natural resources finance

Division of Lands and Minerals
Minnesota Department of Natural Resources

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Establishment of Mining Administration Account

During the 2008 session, state law was enacted that provided for a new fee for funding a portion of the Mineland Reclamation program, which historically had been funded through a General Fund appropriation. A Mining Administration Fee was established that was intended to partially cover the costs of administering and monitoring of the Permit to Mine for ferrous (taconite and iron ore) mining operations.

The legislature reduced the Division of Lands and Minerals' General Fund appropriation by $200,000 for FY09, and required the *establishment of a ferrous mining administration fee schedule based on the actual costs of issuing and monitoring individual permits and any necessary legislation needed to cover the costs of issuing and monitoring the permits for the next biennium.* In the interim, the legislature determined a fee schedule that stated *the commissioner shall charge the administrative fees established in paragraph (b) payable to the commissioner by June 30 of each year, beginning in 2008.* Subsequently, the division invoiced owners, operators, or managers of facilities that held Permits to Mine based on a schedule in law (see Appendix A). Upon receipt, the fees were credited to a newly established *Mining Administration Account* and appropriated to the division for the intended purpose. Six companies paid mining administrative fees according to the schedule set forth by the legislature (table 1).

Table 1. Ferrous Mining Administrative Fees

Company	Fee
ArcelorMittal	$ 10,000
Cliffs Erie, LLC	$ 3,333
Cliffs Natural Resources	$90,000
Essar Steel Minnesota, LLC	$ 3,333
Steel Dynamics, Inc.	$ 3,333
United States (US) Steel Corporation	$ 90,000
Total	$199,999

Legislative Direction

The legislature directed that *the commissioner shall report to the legislature* (by January 15, 2009) *and the chairs of the senate and house committees with jurisdiction over environment and natural resources finance on the establishment of a permit to mine application fee schedule that is based on the actual costs of issuing and monitoring individual permits and any necessary legislation needed to cover the costs of issuing and monitoring the permits for the next biennium.* This report is intended to fulfill the legislature's charge to report fee schedules.

After passage of the legislation, the division developed a cost-coding structure to track the staff time directed to various mineland reclamation responsibilities including taconite and iron ore permit administration; non-ferrous reclamation work; horticultural peat permits to mine; environmental review for ferrous, non-ferrous, and horticultural peat mines; and reclamation research (see Appendix B). After tracking staff time for several months, a number of modifications to the cost coding structure were implemented.

The cost coding period did not reflect typical work of the Mineland Reclamation staff. The period leading up to the date of the legislation, coincided with a period of dramatic global growth in the metals market; and, subsequently, its sudden decline, along with the seizing up of the credit markets and abrupt decline of global growth. The State of Minnesota, as well as other mineral producing areas, benefited from the metal demand in terms of jobs, vital regional economies, and increased royalties and tax revenue. During the period of growth, industry knowledge of Minnesota mineral potential led to increased mineral exploration, international investment in the state, and mergers and acquisitions of firms doing business in the state. As a consequence of this remarkable growth, the work of the staff was redirected from typical tasks to accommodate new demands for Minnesota minerals along with protecting the health and welfare of the state's citizens and protecting the state's natural resources. Five new staff were hired to assist with the increased workload and to fill in behind current staff while those personnel were (and are) dealing with the increased in environmental review and permitting responsibilities. See Appendix C for details of the staff responsibilities.

History and Responsibilities of the Mineland Reclamation Program

History of Reclamation Law

The Minnesota Mineland Reclamation Act was passed in 1969 reflecting increased promulgation of federal and state environmental laws demanded by citizens. The Federal Clean Air Act followed in 1970 and requirements for environmental review of mining operations came shortly thereafter. The Declaration of Policy, MS93.44, for Minnesota's Mineland Reclamation statute follows:

> *In recognition of the effects of mining upon the environment, it is hereby declared to be the policy of this state to provide for the reclamation ofcertain lands hereafter subjected to the mining of metallic minerals or peat where such reclamation is necessary, both in the interest of the general welfare and as an exercise of the police power of the state, to control possible adverse environmental effects of mining, to preserve the natural resources, and to encourage the planning of future land utilization, while at the same time promoting the orderly development of mining, the encouragement of good mining practices, and the recognition and identification of the beneficial aspects of mining.*

The first version of the reclamation law was non-regulatory, and an acknowledgement of the impacts that mining created and the electorate's desire for heightened stewardship of the land. Over the succeeding years the Reclamation Act was revised as both the state and the mining industry became more aware of the undesirable impacts of mining and the means by which acceptable, cost-effective, reclamation processes could be identified and implemented.

In 1981, rules were promulgated that directed the means by which a Permit to Mine could be issued for iron ore and taconite mining operations. These rules were followed in 1985 with rules for the mining of peat, and in 1992, with rules for the mining of non-ferrous metallic minerals.

Historically, the State of Minnesota has been leasing its iron ore and taconite resources since the 1890s. Iron ore and taconite mines have produced 4.5 billion tons of ore. The state has also had an active program of leasing non-ferrous metallic minerals since 1966. The leases set up the conditions that allow companies to explore for, and perhaps, eventually mine ore that is discovered. The state has issued 3,213 leases to explore for non-ferrous metallic minerals that

cover over 1.3 million acres of state-owned mineral rights. From 1890 through June 2008, mineral exploration and mining on state-owned lands have generated $398.7 million.

Mineland Reclamation Responsibilities

The Mineland Reclamation Program has broad responsibilities for mine permitting for ferrous, non-ferrous, and peat mining. Following is a compilation of the program's primary responsibilities.

- Manage permitting (Minn. Stat. sec. 93.47, subd. 3):
  - Process iron and taconite, non-ferrous, and peat Permit to Mine applications (including pre-application meeting, field review of project areas, review of permit applications, response to public comments, and approval of permits, if warranted) for public and private lands
  - Issue reclamation permits (Minn. Stat., sec. 93.47, subd. 3) for currently operating companies
  - Review annual reports and operating plans for conformance to Permit to Mine requirements
  - Conduct field inspections for progress of mining and reclamation and conformity to reclamation rule standards
  - Review and consider plans for financial assurance and verify reclamation cost estimates
  - Consider approval for variances, acceptable research, reclamation exchanges, alternative reclamation methods, buffers and barriers
  - Review and administer permit amendment proposals (amendments follow same general procedures as initial applications)
  - Complete annual reclamation summary reports
  - Review deactivation and closure plans and consider reclamation release
  - Map mining and reclamation activities digitally using GIS
  - Respond to complaints from public related to mining activities, e.g. blasting, noise and dust
  - Coordinate with other permitting agencies
  - Develop reclamation rules and amendments as needed
- Administer wetland banking for mining impacts
- Review and consider for approval wetland replacement monitoring reports and final wetland bank delineations
- Work with mining companies on reclamation of bulk sample sites
- Provide technical assistance environmental review to local units of government, other DNR Divisions, other state and federal agencies, private industry, and act as RGU when needed for ferrous, non-ferrous, and peat operations
- Provide geo-technical engineering services for tailings dams, breakwaters, harbors of refuge, etc.
- Manage Environmental Cooperative Research, with private industry and other agencies, which provides environmental solutions to mining issues
- Conduct field and laboratory research for mitigation of environmental effects of mining and for mine waste characterization and prediction
- Manage research on controlling mercury in air emissions from taconite plants
- Conduct study examining sources and fate of sulfate as related to mercury uptake in fish species in northeast Minnesota watersheds

- Provide information and education on issues of mine waste management to DNR staff, other state and federal agencies, and the public

Currently there are six active taconite operations on the Mesabi Iron Range with a total of 256,350 acres of land under permit, 105,500 acres of which have been disturbed. Ten peat operations are permitted, covering 5,138 acres of land, 2,908 acres of which have been disturbed. In addition there are several proposals for expansion of existing ferrous and peat operations and a number of companies that are at various stages of planning for new non-ferrous metallic mineral operations.

In addition to permitting the facilities, the Reclamation Section provides detailed assessments of proposed options identified in the environmental review associated with those facilities. Recent projects that have required environmental review and amended or new Permits to Mine follow below.

- *PolyMet*: The Draft Environmental Impact Statement (DEIS) is expected to be available for public review in early 2009. Few discussions regarding Permit to Mine have been undertaken due to uncertainty regarding the project details on what would be requested for permitting.
- *Mesabi Nugget (Steel Dynamics):* A pit water quality issue detected in the fall of 2008 delayed the progress of environmental review. Elevated levels of sulfate in the pit water exist that would have adversely affected the plans for dewatering the pits. A new schedule has been proposed with an adjusted project to accommodate the water quality issue. Bids are being requested for an EIS consultant for a joint state-federal EIS. This project will require a new Permit to Mine for the mining and processing facility.
- *Keewatin Taconite:* A voluntary EIS is underway for the proposed expansion at the Keewatin facility. A DEIS is expected in the spring of 2009. The expansion will require a Permit to Mine *substantial change amendment* with associated public review.
- *Teck Cominco*: An Environmental Assessment Worksheet (EAW) was completed in the summer of 2008 for bulk sampling that was conducted on state land near Babbitt. The EAW predicted no significant impacts from the sampling, and the bulk sample was collected. The sample was processed at Coleraine and shipped out of the state for metallurgical process testing. A reclamation plan was initiated and completed that included filling the bulk sampling pit and vegetating the area.
- *Essar -- Minnesota Steel:* This facility is currently under construction and underwent environmental review culminating in a Permit to Mine issued in 2007. It will be the first facility to produce steel on the Mesabi Iron Range.
- *ArcelorMittal:* This facility underwent environmental review from 2005 to 2007. The environmental review was completed and an amended Permit to Mine was issued in 2007.

The program also encompasses an environmental research component that is directed toward reducing, mitigating, or eliminating the impact of mining on the environment. The Environmental Cooperative Research program, which was established in 1993, provides a funding mechanism to collaborate with industry in addressing environmental issues related to mining by requiring matching monies from non-state sources. The funding has supported research and demonstration projects related to ferrous, non-ferrous, and industrial minerals mining. Most recently during FY06-09, the iron mining industry has co-funded research to

reduce mercury emissions from taconite plants, the second largest emitter of mercury in the state after power plants. Projects in previous years include determination of the effects of taconite mining on the hydrology of the Mesabi Iron Range and methods for environmentally sound management of non-ferrous mine wastes.

Options for maintaining the Mineland Reclamation Program

The current annual cost of the Mineland Reclamation program is $1.4 million (table 2). Funding options for legislation consideration are outlined below. The options include 1) historic fund mechanisms; 2) current funding and fee schedule; 3) a new fee schedule for facilities; 4) a charge to mineral fee owners; and 5) a charge back mechanism to recover costs for new Permit to Mine applications. The fifth option could be combined with any of the previous four. Each option contains inherent positive and negative implications. In addition, each new option will require new statutory language to be included in the reclamation statutes found in Chapter 93.

Table 2. Reclamation Section Budget

Category	Budget[1]
Staff	$1,014,000.00
Rent	$36,500.00
Supplies	$5,300.00
Attorney General Fees	$20,000.00
Governance	$123,000.00
Lab Services	$32,400.00
Reclamation Operations	$81,000.00
Contracts	$125,000.00
Total	$1,437,200.00

[1] Values are rounded.

1. General Fund (Historic Fund Mechanisms)

At the program's inception in 1969, the state legislature determined funding for the program is most appropriate from the General Fund. This funding source may be most appropriate because the use of General Fund monies is typically designed to protect the general health and welfare of state citizens as well as providing protection for the state's natural resources. Much like the separation of the executive and judicial branch, it provides for an independent oversight and a measure of separation of the permittee and permitor. More specifically, it avoids conflict of interest allegations that are prevalent in the press relative to the financial crisis and lack of governmental oversight.

2. Mining Administration Account in the Natural Resources Fund and the General Fund

During the 2008 session, the legislature provided partial funding for the program through the fee structure outlined above whereby a fee is charged to entities holding Permit(s) to Mine for ferrous operations. The General Fund supports the balance of the program.

3. New Fee Schedule for Facility Fees

Program funding could be provided through an expansion of the Mining Administration Account to provide for the full cost of the Mineland Reclamation Program beyond the administration of current ferrous mine permits. A fee schedule would be charged to operators of mines, encompassing multiple-ownership, based on production. Under this scenario, the fee for taconite

and steel-making facilities would be $150,000 annually for producing facilities and $75,000 for non-producing facilities. For scram operations, the fee would be $12,000 annually for producing facilities and $6,000 for non-producing facilities. For peat operations, the fee would be $3,000 annually for producing facilities and $1,500 for non-producing facilities. For non-ferrous operations, the fee would be $180,000 annually for producing facilities and $85,000 for non-producing facilities. Cumulatively and based on the current status of production and Permits to Mine, this schedule would generate about $1,158,000 (table 3.). It should be noted that peat mining operations have very thin margins, and imposition of a fee may be financially challenging to the industry.

Table 3. Possible Permit to Mine Fee Structure

Facility Name	Owners	Percent Ownership	Permit Fee
	Taconite Operations		
Essar Steel Minnesota	Essar Steel Minnesota, LLC	100	$ 75,000.00
Keewatin Taconite	US Steel Corporation	100	$ 150,000.00
Hibbing Taconite	ArcelorMittal	62.3	$ 93,450.00
Hibbing Taconite	Cliffs Natural Resources	23	$ 34,500.00
Hibbing Taconite	US Steel Corporation	14.7	$ 22,050.00
Minntac	US Steel Corporation	100	$ 150,000.00
Minorca	ArcelorMittal	100	$ 150,000.00
United Taconite	Cliffs Natural Resources	100	$ 150,000.00
Mesabi Nugget/Mesabi Mining	Steel Dynamics, Inc.	100	$ 75,000.00
Cliffs Erie (LTV)	Cliffs Natural Resources	100	$ 75,000.00
Northshore	Cliffs Natural Resources	100	$ 150,000.00
		sub-total	$ 1,250,000.00
	Scram Operations		
Magnetation	Magnetation, LLC	100	$ 6,000.00
		sub-total	$ 6,000.00
	Peat Operations		
Aitkin-Agri Cromwell	Aitkin-Agri Peat, Inc.	100	$ 3,000.00
Aitkin-Agri McGregor	Aitkin-Agri Peat, Inc.	100	$ 3,000.00
Berger	Berger Horticultural Products, Ltd.	100	$ 1,500.00
Fafard	Conrad Farard, Inc.	100	$ 3,000.00
Ferweda	Ferweda General Contracting	100	$ 1,500.00
Hawkes	Hawkes Company, Inc.	100	$ 3,000.00
Premier	Premier Horticulture, Inc.	100	$ 3,000.00
Sampson	Curtis A Sampson	100	$ 3,000.00
Thompson	Thompson Farms	100	$ 3,000.00
Waupaca	Waupaca Northwoods, LLC	100	$ 3,000.00
		sub-total	$ 27,000.00
		grand total	$ 1,158,000.00

4. Charge to mineral fee owners

Funding for the program could be provided through a fee paid by mineral fee owners who benefit from reclamation of lands within the permitted mine areas. The premise of this cost is that it is the fee owners who realize the benefit of reclaimed lands for future use. The concept is similar to the royalty tax, collected from 1923 through 1989, that was payable on mineral royalties received by private companies and individuals. The tax was assessed against the royalty recipient, with nonresidents and residents subject to the **tax.** In this option, the reclamation cost could be based on a charge of $0.01 per ton of crude ore mined for the taconite operations.

The mineral owners would pay this fee for reclamation oversight and inspection to ensure that reclamation complies with Minnesota Rules. Based on an estimate of 2007 and 2008 taconite production, an annual reclamation fee would generate approximately $1.35 million from privately and publicly-owned mineral rights (tables 4 and 5). Under current mining plans, about 71% of the taconite ore mined was mined from privately-owned minerals and 29% was mined on state-owned lands; therefore, private mineral fee owners would provide about $900,000 in fees and public fee owners, such as the Permanent School Trust Fund and Permanent University Trust Fund, would provide about $400,000.

Table 4. 2007 Taconite Ore Production

Mineral Fee	Crude Tonnages	Percent Production	Reclamation Fee $/Lton	Reclamation Fee
State	37,391,602	28.97%	$0.010	$ 373,916
Private	91,679,834	71.03%	$0.010	$ 916,800
All fee owners	129,071,436	100.00%	$0.010	$1,290,716

Table 5. Estimated 2008 Taconite Ore Production*

Mineral Fee	Crude Tonnages	Percent Production	Annual Estimated Crude Tonnages	Reclamation Fee ($/Lton)	Reclamation Fee
State	32,670,069	29.10%	40,837,586	$0.010	$ 408,376
Private	79,617,458	70.90%	99,521,823	$0.010	$ 989,247
All fee owners	112,287,527	100.00%	140,359,409	$0.010	$1,397,623

* Note estimated from 10 months of production

Appendix D and E contain cost details of fees that would be attributed to each fee owner for this option.

This fee could also be charged, based on a production rate to be determined, to the peat and non-ferrous operations.

5. Recovery of the cost of processing new Permit(s) to Mine

In order to recover the costs for processing new Permits to Mine, or existing Permits to Mine that would require a substantial change amendment, costs would be recovered in a manner similar to that used to recover costs of environmental review. The costs of applications would be charged as professional services on a charge back account based on the prevailing division rate (currently $80 per hour). An income agreement would be established estimating the expected costs. The

proposer would then fund the income agreement, and actual time spent on the Permit to Mine would be tracked and charged. At the end of the process, any remaining funds would be returned to the proposer.

Summary

In summary, recommended here are five options for alternate methods for recovering the costs of administering and issuing Permits to Mine for ferrous, non-ferrous, and peat mines in the State of Minnesota. The options listed range from returning to the historical means of funding the program (all from General Fund) to combinations of recovering the costs from those who benefit most directly from services provided. It may be that recovery of the costs could be through one of the five mechanisms described or a combination of any of the above. For example, partial recovery of the costs from the mining companies and partial from the mineral owners. However it is determined to fund the program, it is important to continue to maintain a consistent staff with the capacity and requisite experience to administer, monitor, and issue Permits to Mine to protect the natural and economic resources of the State of Minnesota.

Appendix A. Laws of 2008, Chapter 363, Article 5, Sec. 4, subd. 2

$200,000 in 2009 is appropriated from the natural resources fund for the administration and monitoring of permits to mine ferrous metals under Minnesota Statutes, section 93.481. By January 15.2009, the commissioner shall report to the legislature and the chairs of the senate and house committees with jurisdiction over environment and natural resources finance on the establishment of a permit to mine application fee schedule that is based on the actual costs of issuing and monitoring individual permits and any necessary legislation needed to cover the costs of issuing and monitoring the permits for the next biennium.

Sec. 11. Minnesota Statutes 2006, section 93.481, is amended by adding a subdivision to read:

Subd. 7. **Mining administration account.** The mining administration account is established as an account in the natural resources fund. Ferrous mining administrative fees charged to owners. operators, or managers of mines shall be credited to the account and may be appropriated to the commissioner to cover the costs of providing and monitoring permits to mine ferrous metals under this section.

Sec. 30. **MINING ADMINISTRATIVE FEE.**

(a) Until a new application fee schedule is adopted for permits to mine or process taconite according to the report submitted by the commissioner of natural resources under this article, the commissioner shall charge the administrative fees established in paragraph (b), payable to the commissioner by June 30 of each year, beginning in 2008.

(b) A company that manages a taconite mining or taconite processing operation shall pay:

(1) $90.000 if the total production of the company's combined operations in the state had an annual production of 10,000,000 or more tons of taconite pellets or iron nuggets during the previous calendar year:

(2) $10.000 if the total production of the company's combined operations in the state had an annual production of less than 10,000,000 tons of taconite vellets or iron nuggets during the previous calendar year: and

(3) $3.333 if the mining operation is permitted to mine. but had no annual production of taconite pellets or iron nuggets during the previous calendar year.

EFFECTIVE DATE. This section is effective the day following final enactment and applies to companies that manage a taconite mining or taconite processing operation holding or applying for a vermit to mine under Minnesota Statutes, section 93.481, during the 2007 calendar year.

Appendix B. Cost coding structure: Activity Codes

Activity Codes are four character codes that are determined in the following manner:

First character	1	= DNR
Second character	F	= Lands and Minerals
Third character	6	= Reclamation
Fourth character	X	= see below

			Name	Description
Where	X	= 1	= Issue - New Permit	creating a new permit to mine
		2	= Administer/Monitor - Wetlands	review of wetlands replacement plans
		3	= Issue - Assignment Transfer	move an existing permit from one company to another
		4	= Administer/Monitor - Non-substantial change amendment	altering existing permit that does not require public notice
		5	= Issue - Substantial change amendment	alter existing permit that requires public notice
		6	= Administerhionitor - Inspections	visits to mine sites (existing or proposed)
		7	= Administer/Monitor - Annual/operating plans review	review mining and sampling plans for existing permits and exploratory/preliminary phase
		8	= Lab and field research	work to improve reclamation practices (includes on minesite work and Hibbing lab work)
		9	= Environmental review	environmental review
		@	= Administration for ferrous permits	work that applies to more than one ferrous company
		#	= Administration for non-ferrous permits	work that applies to more than one non-ferrous company
		*	= Administration for peat permits	work that applies to more than one peat company

In all cases, the activity code will have the first three characters = 1F6 followed by a number from 1 to 9 or @, #, or *.

The third character remains 6 (Reclamation) even if the employee is not in the Reclamation Section, because the work is done for Reclamation.

Appendix C. Reclamation staff duties and responsibilities with regard to permitting and environmental review.

Mineland Reclamation Manager	Provides managerial direction, statewide leadership, policy development, implementation and program expertise for mineland reclamation so that mineland reclamation policy and business initiatives receive the direction and oversight to achieve goals. Exercises authority over the allocation of fiscal and human resources in the program area. Serves as a representative of the Lands and Minerals Division Director and the Commissioner internally and externally.
Mineland Reclamation Field Supervisor	Monitors and directs mining operators reclamation success, directs field research activities on revegetating minelands, and supervises the Hibbing field reclamation and monitoring staff. Particular attention is directed at the areas of vegetation, soil, and their role in future land use potential of reclaimed mineral and peat mining facilities.
Mineland Reclamation Field Supervisor	Supervises and conducts laboratory and field research projects on the prediction and control of environmental impacts associated with sulfide metal mining. Particular attention is directed at sulfide mineral mining and exploration and associated water quality impacts. Provides assistance to environmental review and permitting as related to non-ferrous mining operations.
Engineer Principal	Develops and administers programs that will predict the response of snrface'water and groundwater to mineralized rock and associated waste. Uses results to direct the siting, design, operation and reclamation of non-ferrous metallic mineral mining. Participates in environmental review and permitting to reduce, minimize, and mitigate thc impacts of mining.
Engineer Principal	Develops and administers programs that will assess tl environmental effects of mining, provides environmental data for state permits, leases and reclamation rules that will provide methods for thd ultimate reclamation of mined lands. Particioates in environmental review and permitting to reduce, r iinimiz and mitigate the impacts of mining.
Engineer ıdministrative	Provides the Department with technical and administrative expertise in geotechnical and structural design, materials, technology and for civil and mining engineering activities on a statewide basis.
Mineland Reclamation Specialist Senior	Inspects, monitors, evaluates, and documents mining and reclamation activity in accordance with the state's Rules for Mineland Reclamation, and participates in water quality and vegetation research relating to the reclamation of mining stockpiles and tailings basins so that the environmental impacts of mining can be controlled. Participates in environmental review and permitting to reduce, minimize, and mitigate the impacts of mining.
Mineland Reclamation Specialist Senior	Conducts research to evaluate the environmentally sound management of mining wastes, to coordinate the Division of Lands and Minerals environmental review process for non-ferrous mining projects, and reviews documents submitted for technical content and regulatory adequacy. Review of and continuation of research and correlation of complex technical findings will facilitate and improve the environmental review and permitting process.

Appendix C. Reclamation staff duties and responsibilities with regard to permitting and environmental ev (cont.)

Mineland Reclamation Specialist Senior	Monitors and directs mining operators' reclamation programs and directs field research activities on revegetating minelands. Particular attention is directed at the areas of vegetation, soil, and their role in future land use potential of reclaimed mineral and peat mining facilities.
Chemist 1	Conducts field and laboratory research on the prediction and mitigation of water quality problems associated with mining so that methods can be developed to control the p of mining.
Mining Aide Intermediate	Conducts laboratory d field v characterization and iiti_ ti experiments that examine potential water quality problems associated with mining, conducts facility maintenance and repair, conducts evaluations of the State's peat resource potential, assist engineers, geologists, and other staff in various activities related to mining, and performs other tasks as assigned.
Mining Aide	Assists with duties associated with the Hibbing drill core library, Reclamation research site, and other Division projects.
Research Scientist 3	Conceives, designs, and directs research that will address the quantification and control of impacts of mining on the state's air and water resources. The importance of this industry to the state, the importance of Minnesota's water and air resources, and the department's regulatory responsibilities for mining requires it to be proactively involved in solutions to mining impacts. Current research topics include control of mercury emissions from taconite pelletizers, geochemistry of release and control of acid and metals in mine drainage, and release of mineral fibers.
Research Scientist 1	Perf s supervised scientific research relating to sulfate, mercury, and phosphate source, transport, and fate on Minnesota's Iron Range. Assists in planning and conducting research in several areas and participates in writing reports and publications.
Project Specialist	Manages, summarizes, and analyzes data, and reports on non-ferrous research projects designed to predict mine waste drainage quality and to mitigate problematic drainage. Responsible for review of documents submitted for environmental review and permitting of proposed non-ferrous mines. These efforts will assist in the environmentallv sound management of non-ferrous mi ie w ste m s ot
Project Analyst	Assists ith in tigati within the Reclamation Section involved with environmental review, mine permitting, and research.
Hydrologist 2	Designs and coordinates the acquisition, int tation and technical application of hydrogeologic data on the Mesabi Iron Range for mineland watershed reclamation. Uses mine pit water balance modeling to help predict existing and future mine pit water levels, groundwater outflow and surface water inflow and outflow locations and hydrographs. Modeling outputs are necessary for quantification of local and downstream impacts and development of mitigation plans.

Appendix D. Example of a Possible Fee Owners Schedule for Mineland Reclamation Based on 2007 Crude Ore Production

Company	Mineral Fee	Crude Tonnages	Percent Production	Reclamation Fee $/Lton	Reclamation Fee
Minntac	State	23,037,750	49.66%	$0.010	$230,378
	GNIOP/Wheeling/Toledo	16,068,373	34.64%	$0.010	$160,684
	USS	7,283,007	15.70%	$0.010	$ 72,830
	TOTAL	46,389,130	100.00%	$0.010	$463,892
KeeTac	State	12,336,789	66.80%	$0.010	$123,368
	Russell	6,762	0.04%	$0.010	$ 68
	Aromac	0	0.00%	$0.010	$ 0
	Sargent	2,781,738	15.06%	$0.010	$ 27,817
	Stevenson Annex	0	0.00%	$0.010	$ 0
	Stevenson	540,317	2.93%	$0.010	$ 5,403
	Miss.#3	2,587,847	14.01%	$0.010	$ 25,878
	Section 18	0	0.00%	$0.010	$ 0
	Russell Annex	0	0.00%	$0.010	$ 0
	Ont. Annex	0	0.00%	$0.010	$ 0
	Forest	0	0.00%	$0.010	$ 0
	Miss.	213,971	1.16%	$0.010	$ 2,140
	Ont. Iron Co.	1,504	0.01%	$0.010	$ 15
	Ont. Res.	281	0.00%	$0.010	$ 3
	TOTAL	18,469,209	100.00%	$0.010	$184,692
UnitedTac	State	955,041	6.26%	$0.010	$ 9,550
	RFMDF	775,038	5.08%	$0.010	$ 7,750
	RGGS	10,125,845	66.40%	$0.010	$101,258
	Alworth	1,133,492	7.43%	$0.010	$ 11,335
	Whiteside	1,780,562	11.68%	$0.010	$ 17,806
	Mesabi	478,855	3.14%	$0.010	$ 4,789
	TOTAL	**15,248,833**	**100.00%**	$0.010	**$152,488**
NorthShore	State	1,062,022	7.21%	$0.010	$ 10,620
	Peters	13,669,450	92.79%	$0.010	$136,695
	TOTAL	14,731,472	100.00%	$0.010	$147,315
Hibbing Tac	State	0	0.00%	$0.010	$ 0
	GNIOP	3,267,256	12.65%	$0.010	$ 32,673
	Meriden	0	0.00%	$0.010	$ 0
	BLGN	4,419,489	17.12%	$0.010	$ 44,195
	EVELETH	5,893,147	22.82%	$0.010	$ 58,931
	DAY Lands	4,412,965	17.09%	$0.010	$ 44,130
	DAY Development	0	0.00%	$0.010	$ 0
	ONEIDA	379,257	1.47%	$0.010	$ 3,793
	Leetonia	0	0.00%	$0.010	$ 0

Appendix D. Example of a Possible Fee Owners Schedule for Mineland Reclamation Based on 2007 Crude Ore Production (cont.)

Hibbing Tac (cont.)	NWNB	3,785,619	14.66%	$0.010	$ 37,856
	Langdon/Warren	2,017,093	7.81%	$0.010	$ 20,171
	GALOB	0	0.00%	$0.010	$ 0
	Penobscott	1,570,917	6.08%	$0.010	$ 15,709
	HTC	76,175	0.30%	$0.010	$ 762
	TOTAL	**25,821,918**	**100.00%**	$0.010	**$258,220**
ArcelorMittal	Private	**8,410,874**	**100.00%**	$0.010	**$ 84,109**
				Total	**$1,290,716**

Appendix E. Example of a Possible Fee Owners Schedule for Mineland Reclamation Based on 2008 Crude Ore Production*

Company	Mineral Fee	Crude Tonnages	Percent Production	Annual Estimated Crude Tonnages	Reclamation Fee $/Lton	Reclamation Fee
Minntac	State	19,764,873	47 33%	24,706,091	$0.010	$ 247,061
	GNIOP/Wheeling /Toledo	15,062,572	36.07%	18,828,215	$0.010	$ 188,282
	USS	6,936,432	16.61%	8,670,540	$0.010	$ 86,705
	TOTAL	41,763,877	100.00%	52,204,846	$0.010	$ 522,048
KeeTac	State	9,529,113	63.13%	11,911,391	$0.010	$ 119,114
	Russell	0	0.00%	0	$0.010	$ 0
	Aromac	157,927	1.05%	197,409	$0.010	$ 1,974
	Sargent	3,726,021	24.69%	4,657,526	$0.010	$ 46,575
	Stevenson Annex	0	0.00%	0	$0.010	$ 0
	Stevenson	0	0.00%	0	$0.010	$ 0
	Miss.#3	1,631,915	10.81%	2,039,894	$0.010	$ 20,399
	Section 18	0	0.00%	0	$0.010	$ 0
	Russell Annex	0	0.00%	0	$0.010	$ 0
	Ont. Annex	0	0.00%	0	$0.010	$ 0
	Forest	0	0.00%	0	$0.010	$ 0
	Miss.	48,343	0.32%	60,429	$0.010	$ 604
	Ont. Iron Co.	0	0.00%	0	$0.010	$ 0
	Ont. Res.	0	0.00%	0	$0.010	$ 0
	TOTAL	**15,093,319**	**100.00%**	**18,866,649**	$0.010	**$ 188,666**
UnitedTac	State	404,093	3.13%	505,116	$0.010	$ 5,051
	RFMDF	119,035	0.92%	148,794	$0.010	$ 1,488
	RGGS	9,847,013	76.33%	12,308,766	$0.010	$ 123,088
	Alworth	1,263,308	9.79%	1,579,135	$0.010	$ 15,791
	Whiteside	365,644	2.83%	457,055	$0.010	$ 4,571
	Mesabi	900,814	6.98%	1,126,018	$0.010	$ 11,260
	TOTAL	**12,899,907**	**100.00%**	**16,124,884**	$0.010	**$ 161,249**
NorthShore	State	2,904,794	19.86%	3,630,993	50.010	$ 36,310
	Peters	11,719,748	80.14%	14,649,685	$0.010	$ 146,497
	TOTAL	14,624,542	100.00%	18,280,678	$0 010	$ 182,807
Hibbing Taconite	State	67,196	0.32%	83,995	$0.010	$ 840
	GNIOP	6,455,117	31.18%	8,068,896	$0.010	$ 80,689
	Meriden	103,376	0.50%	129,220	$0.010	$ 1,292
	BLGN	3,763,645	18.18%	4,704,556	$0.010	$ 47,046
	EVELETH	8,107,393	39.17%	10,134,241	$0.010	$ 101,342
	DAY Lands	0	0.00%	0	$0.010	$ 0
	DAY Development	0	0.00%	0	$0.010	$ 0
	ONEIDA	1,299,671	6.28%	1,624,589	$0.010	$ 16,246
	Leetonia	179,666	0.87%	224,583	$0.010	$ 2,246
	NWNB	0	0.00%	0	$0.010	$ 0
	Langdon/Warren	0	0.00%	0	$0.010	$ 0
	GALOB	0	0.00%	0	$0.010	$ 0
	Roy	18,365	0.09%	22,956	$0.010	$ 230
	Penobscott	574,169	2.77%	717,711	$0.010	$ 7,177
	HTC	130,884	0.63%	163,605	$0.010	$ 1,636
	TOTAL	**20,699,482**	**100.00%**	**25,874,353**	$0.010	**$ 258,744**
ArcelorMittal*	Private		100.00%	8,410,874	$0 010	$ 84,109
					Total	$1,397,623

*annual production estimated from 10 months

**ArcelorMittal used 2007 Annual Report