

California Regional Water Quality Control Board
North Coast Region

Order No. R1-2000-50
ID No. 1A841420SIS
Waste Discharge Requirements

for

Noranda, Inc.
Noranda Grey Eagle Mines, Inc.
And
Siskon Corporation
1000 Luther Gulch Road
Happy Camp, California 96039

Siskiyou County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter the Regional Water Board) finds that:

1. On May 13, 1999, Noranda Grey Eagle Mines, Inc. submitted a Report of Waste Discharge (ROWD). It contained a proposal to revise the wastewater treatment program originally outlined in the ROWD submitted on January 13, 1984. The 1984 ROWD described a program to control seepage from the tailings dam and construction and operation of a treatment plant to treat the seepage waters. Supplemental information to complete filing of the revised application was submitted on August 10, 1999.
2. Noranda Grey Eagle Mines Inc., is a wholly-owned subsidiary of Noranda Finance Inc., a wholly-owned subsidiary of Noranda Inc., of Toronto, Ontario, Canada.
3. Siskon Corporation is the owner of patented and unpatented claims on which the Grey Eagle Mine is located. Noranda Grey Eagle Mines Inc., and Siskon Corporation are hereinafter referred to as the discharger.
4. The Grey Eagle Mine is located within Section 14, T17N, R7E, HB&M in the watershed of Luther Gulch, tributary to Indian Creek thence the Klamath River in Siskiyou County (Attachment A). The mine is five miles north of Happy Camp. Facilities for treating wastewater and disposing of treated wastewater are located within Section 14 and 1, T17N, R7E, HB&M in the watershed of Luther Gulch and Baker Gulch, both tributary to Indian Creek thence the Klamath River in Siskiyou County.

5. The Noranda Grey Eagle Mine was an open pit gold and silver mine. The overburden removed to expose the ore body was used to construct a tailings dam. The ore was processed at a carbon-in-pulp cyanide leach mill and untreated tailings were discharged to the tailings dam reservoir for permanent disposal. The discharger terminated mining and milling operations in 1986. The discharge of running wastes to the tailings reservoir was terminated in July 1986. The discharger completed construction of the tailings reservoir cap in April 1987. The tailings dam and reservoir have the following dimensions:
- a. height above cutoff trench - 240 feet
 - b. crest length - 950 feet; crest elevation - 2581 feet
 - c. volume of fill - 2.5 million cubic yards
 - d. reservoir volume - 900 acre-feet; reservoir surface area (16 acres)
 - e. final tailings volume - 565 acre-feet; surface area - 13 acres

The dam was constructed with special design features including a clay core, a grout curtain, chimney and blanket drains, an armored surface, runoff controls, and a clay plug to impound seepage.

6. The discharger constructed extensive diversion improvements which collect all runoff above the disposal site and transports it to the North Fork Luther Gulch Creek stream channel below the tailings dam.
7. The discharger constructed the water treatment plant outlined in the 1984 ROWD between 1984 and 1986. The discharger has operated the treatment plant since its completion to the present. The treatment plant is located below the toe of the tailings dam and is designed to reduce cyanide and metals to levels acceptable for discharge into a subsurface drainfield. The design flow of the plant is 400 gallons per minute (gpm) and average treatment rate in 1999 was 85 gpm. The treatment process is pH adjustment by sodium hydroxide, metals precipitation and sand filter polishing. Treated effluent is discharged to land via a leachfield system which is located on the gravel bar adjacent to the confluence of Luther Gulch Creek and Indian Creek.
8. The discharger proposes to pump lime into the historical mine workings to complement the water treatment program implemented in the preceding 14 years. The proposed placement of lime is expected to reduce the production of acid waters and coincident solubilization of metals, primarily copper, that is occurring in the historical mine workings. The discharger expects this project to reduce the

need for continued operation of the water treatment plant and allow for a more passive closure program.

9. The discharger proposes the construction of one or two holes into the lower mine stopes along with one or two holes into the upper most mine stopes (Attachment B). Mine water will be pumped from the lower stopes, mixed with lime, and then pumped back into the upper levels of the mine. The lime will neutralize the acidic waters and produce metal hydroxide precipitates. Precipitates will coat the sulfide minerals as well as settle into the flow pathways. This is expected to reduce the release of metals to the mine waters and the flow of groundwater through the mine.
10. It is estimated that 625 tons of lime will be required to neutralize the mine. The discharger plans to add lime to the mine at the rate of 8.5 pounds per minute. The historical mine workings may encompass a volume of 150,000 cubic yards containing an estimated 20 to 25 million gallons of water. At a pumping rate of 500 gallons per minute, an exchange of one mine water volume will take from 28 to 35 days. The discharger plans to pump 3 to 4 mine water volumes and therefore expects the project to last approximately 100 days. Monitoring of the liming operation and resulting water quality effects inside the mine will determine the necessity of repeating the addition of lime.
11. The ROWD submitted in March 1999 did not contain a proposal to modify the effluent limitations contained in Order 87-118. The water treatment plant will continue to be operated to meet existing effluent limitations.
12. The discharger receives, stores, and uses in the waste treatment process hazardous or potentially hazardous raw materials and process chemicals including:

Material	On Hand	Usage Rate (Resupply)
Sodium Hydroxide	10,000 gallons	300 gal/day
Diesel	100	Auxiliary Power Supply

The discharger submitted a plan which describes spill prevention, containment, and cleanup measures. The plan was last updated in 1999.

13. The disposal of tailings at the Noranda Grey Eagle Mine reservoir is a waste discharge to land and subject to regulations contained in Subdivision 1, Division 2, Title 27, California Code of Regulations. The following provisions of Subdivision 1 apply to the Noranda Grey Eagle Mine tailings reservoir.
 - a. Pursuant to Title 27, §22480, the Noranda tailings are a Group A mining waste.
 - b. The Noranda tailings reservoir satisfies §22490 regulations regarding site criteria for protection from a 100-year peak streamflow.

- c. The Noranda tailings reservoir satisfies §22490 construction standards which require diversion and drainage facilities designed to accommodate the anticipated volume of precipitation and peak flows from surface runoff for one 25-year, 24-hour storm.
 - d. The Noranda tailings reservoir was designed by a registered civil engineer and construction was supervised by a registered civil engineer.
 - e. The Noranda tailings reservoir satisfies the general criteria for containment standards as specified in §20320. Waste containment facilities for the tailings reservoir include hydrogeologic conditions which divert all waste-bearing flows to a collection system at the toe of the tailings dam.
 - f. The discharger is implementing a water quality monitoring program in compliance with §22500.
 - g. The discharger will maintain both the original diversion channel until the cover of the tailings disposal site has stabilized and will continuously maintain the new channel across the surface of the covered disposal site. The discharger will also remove undesirable vegetation from the surface of the covered disposal site to assure that root penetration does not desiccate and crack the clay layer.
 - h. The discharger will perform erosion control work as necessary to prevent discharge of earthen materials to surface drainages
14. The discharger submitted financial assurances to pay for the costs of post-closure maintenance in conformance with §22510, Closure and Post-Closure Maintenance of Mining Units.
15. The Regional Water Board Water Quality Control Plan for the North Coast Region includes water quality objectives and receiving water limitations.
16. The beneficial uses of the Klamath River and its tributaries include:
- a. municipal and domestic supply (MUN)
 - b. agricultural supply (AGR)
 - c. industrial service supply (IND)
 - d. industrial process supply (PROC)
 - e. groundwater recharge (GWR)
 - f. freshwater replenishment (FRSH)
 - g. navigation (NAV)
 - h. water contact recreation (REC1)
 - i. noncontact water recreation (REC2)
 - j. commercial and sport fishing (COMM)
 - k. warm freshwater habitat (WARM)
 - l. cold freshwater habitat (COLD)

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| m. | wildlife habitat | (WILD) |
| n. | migration of aquatic organisms | (MIGR) |
| o. | spawning, reproduction, and/or early development | (SPWN) |
| p. | estuarine habitat | (EST) |
| q. | aquacultural | (AQUA) |

17. Beneficial uses of areal groundwaters include:
 - a. domestic water supply
 - b. agricultural water supply
 - c. industrial service supply
 - d. industrial process supply
18. The discharge is presently governed by Waste Discharge Requirements Order No. 87-118, adopted by the Regional Water Board on December 3, 1987.
19. A negative declaration was prepared and approved by the Regional Water Board on July 27, 2000 to satisfy the requirements of the California Environmental Quality Act. The Regional Water Board has considered the negative declaration and has determined that compliance with this Order will have no significant environmental impact.
20. The Regional Water Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations.
21. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
22. The permitted discharge is consistent with the antidegradation provision of State Water Resources Control Board Resolution No. 68-16. The impact on existing water quality will be insignificant.

THEREFORE, IT IS HEREBY ORDERED that Waste Discharge Requirements Order No. 87-118 are rescinded and the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of any waste not specifically regulated by this Order is prohibited.
2. Creation of a pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code (CWC), is prohibited. [Health and Safety Code, Section 5411]

3. The discharge of waste to land that is not under the control of the discharger is prohibited.
4. The discharge of untreated waste from anywhere within the collection, treatment, or disposal facility is prohibited.
5. The discharge of waste from the Noranda Grey Eagle Mine to the surface waters of the Klamath River Basin is prohibited.

B. EFFLUENT LIMITATIONS

1. Representative samples of the discharge (treated tailings dam seepage discharged to percolation beds adjacent to Indian Creek) shall not contain constituents in excess of the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Maximum Concentration</u>
Cyanide (Free)	mg/l	0.2
Copper	mg/l	1.0
Iron	mg/l	0.3
Zinc	mg/l	0.02
Cadmium	mg/l	0.01
Mercury	mg/l	0.002
Nickel	mg/l	0.7

C. PROVISIONS

1. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel.
2. Severability

Provisions of these waste discharge requirements are severable. If any provision of these requirements is found invalid, the remainder of these requirements shall not be affected.

3. Operation and Maintenance

The discharger must maintain in good working order and operate as efficiently as possible any facility or control system installed by the discharger to achieve compliance with the waste discharge requirements.

4. Change in Discharge

The discharger must promptly report to the Regional Water Board any material change in the character, location, or volume of the discharge.

5. Change in Ownership

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the discharger, the discharger must notify the succeeding owner or operator of the following items by letter, a copy of which must be forwarded to the Regional Water Board:

- a. existence of this Order, and
- b. the status of the discharger's annual fee account

6. Vested Rights

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the discharger from his liability under federal, State, or local laws, nor create a vested right for the discharger to continue the waste discharge.

7. Monitoring

The discharger must comply with the Contingency Planning and Notification Requirements Order No. 74-151 and the Monitoring and Reporting Program No. R1-2000-50 and any modifications to these documents as specified by the Executive Officer. Such documents are attached to this Order and incorporated herein. Chemical, bacteriological, and bioassay analyses must be conducted at a laboratory certified for such analyses by the State Department of Health Services.

8. Inspections

The discharger shall permit authorized staff of the Regional Water Board:

- a. entry upon premises in which an effluent source is located or in which any required records are kept;
- b. access to copy any records required to be kept under terms and conditions of this Order;
- c. inspection of monitoring equipment or records; and
- d. sampling of any discharge.

9. Noncompliance

In the event the discharger is unable to comply with any of the conditions of this Order due to:

- a. breakdown of waste treatment equipment;
- b. accidents caused by human error or negligence; or
- c. other causes such as acts of nature;

the discharger must notify the Executive Officer by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate the steps taken to correct the problem and the dates thereof, and the steps being taken to prevent the problem from recurring.

10. Revision of Requirements

This Regional Water Board requires the discharger to file a report of waste discharge at least 120 days before making any material change or proposed change in the character, location, or volume of the discharge.

The discharger shall file a supplemental report of waste discharge if the tonnage of lime estimated to be added to the mine as outlined in Finding No. 10 is expected to be exceeded.

11. Operator Certification

Supervisors and operators of municipal wastewater treatment plants shall possess a certificate of appropriate grade in accordance with Title 23, California Code of Regulations, Section 3680. The State Water Board may accept experience in lieu of qualification training. In lieu of a properly certified wastewater treatment plant operator, the State Water Board may approve use of a water treatment plant operator of appropriate grade certified by the State Department of Health Services where water reclamation is involved.

12. The discharger shall protect from erosion all disturbed soil areas, protective dikes, diversion facilities, stream crossings, and other water quality control facilities.

13. The Group A mining waste disposal area shall be protected from any wash-out or erosion of wastes or covering material and from inundation which could occur as a result of floods.

14. Group A mining waste materials and any water that has contacted the waste shall be contained in the area designed for Group A mining wastes, including seepage control facilities.

15. Waste confinement barriers shall be protected and maintained to ensure their effectiveness.

16. Leachate collection, treatment, and disposal facilities shall be operated and maintained as necessary to prevent the discharge of wastes except as provided in B.1. above to surface or groundwaters. The effectiveness of the slurry wall to prevent lateral movement of wastes to groundwater shall be assured by maintaining the level of groundwater above the slurry wall at least one foot lower than the level of groundwater below the slurry wall.

17. The discharger shall provide assurances that monies are available in an amount estimated by the Regional Water Board to be sufficient to ensure the post-closure maintenance of the disposal site in a manner that will not pose an adverse threat to the environment. The cost estimate and, if necessary, the financial assurances shall be updated on an annual basis. Post-closure maintenance costs shall be estimated for a period of thirty years following site closure.
18. The discharger shall have a continuing responsibility to assure protection of usable waters from the waste discharge and from gases, leachate or seepage that are caused by infiltration or precipitation or waters draining into the waste disposal area.
19. Any detection above "background concentrations" of the following constituents at monitoring points outside of the process containment and permitted disposal areas constitutes a violation of this Order.

Constituent
Total Cyanide
Free Cyanide
Copper
Iron
Zinc

Certification

I, Lee A. Michlin, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on July 27, 2000.

Lee A. Michlin
Executive Officer