Title 40—Protection of Environment
CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY
SUBCHAPTER N—EFFLUENT GUIDELINES AND STANDARDS
[FR 71:5-4]
PART 434—COAL MINING POINT SOURCE CATEGORY
Effluent Limitations Guidelines for Existing Sources
AGENCY: Environmental Protection Agency.
ACTION: Final rule.
SUMMARY: On May 13, 1976, the Environmental Protection Agency promulgated effluent limitations guidelines and proposed additional effluent limitations guidelines and new source performance standards for the coal mining point source category. The rule promulgated today establishes final effluent limitations guidelines for the coal mining point source category and includes a number of major changes and clarifications to the earlier rule making which reflect comments received on the earlier rule making as part of public participation in EPA's rule making procedures. These regulations incorporated in National Pollutant Discharge Elimination System permits issued by the Federal EPA or by States with approved programs.

EFFECTIVE DATE: April 26, 1977, to be fully complied with by July 1, 1977.

FOR FURTHER INFORMATION CONTACT:
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SUPPLEMENTARY INFORMATION:
Summary of Procedural Background
The Environmental Protection Agency today promulgates final effluent limitations guidelines for the coal mining point source category. On October 17, 1975, EPA promulgated interim final effluent limitations guidelines and proposed regulations for this point source category. (40 FR 48830.) The interim final regulations announced in that publication controlled only the pH of the effluent. The standards proposed at that time were with respect only to pretreatment for existing sources and presented only general requirements.

On May 13, 1976, the Agency published additional interim final effluent limitations guidelines and proposed additional new source performance standards for this point source category. (41 FR 19841.) These interim final regulations expanded the list of pollutants which dischargers must control. The regulations published in interim final form included, for all four subparts of Part 434, a determination based upon the use of best practicable control technology currently available.

The proposed new source performance standards covered Subpart A (coal preparation plant subcategory) and Subpart B (coal storage, refuse storage, and coal preparation plant ancillary subcategory). 41 FR 19841. Effluent limitations guidelines based upon the use of best available technology economically achievable were proposed for all four subparts. Finally, pretreatment standards for new sources were proposed for subparts A and B. As noted above, the regulations proposed to address only the use of best practicable control technology currently available—that technology and those regulations which must be implemented by July 1, 1977, pursuant to section 301 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1311.

The Agency is not promulgating pre-treatment standards for this point source category at this time nor does it intend to promulgate such standards in the future, because there are no known situations in which such standards would be applicable. Should information become available which indicates that there is a need for such standards, they will be issued. The regulations based upon best available technology economically achievable which were promulgated today because the Agency has embarked on a major effort to publish these regulations (which must be implemented by 1983) in connection with requirements for control of a large number of priority water pollutants. Since the Agency intends to restate this industry extensively with respect to priority water pollutants and the best available technology and since the permits which would incorporate this technology will not be written in the near future, it was deemed more reasonable to promulgate the revised BAT limitations at one time rather than publish effluent limitations guidelines now which must be revised within one or two years. These regulations do not include final new source performance standards; these standards will be announced in the near future in the Federal Register. At that time the Agency will also propose effluent limitations standards for those subcategories for which new source standards have not been proposed.

SUMMARY OF RULE AND OUTLINE OF MAJOR CHANGES
The regulations promulgated today incorporate several revisions to the interim final effluent limitations guidelines published on May 13, 1976. For the most part, these changes were brought about by consideration of the substantial number of comments received from industry and environmental groups. These comments are summarized in detail in the Appendix to this preamble. However, several major points were raised which will be addressable. Although the agency did not receive criticism with respect to the organization of the regulations, the Agency's own review indicated that a reorganization of the subparts was necessary to eliminate certain of the ambiguities which existed in the May 13 publication. Also, there appeared to be substantial confusion over some of the definitions and these have been reorganized and to some extent, are revised. These are the major changes brought about by or considered for today's announcement:

1. Reorganization of the subparts. The interim final effluent limitations guidelines published on May 13, 1976 contained four subparts. The first subpart addressed preparation plant discharges; the second addressed discharges from coal storage, refuse storage and coal preparation plant ancillary areas. And the third and fourth subparts addressed discharges from active mining operations. Each subpart contained a section setting forth specialized definitions for that subpart. Many of the specialized definitions were the same for several of the subparts and thus it was decided that it would be more readable to convert subpart A into a presentation of definitions which apply throughout Part 434. The previous subpart A covered coal preparation plants, and, as noted below, the Agency has decided to combine Subparts A and B into the Subpart B presented today.

In addition, Subpart B, as presented today, is further subdivided, in order to provide a distinction between acid and alkaline water and to be consistent with new source performance standards. Subpart B, as presented today, is further subdivided, in order to provide a distinction between acid and alkaline water and to be consistent with new source performance standards.

2. General definitions. The term "active mining area" has been defined to clearly state with respect to surface mines, that these effluent limitations guidelines (and new source performance standards to be promulgated soon) do not apply once grading has been completed to return the earth to the desired contour and once reclamation work has begun. The previous definition was confusing in that it spoke of reclamation work being "completed" or "completed." There is a new definition, for coal preparation plant associated areas. This term is defined to mean the area around the coal preparation plant which was previously included in the ancillary areas subject to previous Subpart B. Thus, the new Subpart B includes the areas previously subject to both Subparts A and B.

3. Discharges from coal preparation plants. Perhaps the strongest criticism of the interim final regulations published on May 13, 1976, was with respect to the requirement of no discharge from coal preparation plants (i.e., that no coal preparation companies submitted comments to the Agency. They strongly suggested that there was a misconception as to the facts of operation of coal preparation plants, and that when the Agency and its contractor concluded that a coal preparation plant had a closed cycle system they were mistaken in the fact. The industry contentions were that even when a coal preparation plant is designed to recycle water, there are points in the system and occasions when discharge is necessary. Close examination of this problem revealed that there was very little disagreement as to the fundamental facts of operation of a coal preparation plant and that by combining Subparts A and B and imposing the restrictions that were previously applied to Subpart B, to the new subpart, the problem has been solved.
could be resolved with no increase in environmental degradation. Simply stated, it was found by the Agency after careful inspection that there are virtually no coal preparation plants which are not surrounded by areas subject to the previous regulations. The coal preparation plants would not in practice be subject to a "no discharge" standard, but rather would be subject to the limitations applied to previous Subpart B. This is because the common form of operation of a coal preparation plant and associated areas is to have a common pond or series of ponds and treatment facilities for all the discharges and runoffs from these facilities. It was found that consideration of a coal preparation plant without the surrounding associated or ancillary areas is an unrealistic approach. With the qualifications then in the discussion of manganese, the limitations which are applied to coal preparation plants and associated areas under the new § 434.22 are the same effluent limitations that govern discharges from coal storage, refuse storage, and coal preparation plant ancillary areas in the previous regulations and which, as explained above, were in fact the limitations which would have governed discharges from coal preparation plants previously subject to Subpart A.

Another area in which there was substantial comment was with respect to the exemption for discharges from coal mining facilities which result from unusual precipitation events. The lowest design criteria for impoundment facilities is unreasonable. To the contrary, the Agency considered the reasonable of this requirement revealed that a retention structure sufficient to contain a 10-year, 24-hour storm event is relatively small, that the 10-year, 24-hour rainfall is a widely used engineering design criteria which has been adopted for other purposes in this and other industries for many years. Among the specific requirements of the Office of Coal Mine Health and Safety, Mining Enforcement and Safety Administration of the Department of Interior, in comments on the interim final effluent limitations guidelines, suggested that certain changes be made in those regulations, but did not criticize the use of the 10-year, 24-hour event as a design criteria for an overflow exemption.

In light of the many comments with respect to the 10-year, 24-hour rainfall event, it is concluded with the Office of Coal Mine Health and Safety, Mining Enforcement and Safety Administration of the Department of Interior, Representatives of that office stated that the rainfall of a 10-year, 24-hour event in virtually all situations is a lesser rainfall than would occur during the rainfall event utilized by that office as the minimum design criteria for impoundment facilities. The lowest design criteria is a 6-hour maximum precipitation event, the highest is a "maximum precipitation event" for the Pittsburgh area, a 10-year, 24-hour rainfall is about 4 inches, a 6-hour event is slightly greater than 4 inches, and a maximum precipitation event is about 28 inches.

Under 39 CFR Part 77, which presents the Mandatory Safety Standards, Surface Coal Mines and Surface Work Areas of Underground Coal Mines, plans for the design, construction and maintenance of structures which impound water, sediment or slurry (above a certain size) are required to contain many details of the structure. The actual size will depend on several factors, including the area to be served by the rainstorm. Among the specific requirements of 30 CFR Part 77, the duration of the storm in minutes is impractical. The duration of a storm has no close relationship to the quantity of water which falls during the storm or to the ability of a containment facility to gradually treat and discharge the water (these facilities are designed to allow relatively clean water to escape). It is also unclear as to what would be considered a storm. Also, it is difficult to conceive of a workable enforcement scheme which relies on measurement of a storm, when the exact time of the initiation of the storm or rainfall event may be unclear. It would require an owner or op-
...considered precipitation events under...lations into a fairly routine allowance on...the time of the...allow for uncontrolled discharges from...when attempting to control the dis-

...used in the State of Kansas to contain...year, 24-hour storm event as a realistic...Amendments of...the Federal Water Pollution Control Act...were raised during the consideration of...the industry...which the major source of pollution...has been used in several other industries...an allowance, excursion, or exemption...would allow for discharges caused by...sudden snowmelt, since these would not...would be considered precipitation events under the...the suggested formulae.

Use of a provision such as § 434.22(b), which allows for the release of waste water when there is an unusual precipitation...is not restricted solely...the mining industry...an allowance, excursion, or exemption...has been used in several other industries...in which the major source of pollution...results from rainfall runoff. For example...when attempting to control the dis-

...discharges of highly pollutant wastes...feedlot operations, the regulatory au-

...these considerations were raised during the consideration of the Federal Water Pollution Control Act...and there is prominent mention of the...year, 24-hour storm event as a realistic...method of addressing the problem. In...debate on the predecessor bill to the...Rearrars, Senator Dole noted to Senator Muskie some of the practices which are...in the State of Kansas to contain...to feedlot operators...the following dialogue ensued:

(Mr. Dole) Retention basins and other...be employed to accommodate any...normal runoff from feedlots, but as a prac-

tical matter it is impossible to construct...reconstruction structures to handle the runoff...from extreme rainfall conditions which could...be precipitated resulting from a storm...occurred in a 24-hour period within a 10-square...ules area is 24 to 28 inches. Such a torren-

tal downpour has never occurred, but...the statistical probability of its happening shows...is at least in principle possible. Unfor-

...The question which I pose is: To what ex-

tent does the zero discharge requirement...that relates to runoff from feedlots, contain-

...the suggested formulae.

...a relatively minor pollutant and there-

...adverse effects of manganese...is well known that manganese...often present with iron concentra-

...of manganese contained in the interim final...guidelines is inauspicious with the meth-

...enables the analytical procedure used to develop...the data base for the limitations con-

...the technical studies on which the regula-

...the effluent. Soviet coal mining...the effluent limits guidelines contained in the...interim final regulations...on iron and manganese subcategory. The...additional concentrations of manganese...in the effluent from coal mining...These observations essentially contended...requirement of maintaining a pH of...was inconsistent with the requirement of...the May 13 interim final regula-

...In those limitations because manganese...can only be reduced when the pH is...to a lesser extent, the companies...contended that there is...may be used to monitor...such digestion. There-

...on the discharge from coal mines...the Western United States. Representa-

...of that Region believe more...stringent numbers are appropriate in...light of actual concentrations of manganese... These data appear to support ef-

...rules and regulations...FEDERAL REGISTER, VOL. 42, NO. 80-TUESDAY, APRIL 26, 1977
number of parameters significantly more stringent than the limitations announced today. The reasons for the apparent ability of Western coal mines to discharge pollutants in less concentration than the use of Eastern mines is many, and certainly include the relatively more even topography of Western coal mines, the emphasis on recycling of relatively scarce water supplies, and the concentration of pollutants in the geologic formations being exploited. The Agency is undertaking a thorough evaluation of the information being collected, pursuant to permitting authorities in the Western United States. It is anticipated that consideration will be given to proposal of a separate subcategory with respect to all pollutant parameters for those coal mining operations located in the Western United States which have attributes such that they are able to meet more stringent effluent limitations.

The Agency has determined not to promulgate national TSS limitations for mines in some Western States. Until national limitations guidelines are published to address Western mines and TSS, NPDES permit writers shall calculate TSS restrictions utilizing the same discretion and with the same deference to statutory factors as they have in the past. It is the policy of the Environmental Protection Agency that if any discharger has received a final NPDES permit which calls for compliance with limitations more stringent than those specified in this document, the discharger is still obligated to meet the terms of the final permit. Thus, whether a discharger has a final State or Federal NPDES permit calling for more stringent discharge controls that operator will not be permitted to rely on today's promulgation of effluent limitations guidelines to obtain modification of that permit.

9. Extend the applicability of effluent limitations guidelines to all point sources at surface coal mines until release of the reclamation bond by an appropriate state agency; and

10. General Environmental Benefits to be Obtained by Regulations of Coal Mine Discharges. The effluent limitations guidelines promulgated today are technologic standards and are not designed with precision to obtain designated water quality levels in the streams and other receiving water bodies into which coal mining discharges flow. However, there has been general criticism of the coal mining regulation voiced by representatives of the industry that the technology-based standards may not be needed in light of the benefits (or lack of benefits) which will accrue if discharged pollutants are reduced with the limitations. It is impossible in this preamble to summarize the many works that have been written on the environmental impacts of coal mining and coal mining discharges. Even by examining a small portion of these works and focusing on only one Regional area, one can appreciate that significant environmental benefits will accrue should the reduction in coal mining pollutant loadings be achieved.

One of the most respected studies of the effects of coal mining discharges is presented in "Acid Mine Drains in the Appalachia," a report by the Appalachian Regional Commission (Washington, D.C. 1969). This report was sent to the President by direction of the Appalachian Regional Development Act, as amended, incorporating the views of many respected experts, and included the advice and assistance of members of the National Research Council of the National Academy of Engineering. The conclusions of "Acid Mine Drainage" demonstrate the effect of just one of the pollutant parameters by the effluent limitations guidelines upon just one area of the United States, the Appalachian Region. That study concluded:

About 10,500 miles of streams in eight states of the Appalachian Region are affected by pH 5.5-6.0. The streams are polluted by increased amounts of acids, sediment, sulfate, iron and hardness of which the most significant is acidity. The study documented many of the direct economic costs resulting from acid mine pollution but noted that "the general environmental and aesthetic degradation of affected areas, the destruction of trout, the interference to water-based recreation caused by acid mine drainage might well exceed these other more readily measured dislocations."

The report entitled "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Coal Mining Point Source Category." May 1976, details the analysis undertaken in support of these regulations and is available for inspection in the EPA Public Information Referral Center at the U.S. Environmental Protection Agency, Waterside Mall, 401 M St. SW, Washington, D.C. 20460, at all EPA regional libraries.
§ 434.11 General definitions.

(a) The term "acid or ferruginous mine drainage" means mine drainage which before any treatment either has a pH of less than 6.0 or a total iron concentration of more than 10 mg/L.

(b) The term "active mining area" means a place where work or other activity related to the extraction, removal, or recovery of coal is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.

(c) The term "alkaline mine drainage" means mine drainage which before any treatment has a pH of more than 6.0 and a total iron concentration of less than 10 mg/L.

(d) The term "coal mine" means an active mining area, including all land and property placed upon, under or above the surface of such land, used in or resulting from the mining of coal from its natural deposits by any means or method, including secondary recovery of coal from refuse or other storage piles derived from the mining, cleaning, or preparation of coal.

(e) The term "coal preparation plant associated areas" means the coal preparation plant yards, immediate access roads, slurry ponds, drainage ponds, coal refuse piles, and coal storage piles and facilities.

(f) The term "mine drainage" means any water drained, pumped or siphoned from a coal mine.

(g) The term "ten-year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable re-occurrence interval of once in 10 years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, and in other amendments, or equivalent regional or rainfall probability information developed therefrom.

§ 434.20 Applicability.

The provisions of this subpart are applicable to discharges from coal preparation plants and associated areas, including discharges which are pumped, siphoned or drained from coal storage, refuse storage and coal preparation plant ancillary areas related to the cleaning or beneficiation of coal of any rank including but not limited to bituminous, lignite and anthracite.

§ 434.21 [Reserved].

§ 434.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and collate with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would allow these limitations to have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that plant, and it will be related to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) The following limitations establish the concentration of pollutants which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available if discharges from that point source normally are acidic prior to treatment.

<table>
<thead>
<tr>
<th>Effluent characteristic</th>
<th>Maximum for any 1 day</th>
<th>Average of daily values for 29 consecutive days shall not exceed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron, total</td>
<td>7.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Manganese, total</td>
<td>2.0</td>
<td>1.5</td>
</tr>
<tr>
<td>pH</td>
<td>-0.0 to 0.60</td>
<td>-0.0 to 0.60</td>
</tr>
</tbody>
</table>

(b) The following limitations establish the concentration of pollutants, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available if discharges from that point source normally are alkaline prior to treatment.
(c) Any untreated overflow, increases in volume of a point source discharge, or discharge from a bypass-pass system from facilities designed, constructed, and maintained to treat or discharge from the facilities and areas covered by this subpart which would result from a 24-hour event, shall not be subject to the limitations set forth in paragraph (a) of this section.

(d) Where the application of neutralization and sedimentation treatment technology results in inability to comply with the manganese limitations set forth in paragraph (a) of this section, the permit issuer may allow the treatment technology results in inability to comply with the manganese limitations set forth in paragraph (a) of this section, the permit issuer may allow the treatment technology to be discharge in the combined discharge from a by-pass system from sources within the mine drainage area shall not be required to meet the limitations set forth in paragraph (a) of this section.

Subpart D—Alkaline Mine Drainage Subcategory

§ 434.40 Applicability; description of the alkaline mine drainage subcategory.

The provisions of this subpart are applicable to alkaline mine drainage resulting from the mining of coal of any rank including but not limited to bituminous, lignite, and anthracite.

§ 434.41 [Reserved]

§ 434.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs which can affect the industry subcategorization and effluent limits established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations may be less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations may be established by the Regional Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) The following limitations establish the concentration of pollutants which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

<table>
<thead>
<tr>
<th>pollutant</th>
<th>standard (in mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>iron</td>
<td>3.5</td>
</tr>
<tr>
<td>manganese</td>
<td>65.0</td>
</tr>
<tr>
<td>pH</td>
<td>6.4 to 9.0</td>
</tr>
</tbody>
</table>

These TES effluent limitations shall not apply to discharges from coal mines located in the following States: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. In these States, the TES limitations shall be determined on a 10-year 24-hour precipitation event. The express limitations shall not be subject to the limitations set forth in paragraph (b) of this section.

(b) Any untreated overflow, increases in volume of a point source discharge, or discharge from a by-pass system from facilities designed, constructed, and maintained to contain or treat the discharges from areas covered by this subpart which would result from a 10-year 24-hour precipitation event, shall not be subject to the limitations set forth in paragraph (a) of this section.

(c) Drainage which is not from an active mining area shall not be required to meet the limitations set forth in paragraph (a) of this section as long as such drainage is not commingled with untreated mine drainage which is subject to the limitations in paragraph (a) of this section.

The final effluent to be exceeded to a small extent in order that the manganese limitation set forth in paragraph (a) of this section, will be achieved.
(a) The following limitations establish the concentration of pollutants which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Category</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron, total</td>
<td>1.5</td>
<td>Subpart B</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>8.5</td>
<td>Subpart C</td>
<td></td>
</tr>
<tr>
<td>TSS</td>
<td>20.0</td>
<td>Subpart C</td>
<td></td>
</tr>
</tbody>
</table>

These TSS effluent limitations shall not apply to discharges from coal mines located in the following States: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. In these States, TSS limitations shall be determined on a case-by-case basis.

(b) Any untreated overflow, increase in volume of a point source discharge, or discharge from a by-pass system from facilities described in paragraph (a) of this section shall be subject to the limitations set forth in this subpart.

(c) Drainage which is not from an active mining area shall not be required to meet the limitations set forth in this subpart. Limitations for such drainage shall be determined on a case-by-case basis.

APPENDIX A--TECHNICAL SUMMARY AND BASIS FOR REGULATIONS

This Appendix summarizes the basis of final effluent limitations guidelines for existing sources to be achieved by the application of best practicable control technology currently available.

(1) GENERAL METHODOLOGY

The effluent limitations guidelines set forth herein were developed in the following manner. The point source category was first studied for the purpose of determining whether separate limitations are appropriate for the different segments within the category. This analysis included a determination of whether differences in raw material used, equipment and methods employed, age, size, waste water constituents and other factors require development of separate limitations for different segments of the point source category. The raw waste characteristics for each segment were then identified. This analysis of the source, flow and volume of water used in the process employed, the sources of waste and waste waters in the operation and the constituents of all waste water. The constituents of the waste waters which should be subject to effluent limitations were identified.

The control and treatment technologies existing within each segment were identified. This included an identification of each distinct control and treatment technology, including both in-plant and end-of-process technologies, which is relevant or capable of being applied. Section 306 of the Act also included an identification of, in terms of the amount of constituents and the chemical, physical, and biological characteristics of the raw materials, the effluent level resulting from the application of each of the technolgies. The problems, limitations, and reliability of each treatment and control technology were also identified. In addition, the nonwater quality technological impact, such as the effects of the application of such technologies upon other pollution problems, including both in-plant and end-of-process technologies, were identified. The energy requirements of each control and treatment technology were determined as well as the cost of the application of each technology.

The information, as outlined above, was then evaluated in order to determine what levels of control could be achieved from the best practicable control technology currently available. In identifying such technologies, the age, size, and waste water characteristics of the facilities or point source were involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, nonwater quality environmental impact (including energy requirements) and other factors.

The data upon which the above analysis was performed included EPA permit applications, EPA sampling and inspections, consulant reports, and industry submittals.

(2) Summary of conclusions with respect to the coal preparation plants and associated areas (Subpart B), and the acid or ferruginous mine drainage subcategory (Subpart D) of the coal mining point source category.

(1) Categorization. For the purpose of studying waste treatment and effluent limitations the coal mine point source category was initially subcategorized by the established Standard Industrial Classification (SIC) groups applicable to the coal mining industry. These SIC groups were then further subdivided by: geographic location of the mine, type of mine (surface or deep), and size of mine (annual tonnage); all based on anticipated variations in raw waste water. After statistical analysis of the data obtained during this study this part is applicable to: waste treatment the coal mining point source category should be divided into three discrete subcategories based on: the origin of the raw waste, i.e., waste water from the mining activities and waste water from the mining of coal; waste water service activities. Waste water was further subdivided by the characteristics of the effluent (acid or alkaline).

(1) SIC--Coal Preparation Plants and Associated Areas. The provisions of this subpart are applicable to discharges from coal preparation plants and associated areas (Subpart B) are limited to bituminous, lignite, and anthracite.

(2) Subpart D--Alkaline Mine Drainage. The provisions of this subpart are applicable to discharges from alkaline mine drainage resulting from the mining of coal of any rank including but not limited to bituminous, lignite, and anthracite.

(2) Waste characteristics. The raw waste characteristics of coal preparation plants and ore preparation plants are generally the result of the mining activities themselves. The chemical characteristics of coal and mine drainage are determined by the geology of the coal, associated overburden, and mine bottom. Raw mine drainage ranges from poorly to highly polluted drinking water quality. Discharge characteristics vary between the two classes of raw mine drainage (1) acidic or ferruginous, and (2) alkaline,
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which are generally representative of geographic areas.

Acid or ferruginous mine drainage (Subpart C) is characterized by high acidity, iron, manganese, and nickel, plus varying concentrations of other metals such as aluminum, manganese, nickel, zinc, and possibly barium. It may also contain suspended solids, which include iron, manganese, nickel, zinc, and suspended solids.

E. Limitations guidelines and standards of performance are established to control pollutants which are chosen primarily on the following criteria:

1. Pollutants are frequently present in coal mine point source discharges in concentrations deleterious to aquatic organisms;
2. Technology exists for the reduction or removal of the pollutants in question; and
3. Research data indicate that certain concentrations of pollutants are capable of disrupting an aquatic ecosystem. The following were identified as the pollutants of greatest concern at coal preparation plants and associated areas of the coal industry:

- Alkaline mine drainage (Subpart D): This condition can be characterized by alkaline wastes, including aluminum, manganese, nickel, zinc, and possibly barium. Alkaline mine drainage is a serious problem in areas where it comes into contact with coal or coal refuse. The wastewater discharge from coal preparation plants and associated areas contains pollutants similar to the pollutants discharged by the mines served by the preparation plant. As with the coal mining segment of the industry, waste water handling from coal preparation plants associated areas may require no treatment to meet this final regulation. If effective control technology is not employed, several control technology: treatment and control technology have been studied for each subcategory of the final regulations. Waste water control technology includes techniques employed before, during and after the actual mining operation to reduce or eliminate wastes. Several control technologies are evaluated in the Development Document, referenced below, which can control or ameliorate mine discharge and associated areas (reclamation). While reclamation of preparation plant refuse disposal areas has not been demonstrated as control technology which ameliorates this aspect of mine pollution from mining, it is not required as part of this final regulation.

- Total dissolved solids, sulfates, fluorides, strontium, and barium because best practicable control technology is not employed, or even increase in intensity after mine closure if proper mine closure controls are not employed. Control of mine drainage after mine closure or abandonment is not included in this final regulation although techniques are described in the Development Document, referenced below, which can control or ameliorate mine discharge after mine closure and all activities associated with the mine have ceased.

Water enters preparation plant associated areas such as coal storage and refuse storage via precipitation, wash down, and runoff, where it comes in contact with coal or coal refuse. The wastewater discharge from coal preparation plants and associated areas contains pollutants similar to the pollutants discharged by the mine served by the preparation plant. As with the coal mining segment of the industry, waste water handling from coal preparation plants associated areas contains solids removal including thickeners, vacuum filtration, and pressure filtration.

Waste water control technology includes techniques employed before, during and after the actual mining operation to reduce or eliminate wastes. Several control technologies are evaluated in the Development Document, referenced below, which can control or ameliorate mine discharge after mine closure and all activities associated with the mine have ceased.

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Surface holding ponds or underground sumps are employed to equalize the flow of mine drainage before treatment. Although solidly in the raw mine drainage is neutralized with an alkali, usually hydrated lime, it may contain ferrous and other reducible metals through the formation of their insoluble hydroxides. When iron is present in raw mine drainage in the ferrous form, usual practice is to provide aeration facilities for oxidation to the ferric state. Suspended solids removal including thickeners, vacuum filtration, and pressure filtration.

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drainages from over 3 mg/l to less than 3 mg/l. Alkaline mine drainage was observed to have low concentrations of other metal ions. Therefore, the parameters included in the alkaline mine drainage subcategory of 40 CFR Part 434 (40 FR 48830) have been revised to increase daily total iron, total suspended solids and pH.

Solid waste control must be considered. Most practical and economical method of disposal today, requires disposition of the pollutants removed from waste waters in this industry in the form of liquid and solid wastes. In most cases these are nonhazardous substances requiring only minimal custodial care. However, a few of these hazardous and may require special consideration. In order to insure long-term protection of the environment from these hazardous or harmful constituents, special consideration of disposal sites must be made. All landfill sites where such hazardous wastes are disposed should be selected so as to prevent horizontal and vertical migration of these contaminants to ground surface waters. In cases where geologic conditions may not reasonably ensure this, adequate legal and mechanical precautions (e.g. impervious liners) should be taken to ensure long term protection to the environment from hazardous materials. Where appropriate, the location of disposal, the materials disposed, and the nature sites should be permanently recorded in the appropriate office of legal jurisdiction.

(v) Cost of wastewater treatment facilities. The estimated capital investment required for coal mining facilities to meet the pollution control standards 1825 kg/ton or less is estimated to be 132 million dollars and on a per ton basis may cost up to 42 cents per ton of designed annual capacity for BPT depending on size, location and type of mine. Annual operating costs of effluent treatment facilities inclusive of capital charges are estimated to be less than 90 million dollars and may range up to 28 cents per ton for BPT. The estimated investment cost to meet BPT for coal preparation plants is estimated to be 52.5 million dollars or approximately 41 cents per ton of annual design capacity. Annual costs of treatment facilities is estimated to be 6 cents per ton of preparing coal. The above estimates are based on the assumption that no treatment facilities are currently in place.

(vi) Energy requirements and nonwaste water pollutants. The energy requirements of this regulation were set forth in substantial detail in the notice of interim final rule-making for the coal mining point source category published October 17, 1983 (40 FR 48830) and interim final rulemaking published on May 13, 1978 (41 FR 19833) and in the notice of public reviver procedures published October 6, 1973 (38 FR 21202). In addition, each regulation as promulgated in interim final forms was supported by two other documents: (1) the document entitled “Development Document for Interim Final Effluent Limitations Guidelines and Pretreatment Standards for the Coal Mining Point Source Category” and (2) the document entitled “Economic Impact of Interim Final Effluent Guidelines for the U.S. Coal-Mining Industry.” These documents were made available to the public and circulated to interested persons at approximately the time of publication of the notice of interim final rulemaking.

Prior to the publication of the notice of interim final rulemaking (40 FR 48830) a development document was distributed to the federal agencies, industrial pollution control agencies, industry trade associations, and conservation organizations. Comments on that report were solicited. The major document received in these comments was “Economic Impact of Interim Final Effluent Guidelines for the U.S. Coal-Mining Industry.” These documents were distributed to the public and to interested persons at approximately the time of publication of the notice of interim final rulemaking.

Commenters suggested that the effluent limitations guidelines remain applicable to point sources in this category until (in the case of surface mines) release of the reclamation or revegetation program. As was suggestion that, with respect to both surface and deep mines, regardless of the nature of activity involved, and whether or not performance bonds are involved, the effluent limitations guidelines may be applied to the discharge which have ceased active operation. Indeed, in some cases, when a mining area is no longer subject to regular supervision, the pollutants in the drainage may increase. However, EPA does not today extend coverage of these effluent limitations guidelines to inactive areas or those areas undergoing vegetation or reclamation. This is not to say that point sources discharging pollutants may not be covered by NPDES permits; it means only that national effluent limitations guidelines do not apply. The Agency is conducting an intensive analysis of data with respect to water pollution created during the vegetation stages, and may in the future propose extension of coverage. However, EPA does not today extend coverage of these effluent limitations guidelines to inactive areas or those areas undergoing vegetation or reclamation.

The above statement, quoted from 40 FR 19837, may be misleading. Several parameters such as ammonia, sulfates, fluorides and strontium because the levels observed in coal mine wastewater discharge generally do not warrant concern.

The above statement, quoted from 40 FR 19837, may be misleading. Several parameters such as ammonia, sulfates, fluorides and strontium do warrant concern but best practicable control technology is not currently available for the removal of these pollutants. Therefore, there is no way to require treatment for removal of these parameters with today’s BPT regulations. These parameters shall be reconsidered during the BAT technical study.

A commenter states that the character of discharges from and treatment technologies are affected by geologic, hydrologic and climatic factors, so that mining operations in different geological areas will have different discharge characteristics. The commenter suggests the establishment of special guidelines for the different geological areas. The Agency considered the subcategorization of the coal mining category as described in the Development Document. In that study, it was determined that two subcategories exist: those of raw mine drainage existed (Acid or Ferruginous and Alkaline). These two classes of wastewater are based on wastewater treatment technology required, but reflect regional and local geologic conditions. This industry may be categorized consists of two large regions, Region I, states or areas characterized by acid or ferruginous raw mine drainage, is comprised of Maryland, Pennsylvania, Ohio and or areas in West Virginia, New York, Indiana and Illinois; and Region II, states or areas in Western Kentucky and along the Illinois-Indiana border also exhibit acid or ferruginous raw mine drainage which includes all the remaining coal producing areas which exhibit predominantly alkaline raw mine drainage.

Statistical analysis of all raw mine drainage obtained during the field program substantiated the categorization based on the chemical characteristics of the raw mine drainage. Based on this information, it was
determined that there was no need for further industry categorization of existing industries reporting new mine drainage characteristics. However, as noted in the preamble, EPA is reviewing data with respect to Western mine drainage and may indicate subcategories subject to NPDES permits. Further, it is not clear whether a common definition of new mine drainage should be established for coal mines in that area.

Design of treatment facilities (e.g., liners for settling basins) was requested by a commenter in order to avoid contamination of surface and ground water. The Agency has embarked on a major effort to identify toxic water pollutants in effluents resulting from coal mining operations, and to examine and establish standards for effluent control technology which can substantially remove those pollutants. At the conclusion of those studies EPA may issue revised NPDES permit pollution standards or may direct the Administrator to consider the physical difficulties of installing the equipment by July 1, 1977, necessary to meet these effluent limitations and guidelines, is limited. The factors set forth in section 304(b)(1)(B) of the Act do not include consideration of the time necessary for installation, and the legislative history of the relevant sections of the Act is likewise devoid of consideration of this factor. EPA is currently analyzing water samples for manganese, and dissolved iron. The Agency does not intend to act under that section.

A commenter suggests the exemption of BPT requirements for plants which do not have the required technology in place in time to meet the July 1, 1977 statutory compliance date. This comment necessarily is limited to coal mining category point sources which do not have the final NPDES permits, because the final NPDES permits are not affected by the promulgation of these effluent limitations guidelines. The ability of the Administrator to consider the physical difficulties of installing the equipment by July 1, 1977, necessary to meet these effluent limitations and guidelines, is limited. The factors set forth in section 304(b)(1)(B) of the Act do not include consideration of the time necessary for installation, and the legislative history of the relevant sections of the Act is likewise devoid of consideration of this factor. EPA is currently analyzing water samples for manganese, and dissolved iron. The Agency does not intend to act under that section.

Another commenter suggests monitoring for nickel, zinc, and aluminum, particularly in the coal mining area. The Agency will examine available pollution control technology which can substantially remove these pollutants. At the conclusion of those studies EPA may issue revised NPDES permit pollution standards or may direct the Administrator to consider the physical difficulties of installing the equipment by July 1, 1977, necessary to meet these effluent limitations and guidelines, is limited. The factors set forth in section 304(b)(1)(B) of the Act do not include consideration of the time necessary for installation, and the legislative history of the relevant sections of the Act is likewise devoid of consideration of this factor. EPA is currently analyzing water samples for manganese, and dissolved iron. The Agency does not intend to act under that section.

One commenter questioned whether treatment technology, technical studies have demonstrated that the limitations for TSS can be met on a routine basis as substantiated by the data for the mine drainage and actual cases where it can be shown that high suspended solids loads already exist in the intake streams to a plant, and BPT levels may adjust the limitations, for discharge to the same stream.

Several commenters stated that Subpart B, Coal Mine Effluent Prevention Plant Ancillary Area, is nonpoint source discharge and should not be subject to effluent limitations guidelines. These regulations apply only to point source discharges. If a pollution source is truly a point source facility, it will be subject to these effluent limitations guidelines. But EPA's study of this industry indicates that most water pollution from coal storage, refuse storage and other areas around coal preparation plants is released through definite point sources. A commenter asked for the addition of zinc limitation to the regulations, because zinc may not precipitate until pH 7.0 is reached, and the calculations only require acid drainage to be neutralized to pH 6.0, so that zinc will not necessarily be removed.

E-Technical Summary and Basis for Final Rule

The analytical methods used by the contractor in analyzing waste water samples obtained during the study were those specified in the 'Final Development Document Indicating Some Alkaline Mine Drainage Containing Acidic Values,' dated October 1, 1973. This regulation provides a number of equivalent methods to be used in the analysis of waste water and under the parameters for iron and manganese, there is the availability of both colorimetric as well as instrumental methods for measurement. The contractor's choice of method was the use of atomic absorption spectral chromatography. Under the prescribed procedure the analyst has a number of choices to make depending upon the sample type and character to make these determinations during his analytical work up. All measurements in this contract were as specified in the Final Development Document and are in compliance with the Agency's accepted practice.

Comments on proposed EHC guidelines are based on treatment technology. Prior conditions have little effect on technology evaluation. One commenter questioned whether EPA had the latitude to the regulatory order 11821 for inflationary impact statements. An economic impact report entitled "Economic Impact of Interim Final and Proposed Effluent Guidelines, Coal Mining" was prepared in support of the regulations. The impact analysis performed examined costs of compliance, both capital and annual cost, the impact of these costs, price effects, production effects, effects on profitability, regional impacts, balance of payments effects, and employment effects. The impact analysis was confined to the preface to the regulations and in Appendix D—Technical Summary and Basis for proposed regulations under part "Regulatory Impact Analysis. The impact analysis performed was in accordance with circular A-107 and therefore the economic impact analysis was considered in accordance with Executive Order 11821. One commenter questioned whether treatment costs per mine and total treatment-
costs may have been understated. Using BPT capital costs per mine and preparation plant for the model large deep mine in the Northern Appalachian region the commenter computed a compliance cost for this area of between $111 million and $378 million, with the majority of the broad range reflecting costs for closing the circuit for preparation plant water networks.

EPA attempted to prepare a worst case analysis for assessing the cost and economic impact of its regulations. EPA's estimates of the costs were developed by assuming that no treatment facilities were already in place even though it is known that most of the industry does treat effluents in order to comply with State and local requirements. Thus it is likely that individual mines will sustain a lower cost than predicted in the analysis.

EPA's estimates for mining compliance costs for a region are based upon a model plant approach. This approach can be illustrated by the example of large deep mines in the Northern Appalachian region. The model plant produces approximately 1 million tons per year. The compliance cost for this mine (rounded to $600,000) is divided by the output to obtain the cost ($4.00) per ton. Multiplying this figure by the tonnage produced by large deep mines in this region (147.9 million tons in 1973) gives a compliance cost for the region of less than $600 million.

EPA's estimates of coal preparation plant costs were similarly computed. Costs per ton were multiplied by the production of plants requiring closure of the water circuit to obtain compliance costs for the nation ($93.5 million). Note—Northern Appalachia accounts for approximately 54 percent of the Nation's production of cleaned coal so preparation plant costs for this region could be expected to be much less than $93.5 million.

The commenter's approach to computing total cost for a region (multiplying the number of model plants in a region by the cost per model plant) can produce biased results. For example, one attempts to estimate the production for large deep mines in the Northern Appalachian region using the commenter's method, one would multiply 225 by the output of the model plant (1 million tons per year). This yields an estimated production of 225 million tons, an estimate over 50% higher than the actual production of 147.9 million tons in 1973.

Total compliance cost estimate using the commenter's methodology would show biases similar to those shown in production and plant statistics. It is because of this possibility of introducing biases into its analysis that the Agency did not use the commenter's approach in computing compliance costs but instead used its methodology.

One commenter questioned whether EPA's costs for treating surface drainage had underestimated the number of ponds and the area drained by these ponds. The commenter cited terrain and natural drainage as factors which can influence the number of ponds.

In computing compliance costs for surface mining operations, EPA used a model plant approach and assumed that no treatment is already in place. Treatment facilities were sized to accommodate drainage from the active mining area. It is assumed that mine operators will quickly return the land to final contour for reclamation at which time the area is no longer part of the active mining area. This prompt return to final grade represents both good mining practice and a way for the operator to minimize his costs of complying with the regulation.

EPA assumed that a new treatment pond for the active mining area would be built every six months, i.e., that the active mining area would be returned to final contour within this period. The active mining area was computed as the land area needed to extract the tonnage for the model plant, and based upon a given seam thickness (e.g., 60 inches) and recovery factor (e.g., 50 percent). The size of active mining area to be drained determines the size of the treatment facilities for the model plant.

Mine operators frequently make use of the fact that terrain can affect treatment costs. For example natural depressions in the ground may be used for treatment facilities. However, in estimating the costs for the treatment facilities EPA assumed the construction of a four-sided pond so that actual pond costs may be less than those estimated.