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Environmental Protection Agency

40 CFR Parts 9 and 434

Coal Mining Point Source Category; Amendments to Effluent Limitations Guidelines and New Source Performance Standards; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 9 and 434

[FRL–7125–4]

RIN 2040–AD24

Coal Mining Point Source Category; Amendments to Effluent Limitations Guidelines and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is amending the current regulations for the Coal Mining Point Source Category by adding two new subcategories to the existing regulation. EPA is establishing a Coal Remining Subcategory that will address pre-existing discharges at coal remining operations. EPA also is establishing a Western Alkaline Coal Mining Subcategory that will address drainage from coal mining reclamation and non-process areas in the arid and semiarid western United States. These amendments do not otherwise change the existing regulations.

The establishment of new subcategories has the potential to create significant environmental benefits at little or no additional cost to the industry. Establishing the Coal Remining Subcategory will encourage remining activities and will reduce hazards associated with abandoned mine lands. The new subcategory has the potential to significantly improve water quality by reducing the discharge of acidity, iron, manganese, and sulfate from abandoned mine lands. EPA projects total monetized annual benefits of $0.7 million to $1.2 million due to remining. Additionally, EPA expects that this regulation will result in significant ecological and public safety benefits that could not be quantified and/or monetized. EPA projects that the annual compliance cost for this new subcategory will be $0.33 million to $0.76 million.

EPA estimates that the Western Alkaline Coal Mining Subcategory will result in a net cost savings to affected surface mine operators. The monetized and non-monetized benefits for this subcategory are a result of adopting alternative sediment control technologies for reclamation and non-process areas in the arid west. These technologies are projected to increase the volume of storm water drainage to arid watersheds and avoid the disturbance of approximately 600 acres per year, thus reducing severe erosion, sedimentation, hydrologic imbalance, and water loss. EPA projects that the subcategory will result in annualized monetized benefits of $0.04 to $0.75 million.

DATES: This regulation is effective February 22, 2002.

ADDRESSES: A copy of the supporting documents cited in this document are available for review at EPA's Water Docket; Room EB57, 401 M Street, SW, Washington, DC 20460. A copy of the record supporting the development of the Western Alkaline Coal Mining Subcategory is also available for review at the Office of Surface Mining Library, 1999 Broadway, 34th Floor, Denver, CO. The public record for this rulemaking has been established under docket number W–99–13, and includes supporting documentation. The public record supporting this rule does not include any information claimed as Confidential Business Information (CBI). For access to EPA docket materials, please call (202) 260–3027 between 9 a.m. and 3:30 p.m Eastern Standard Time, Monday through Friday, excluding Federal holidays, to schedule an appointment. For access to docket materials at the Office of Surface Mining Library, please call (303) 844–1436 between 8 a.m. and 4 p.m. Mountain Standard Time to schedule an appointment.

FOR FURTHER INFORMATION CONTACT: For additional technical information contact William Telliard at (202) 260–7134 or ''*Telliard.William@EPA.gov*''. For additional economic information contact Kristen Strellec at (202) 260–6036 or ''*Strellec.Kristen@EPA.gov*''.

SUPPLEMENTARY INFORMATION: *Regulated Entities:* Entities potentially regulated by this action include:

Category	Examples of regulated entities	SIC codes	NAICS codes
Industry	Operations engaged in the remining of abandoned surface and underground coal mines and coal refuse piles for remaining coal reserves in areas containing discharges defined as ''pre-existing'' Operations engaged in coal mine reclamation activities in the arid and semiarid western coal region..	1221 1222 1231	212111 212112 212113

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your facility is regulated by this action, you should carefully examine the applicability criteria in 40 CFR part 434. If you have questions regarding the applicability of this action to a particular entity, consult the person listed for technical information in the preceding **FOR FURTHER INFORMATION CONTACT** section.

Judicial Review

In accordance with 40 CFR 23.2, this rule will be considered promulgated for purposes of judicial review at 1 p.m. Eastern Standard Time on February 6, 2002. Under section 509(b)(1) of the Clean Water Act, judicial review of this regulation can be obtained only by filing a petition for review in the United States Court of Appeals within 120 days after the regulation is considered promulgated for purposes of judicial review. Under section 509(b)(2) of the Clean Water Act, the requirements in this regulation may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

Compliance Dates

Existing direct dischargers must comply with limitations based on the Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Technology Economically Achievable (BAT) as soon as their National Pollutant Discharge Elimination System (NPDES) permits include such limitations. The compliance date for New Source Performance Standards (NSPS) is the date the new source commences discharging.

Supporting Documentation

The regulations are supported by several key documents:

1. ''*Coal Remining Best Management Practices Guidance Manual*'' (EPA 821–B–01–010). This document describes abandoned mine land conditions and the performance of Best Management Practices (BMPs) that have been implemented at remining operations. The BMP Guidance Manual is a technical reference document that presents research and data concerning the prediction and prevention of acid mine drainage to the waters of the United States. There have been minimal changes to the BMP manual since proposal.

2. ''*Coal Remining Statistical Support Document*'' (EPA 821–B–01–011). This document describes the statistical methodology for establishing and monitoring baseline conditions and setting discharge limits at remining sites.

3. ''*Development Document for Final Effluent Limitations Guidelines and Standards for the Western Alkaline Coal Mining Subcategory*'' (EPA 821–B–01–012): This document presents EPA's technical conclusions concerning the Western Alkaline Coal Mining Subcategory.

4. ''*Economic and Environmental Impact Assessment of Effluent Limitations Guidelines and Standards for the Coal Mining Industry: Remining and Western Alkaline Subcategories*'' (EPA–821–B–01–013): This document presents the methodology employed to assess economic and environmental impacts of the final rule and the results of the analysis.

5. *Statistical Analysis of Abandoned Mine Drainage in the Assessment of Pollution Load.* (EPA 821–B–01–014) This document describes pollutant characteristics of pre-existing discharges at abandoned mine lands.

How To Obtain Supporting Documents

All documents are available from the National Service Center for Environmental Publications, 11029 Kenwood Road, Cincinnati, OH 45242, (800) 490–9198, *http://www.epa.gov/ncepi.* Several of these documents can also be obtained on the Internet, located at *http://www.epa.gov/OST/guide/coal.* This website also links to an electronic version of today's notice.

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Appendix A: Definitions, Acronyms, and Abbreviations Used in This Document

I. Legal Authority

These regulations are promulgated under the authority of sections 301, 304, 306, 308, 402, 501, and 502 of the Clean Water Act, 33 U.S.C. 1311, 1314, 1316, 1318, 1342, 1361, and 1362.

II. Background

A. Statutory Authorities

1. Clean Water Act

Congress adopted the Clean Water Act (CWA) to ''restore and maintain the

chemical, physical, and biological integrity of the Nation's waters' (section 101(a), 33 U.S.C. 1251(a)). To achieve this goal, the CWA prohibits the discharge of pollutants into navigable waters except in compliance with the statute. The CWA confronts the problem of water pollution on a number of different fronts. Its primary reliance, however, is in establishing restrictions on the types and amounts of pollutants discharged from various industrial, commercial and public sources of wastewater.

Direct dischargers must comply with effluent limitations in National Pollutant Discharge Elimination System (''NPDES'') permits; indirect dischargers must comply with pretreatment standards. These limitations and standards are established by regulation for categories of industrial dischargers and are based on the degree of control that can be achieved using various levels of pollution control technology.

a. Best Practicable Control Technology Currently Available (BPT)—section 304(b)(1) of the CWA. Effluent limitations guidelines based on BPT apply to discharges of conventional, toxic, and non-conventional pollutants from existing sources. BPT guidelines are generally based on the average of the best existing performance in terms of pollution control by plants in a particular industrial category or subcategory. In establishing BPT, EPA considers the cost of achieving pollution reductions in relation to the pollution reduction benefits, the age of equipment and facilities, the processes employed, process changes required, engineering aspects of the control technologies, non-water quality environmental impacts (including energy requirements), and other factors the Administrator deems appropriate. Where the pollution control performance of existing sources for a category or subcategory is uniformly inadequate, EPA may set BPT by transferring technology used in a different subcategory or category.

b. Best Available Technology Economically Achievable (BAT)—section 304(b)(2) of the CWA. In general, BAT effluent limitations guidelines are based on the degree of pollution control achievable by applying the best available technology economically achievable for facilities in the industrial subcategory or category. The CWA requires BAT for controlling the direct discharge of toxic and non-conventional pollutants. The factors considered in determining BAT for a category or subcategory include the age of the equipment and facilities involved, the process employed, potential process changes, engineering aspects of the control technologies, non-water quality environmental impacts (including energy requirements), and other factors the Administrator deems appropriate. EPA retains considerable discretion in assigning the weight to be accorded these factors. Generally, economic achievability is determined on the basis of total costs to the industrial subcategory and their effect on the overall industry's (or subcategory's) financial health. As with BPT, where existing performance is uniformly inadequate, BAT may be transferred from a different subcategory or category. BAT may be based upon process changes or internal controls, such as product substitution, even when these technologies are not common industry practice. The CWA does not require cost-benefit comparison in establishing BAT.

c. Best Conventional Pollutant Control Technology (BCT)—section 304(b)(4) of the CWA. The 1977 amendments to the CWA established BCT as an additional level of control for discharges of conventional pollutants from point sources other than publicly owned treatment works. In addition to other factors specified in section 304(b)(4)(B), the CWA requires that BCT limitations be established in light of a two part ''cost-reasonableness'' test. EPA published a methodology for the development of BCT limitations which became effective August 22, 1986 (51 FR 24974, July 9, 1986).

Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demanding pollutants (measured as BOD_5), total suspended solids (TSS), fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979 (44 FR 44501).

d. New Source Performance Standards (NSPS)—section 306 of the CWA. NSPS reflect effluent reductions that are achievable based on the best available demonstrated control technology. New facilities have the opportunity to install the best and most efficient production processes and wastewater treatment technologies. As a result, NSPS should represent the most stringent controls attainable through the application of the best available control technology for all pollutants (i.e., conventional, nonconventional, and priority pollutants). In establishing NSPS, EPA is directed to take into consideration the cost of achieving the effluent reduction and any non-water quality environmental impacts and energy requirements.

e. Pretreatment Standards for Existing Sources (PSES)—section 307(b) of the CWA—and Pretreatment Standards for New Sources (PSNS)—section 307(b) of the CWA.

Pretreatment standards are designed to prevent the discharge of pollutants to a publicly-owned treatment works (POTW) which pass through, interfere, or are otherwise incompatible with the operation of the POTW. Since none of the facilities to which this rule applies discharge to a POTW, pretreatment standards are not part of this rulemaking.

f. CWA section 304(m) Requirements. Section 304(m) of the CWA, added by the Water Quality Act of 1987, requires EPA to establish schedules for (1) reviewing and revising existing effluent limitations guidelines and standards and (2) promulgating new effluent guidelines. On January 2, 1990 (55 FR 80), EPA published an Effluent Guidelines Plan, which established schedules for developing new and revised effluent guidelines for several industry categories. The Natural Resources Defense Council, Inc., challenged the Effluent Guidelines Plan in a suit filed in the U.S. District Court for the District of Columbia (*NRDC* v. *Browner*, Civ. No. 89–2980). On January 31, 1992, the Court entered a consent decree (the ''304(m) Decree''), which established schedules for EPA's proposal of and final action on effluent guidelines for a number of point source categories. The Effluent Guidelines Plan published in the **Federal Register** on September 4, 1998 (63 FR 47285) required, among other things, that EPA propose the Coal Mining Effluent Guidelines by December 1999 and take final action on the Guidelines by December 2001. On November 19, 1999, the Court modified the decree revising the deadline for proposal to March 31, 2000. The deadline of December 2001 for taking final action on these guidelines was not modified.

2. Pollution Prevention Act

The Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13101 *et seq.*, Public Law 101–508, November 5, 1990) ''declares it to be the national policy of the United States that pollution should be prevented or reduced whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or release into the environment should be employed only as a last resort * * *'' (Sec. 6602; 42 U.S.C. 13101 (b)). In

short, preventing pollution before it is created is preferable to trying to manage, treat or dispose of it after it is created.

The PPA directs EPA to, among other things, ''review regulations of the EPA prior and subsequent to their proposal to determine their effect on source reduction'' (Sec. 6604; 42 U.S.C. 13103(b)(2)). Source reduction reduces the generation and release of hazardous substances, pollutants, wastes, contaminants, or residuals at the source, usually within a process. The term source reduction ''includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training or inventory control. * * * The term source 'reduction' does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to or necessary for the production of a product or the providing of a service'' (42 U.S.C. 13102(5)). In effect, source reduction means reducing the amount of a pollutant that enters a waste stream or that is otherwise released into the environment prior to out-of-process recycling, treatment, or disposal.

In today's rule, EPA encourages pollution prevention by requiring the use of site-specific Best Management Practices (BMPs) that are integral to remining operations in abandoned mine lands and to reclamation activities in the arid and semiarid western coal regions. These BMPs, under each subcategory, are designed and implemented to improve existing conditions and to reduce pollutant discharges at the source, thereby reducing the need for treatment.

B. Regulation of the Coal Mining Point Source Category

1. EPA Regulations at 40 CFR Part 434

On October 9, 1985 (50 FR 41296), EPA promulgated effluent limitations guidelines and standards that are in effect today under 40 CFR part 434. Prior to today's rule, there were four subcategories: Coal Preparation Plants and Coal Preparation Plant Associated Areas; Acid or Ferruginous Mine Drainage; Alkaline Mine Drainage; and Post-Mining Areas. Additionally, there is a subpart for Miscellaneous Provisions. The subcategories include BPT, BAT, and NSPS limitations for TSS, pH, iron, manganese, and/or settleable solids (SS).

2. Surface Mining Control and Reclamation Act

In 1977, Congress enacted the Surface Mining Control and Reclamation Act (SMCRA), 30 U.S.C. 1201 *et seq*, to address the environmental problems associated with coal mining on a nationwide basis. SMCRA created the Office of Surface Mining Reclamation and Enforcement (OSMRE) within the Department of Interior, which is responsible for preparing regulations and assisting the States financially and technically to carry out regulatory activities.

Title V of the statute gives OSMRE broad authority to regulate specific management practices before, during, and after mining operations. OSMRE has promulgated comprehensive regulations to control both surface coal mining and the surface effects of underground coal mining (30 CFR parts 700 *et seq*). Implementation of these requirements has significantly improved mining practices, control of water pollution, and protection of other resources. Title IV of SMCRA addresses the problem of presently abandoned coal mines by authorizing and funding abandoned mine reclamation projects.

All mining operations subject to today's regulation must also comply with SMCRA requirements. EPA has worked extensively with OSMRE in the preparation of this rule in order to ensure that today's requirements are consistent with OSMRE requirements.

3. Rahall Amendment

As part of the 1987 amendments to the CWA, Congress added Section 301(p), often called the Rahall Amendment, to provide incentives for remining abandoned mine lands that pre-date the passage of SMCRA in 1977. Section 301(p) provides an exemption for remining operations from the BAT effluent limits for iron, manganese, and pH for pre-existing discharges from abandoned mine lands. Instead, a permit writer may set site-specific, numerical BAT limits for pre-existing discharges based on Best Professional Judgement (BPJ). The effluent limits may not allow discharges to exceed pre-existing ''baseline'' levels of iron, manganese, and pH. In addition, the permit applicant must demonstrate that the remining operation ''will result in the potential for improved water quality from the remining operation.'' The Rahall Amendment defines remining as a coal mining operation which began after February 4, 1987 at a site on which coal mining was conducted before August 3, 1977, which was the effective date of SMCRA. Thus, the Rahall Amendment attempted to encourage remining by no longer requiring operators to treat degraded pre-existing discharges to the BAT levels established in Subpart C of 40 CFR part 434.

Despite the statutory authority provided by the Rahall Amendment, coal mining companies remained hesitant to pursue remining without formal EPA approval and guidelines. Today's regulation establishes requirements for determining baseline pollutant loadings in pre-existing discharges. It also specifies how to determine site-specific BAT requirements for remining operations and how to demonstrate the potential for environmental improvement from a remining operation. EPA is today promulgating a regulation that is consistent with, but not identical to, the Rahall Amendment.

C. Proposed Rule

On April 11, 2000 (65 FR 19440), EPA published proposed amendments to effluent limitations guidelines and new source performance standards for the coal mining point source category. EPA proposed adding two new subparts to the existing regulations at 40 CFR part 434 applicable to Coal Remining (subpart G) and Western Alkaline Coal Mining (subpart H).

In the proposal, EPA solicited comment on 18 specific areas identified by the Agency, in addition to a general comment solicitation on all aspects of the proposed regulation. During the comment period, EPA held public meetings in three locations in the western coal mining region (Denver, CO; Gillette, WY; and Flagstaff, AZ) and three public meetings in areas affected by remining (Nitro, WV; Frankfort, KY; and Zanesville, OH) to explain the proposal and to solicit comment.

On July 30, 2001 (66 FR 39300), EPA published a Notice of Data Availability (NODA) to provide a discussion of options relating to two issues raised by commenters on the Coal Remining Subcategory that were not presented in the proposal. EPA presented these comments, data collected since the proposal, and options being considered for the final rulemaking in the notice and solicited comment on: (1) The expansion of applicability of the Coal Remining Subcategory to sites abandoned after 1977, and (2) alternative effluent limits for solids in pre-existing discharges. The majority of comments received supported these proposed changes. In Section XII of this document, EPA presents a summary of the significant comments received on the proposal and NODA and a summary of the Agency's responses. The complete

set of comments and EPA's detailed responses can be found in the ''Comment Response Document for the Coal Remining and Western Alkaline Coal Mining Subcategories'' (DCN 3056).

III. Summary of Significant Changes to Proposed Rule

Based on comments received, EPA has made several changes to the proposed subcategory applicability, regulated parameters, and statistical methodology presented in the April 11, 2000 **Federal Register** notice. EPA has summarized these changes below, and is presenting its rationale for these changes in Sections V and VI of this document.

A. Coal Remining Subcategory

- At proposal, EPA defined a remining operation as a coal mining operation at a site on which coal mining was conducted prior to August 3, 1977. EPA has modified the definition of ''remining'' to include coal mining operations on sites where coal mining was previously conducted and where the site was abandoned or the performance bond forfeited after August 3, 1977. The rationale for these changes is provided in Section V of this document.

- EPA proposed to establish alternative effluent limitations for pH, iron, and manganese. EPA has modified the pollutants to be regulated by setting limits for net acidity instead of pH, and by establishing alternative limitations for sediment such that solids loads cannot be increased over baseline during remining and reclamation activities, but must meet standards for post-mining areas prior to bond release. The rationale for this decision is described in Section VI.D of this document.

- For pre-existing discharges where it is infeasible to determine baseline conditions for discharge monitoring, EPA is providing an exclusion from numeric standards. In these cases, the coal mining operator will be required to implement a pollutant abatement plan. The rationale for this decision is described in Section V of this document.

- For the calculation and monitoring of numeric limitations in pre-existing discharges, EPA has made several changes to the statistical methodology. Further information on the statistical procedures is described in sections VI.A and VI.B of this document and in Appendix B of the final regulation.

B. Western Alkaline Coal Mining Subcategory

- In the proposal, EPA limited the application of the Western Alkaline Coal Mining Subcategory requirements to ''reclamation areas'' but solicited comment on the possibility of expanding the scope of coverage to include other areas. EPA received significant comment on the use of alternative sediment controls for non-process runoff at mine sites subject to the Western Alkaline Coal Mining Subcategory. Based on comments received, EPA has revised the applicability of the subcategory to allow the use of alternative sediment controls on runoff from some non-process areas of western coal mines. This allowance is discussed in Section V.B of this document.

- At proposal, EPA calculated the costs and benefits based on a model mine run for conditions present in the desert southwest. This model represented the ''worst case'' scenario (in that runoff in the desert southwest contains the highest sediment loadings in the western alkaline coal regions) in order to demonstrate that alternative sediment controls can be used effectively to control sediment to below pre-mined, undisturbed conditions in the arid west. For the final regulation, EPA incorporated the results for two additional model mines representing the ''intermountain'' and ''northern plains'' regions. The changes in EPA's estimates of cost savings and benefits are the result of using three different model mines to represent three different types of conditions present in the arid west. The results of these changes are presented in Sections VIII and IX of this document.

IV. Scope of Final Regulation

Today, EPA is promulgating effluent limitations and performance standards for the Coal Remining Subcategory and for the Western Alkaline Coal Mining Subcategory. The new subcategories will be added to the existing regulations for the Coal Mining Point Source Category found at 40 CFR part 434. The new subcategories will create a set of standards and requirements for the specific waste streams defined in the final regulation. The new subcategories will not otherwise change the existing regulations.

A. Coal Remining Subcategory

The effluent limitations and standards for the Coal Remining Subcategory apply to pre-existing discharges that are located within, or that are hydrologically connected to, pollution abatement areas of a coal remining operation.

EPA proposed to define coal remining as the mining of surface mine lands, underground mine lands, and coal refuse piles that were abandoned prior to the enactment of the Surface Mining Reclamation and Control Act (August 3, 1977), consistent with the language of the Rahall Amendment to the Clean Water Act. However, due to the anticipated benefits of the remining subcategory, EPA received comment on the proposal requesting that EPA extend the applicability of the Remining Subcategory to mine lands that have been abandoned since August 3, 1977. In response to this comment, EPA published a Notice of Data Availability (NODA) to solicit further comment on the issue, including whether to limit applicability to mine lands abandoned before the effective date of today's rule. As described in the NODA, it is estimated that there are currently 260 bond forfeiture sites producing acid mine drainage.

EPA concluded that remining of abandoned mine lands (AML) has many potential benefits, and has decided to extend the applicability of the subcategory to mine lands that are abandoned after August 3, 1977. EPA also concluded that there is no basis for precluding applicability of today's rule to AML abandoned after the effective date of today's rule. Based on comments received from regulatory authorities, EPA does not believe that this change will create an incentive for future bond forfeitures. As noted by commenters, once a coal operator has abandoned an active permit and forfeited the performance bond, there are safeguards that prevent the operator from being allowed to mine in the future. Upon forfeiture of the bond, no portion of the bond would be returned until the site meets all the standards of the operator's permit, including the applicable effluent limitations. Secondly, SMCRA provides an avenue to pursue additional monies and to place additional liabilities upon an operator if the bond is insufficient to complete total reclamation. This includes barring the operator from receiving any other SMCRA permits until reclamation is completed, penalties are paid, and any outstanding liabilities are resolved.

The provisions of this new subpart apply only to pre-existing discharges and do not apply to discharges produced or generated in active mining areas, which include the active mining areas of remining operations. Section 434.11(b) defines active mining area as ''the area, on and beneath land, used or disturbed in activity related to the

extraction, removal, or recovery of coal from its natural deposits. This term excludes coal preparation plants, coal preparation plant associated areas and post-mining areas.'' Wastewater discharges produced or generated by active coal mining operations will remain subject to the effluent limitations already established in part 434, Subpart C—Acid or Ferruginous Mine Drainage or Subpart D—Alkaline Mine Drainage.

Additionally, in accordance with § 434.61, any waste stream subject to this rule that is commingled for treatment or discharge with a waste stream subject to another subpart of part 434 will be required to meet the most stringent limitations applicable to any component of the combined waste stream. However, EPA would like to further clarify this statement of applicability for the Coal Remining Subcategory. For the reasons discussed in the proposal, a waste stream that is intercepted and/or commingled with active mining wastewater during remining is subject to the provisions of § 434.61. However, § 434.61 applies to the commingled waste stream only during the time when the pre-existing discharge is intercepted by active mining or is combined with active mine wastewater for treatment or discharge. After commingling has ceased, the pre-existing discharge remains subject to the provisions established by the Coal Remining Subcategory.

B. Western Alkaline Coal Mining Subcategory

Today's rule establishes effluent limitations and performance standards for the Western Alkaline Coal Mining Subcategory applicable to alkaline mine drainage from reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas at western coal mining operations. ''Western coal mining operation'' is defined as a surface or underground coal mining operation located in the interior western United States, west of the 100th meridian west longitude, in an arid or semiarid environment with an average annual precipitation of 26.0 inches or less. ''Alkaline mine drainage'' is defined as ''mine drainage which, before any treatment, has a pH equal to or greater than 6.0 and total iron concentration of less than 10 mg/L.'' The Western Alkaline Coal Mining Subcategory may also apply to drainage where the total iron concentration is greater than 10 mg/L, provided that the discharge, before any treatment, has a pH equal to or greater than 6.0, and a dissolved iron concentration less than 10 mg/L; and a net alkalinity greater than zero.

The regulation applies to the following areas:

- ''Reclamation area'' is the surface area of a coal mine which has been returned to required contour and on which revegetation (specifically, seeding or planting) work has commenced.
- ''Brushing and grubbing area'' is the area where woody plant materials that would interfere with soil salvage operations have been removed or incorporated into the soil that is being salvaged.
- ''Topsoil stockpiling area'' is the area outside the mined-out area where topsoil is temporarily stored for use in reclamation, including containment berms.
- ''Regraded area'' is the surface area of a coal mine which has been returned to required contour.

The provisions in Subpart D—Alkaline Mine Drainage will continue to apply to discharges produced or generated in active mining areas. Section 434.11(b) defines active mining area as ''the area, on and beneath land, used or disturbed in activity related to the extraction, removal, or recovery of coal from its natural deposits. This term excludes coal preparation plants, coal preparation plant associated areas and post-mining areas.'' Wastewater discharges produced or generated by active coal mining operations will not be affected by this regulation and will remain subject to the effluent limitations already established in part 434.

Additionally, in accordance with § 434.61, any waste stream subject to this rule that is commingled with a waste stream subject to another subpart of part 434 will be required to meet the most stringent limitations applicable to any component of the combined waste stream. Today's new rule simply maintains this regulatory approach.

V. Development of Final Effluent Limitations Guidelines

In this section, EPA describes the rationale for the development of the final limitations and guidelines being promulgated today. For more detailed information on the profile of the industry, please see section IV, ''Industry profile,'' in the April 11, 2000 proposal. For more detailed information on the data gathering efforts used to support this regulation, please see section V, ''Summary of data gathering efforts,'' in the proposal.

A. Coal Remining Subcategory

1. Background

Coal remining is the mining of surface mine lands, underground mine lands, and coal refuse piles that have been previously mined. Acid mine drainage from abandoned coal mines is damaging a significant number of waterways in the Appalachian and mid-continent coal regions of the eastern United States. Information gathered from the Interstate Mining Compact Commission (IMCC) and the Office of Surface Mining and Regulatory Enforcement (OSMRE) Abandoned Mine Land Inventory System indicates that there are over 1.1 million acres of abandoned coal mine lands and over 9,709 miles of streams polluted by acid mine drainage in Appalachia alone. As discussed in the proposal, EPA recognizes that one of the most successful means for improvement of abandoned mine land is for coal mining companies to remine abandoned areas and extract the coal reserves that remain. EPA also recognizes that if abandoned mine lands are ignored during mining of adjacent areas, a time-critical opportunity for reclaiming the abandoned mine land is lost. Once coal mining operations have ceased on the adjacent areas, there is little incentive for operators to return.

During remining operations, acid-forming materials are removed with the extraction of the coal, pollution abatement Best Management Practices (BMPs) are implemented to control acid-forming materials and sediment, and the abandoned mine land is reclaimed. During remining, many of the problems associated with abandoned mine land, such as dangerous highwalls, vertical openings, and abandoned coal refuse piles can be corrected without using public funds from OSMRE's Abandoned Mine Land Program. Furthermore, implementation of appropriate BMPs during remining operations can be effective at improving the water quality of pre-existing discharges. For example, implementation of appropriate BMPs during 112 remining operations in Pennsylvania has been effective in improving or eliminating acidity loading in 45 percent of the pre-existing discharges, total iron loading in 44 percent of the discharges, and total manganese in 42 percent of the discharges. This improvement has resulted in reduced annual pollutant loadings of up to 5.8 million pounds of acidity, 189,000 pounds of iron, 11,400 pounds of manganese, and 4.8 million pounds of sulfate. The environmental benefits associated with reclamation of abandoned mine lands are discussed further in Section VIII of this document.

The current regulations at 40 CFR part 434 create a disincentive for remining because of their high compliance costs. Moreover, the potential of the statutory exemption contained in the Rahall Amendment to overcome this disincentive and derive the maximum environmental benefits from remining operations has not been fully realized in the absence of implementing regulations. If mining companies face substantial potential liability or economic loss from remining, they will continue to focus on mining virgin areas and ignore abandoned mine lands that may contain significant coal resources. Based on information collected in support of this regulation, EPA believes that remining operations are environmentally preferable to ignoring the coal resources in abandoned mine lands.

As described in Section II of this document, Congress attempted to address the problems associated with discharges from abandoned mine lands by passing the Rahall Amendment to provide incentives to encourage coal remining. The Rahall Amendment (CWA section 301(p)) allows permitting authorities to issue NPDES permits for remining sites with different requirements than those in the existing regulations for some pollutant limits. Specifically, section 301(p) allows permit writers to use best professional judgement (BPJ) to set site-specific BAT limits determined for pre-existing discharges. These limits may not exceed baseline levels of iron, manganese, and pH. The operator must also demonstrate that the remining operation will result in the potential for improved water quality. The statute does not specify how to determine site-specific BAT, baseline pollutant discharge levels, or the potential for improved water quality and has left these up to each permitting authority to determine.

Between 1987 (date of enactment of Rahall Amendment) and 1999, seven States established formal remining programs that issued approximately 330 Rahall permits with numeric limits for pre-existing discharges that are less stringent than those in the existing regulations. Of these 330 Rahall remining permits, 300 were issued by the Commonwealth of Pennsylvania. The remaining thirty Rahall permits were issued by Alabama, West Virginia, Kentucky, Virginia, Ohio, and Maryland. Under these Rahall permits, remining operations must meet the alternate baseline numeric limits specified in the permits and must implement site-specific BMPs. These BMPs include special handling of acid-producing materials, daylighting of abandoned underground mines, control of surface water and ground water, control of sediment, addition of alkaline material, and passive treatment. Remining operations currently underway have proven to be a viable means of remediating the environmental conditions associated with abandoned mine lands without imposing a significant cost burden on industry (Skousen, *Water Quality Changes and Costs of Remining in Pennsylvania and West Virginia,* 1997).

A discussion paper released by IMCC, EPA and OSMRE in February 1998 (Discussion Paper on Water Quality Issues Related to Remining) presented an alternative BMP-based remining permit approach where implementation of BMPs would be the central focus of permitting. This alternative would not impose any numeric limits for pre-existing discharges, but would require implementation of selected BMPs. The IMCC Remining Task Force believes that BMPs can result in improved water quality and, in certain cases, can qualify as BAT for achieving standards required by the Clean Water Act. EPA has considered conditions under which remining permits based solely on BMP implementation in lieu of numeric effluent limits may be appropriate. In addition, EPA recently accepted a Coal Remining and Reclamation Project XL agreement from the Pennsylvania Department of Environmental Protection. Once completed, this pilot project is expected to provide a substantial amount of data about remining BMPs in eight different watersheds throughout Pennsylvania.

2. Scope of Final Regulation

EPA is today promulgating a new remining subcategory with effluent limitations guidelines based on a combination of numeric limits and non-numeric BMP requirements. EPA is also allowing effluent limits based on BMP only requirements where numeric monitoring of a baseline pre-existing discharge is infeasible. EPA is establishing a standardized procedure for determining pollutant loadings for baseline and for compliance monitoring. This procedure is described in Appendix B of the regulation and in chapter 3 of the *Coal Remining Statistical Support Document.* Example calculations using these procedures and further discussion of EPA's determination of these procedures are provided in the support document. EPA intends these regulations to control pre-existing discharges at remining operations in a manner consistent with, but not identical to, requirements under the Rahall Amendment. These requirements are effluent limitations guidelines authorized under section 304(b) of the CWA, but are also in effect implementing regulations for section 301(p), providing EPA's interpretation of of the intent of that provision. Section 301(p) requires the permit authority to establish BAT on a case-by-case basis, using best professional judgment to set specific numeric effluent limitations for pH, iron, and manganese in each permit. Section 301(p) requires the operator to demonstrate that the coal remining operation will result in the potential for improved water quality, and in no event may pH, iron, or manganese discharges exceed the levels discharged prior to the remining operation.

Under the final regulations, the permit will contain specific numeric and non-numeric requirements, constituting BPT, BCT, BAT and NSPS. The numeric requirements will be established on a case-by-case basis in compliance with standardized requirements for statistical procedures to establish and monitor baseline. The numeric effluent limitations set at baseline levels will ensure that the pollutant discharges do not exceed the pollutant levels in the discharges prior to remining consistent with section 301(p)(2).

The extent of the non-numeric permit provisions will be established using best professional judgement to evaluate the adequacy of the selected BMPs contained in a pollution abatement plan to improve conditions of the abandoned mine lands. The pollution abatement plan must demonstrate that the remining operation has the potential to improve water quality, consistent with section 301(p)(2). Together, the numeric and non-numeric requirements constitute BPT, BCT, BAT and NSPS.

3. Pollution Abatement Plan

In the regulatory text, EPA has included a qualitative description of the pollutant abatement plan that must be developed. The regulation requires an operator to prepare a pollution abatement plan that identifies the characteristics of the remining area and the pre-existing discharges at the site, identifies design specifications for selected BMPs, and includes periodic inspection and maintenance schedules. The pollution abatement plan must demonstrate that there is a potential for water quality improvement. These requirements are intended to help the permitting authority evaluate the efficacy of the plan in relation to the conditions existing at the site. EPA has provided a support document, the *Coal Remining BMP Guidance Manual,* to assist industry and permitting

authorities in the development and implementation of the pollution abatement plan. EPA and OSMRE plan to sponsor guidance workshops for the States and Tribes on implementation issues and approaches to maximize efficiency and eliminate possible duplication with respect to requirements in the final rule and SMCRA permitting requirements. Upon review of the permit application, it is within the discretion of the regulatory authority to determine whether additional or more intensive BMPs than those identified in an applicant's proposed plan are required.

The SMCRA permit application process requires a coal mining operator to submit an extensive operation and reclamation plan, documentation, and analysis to OSMRE or the primacy permitting authority for approval. The requirements for the operation and reclamation plan are specified in 30 CFR part 780 for surface mining permit applications and part 784 for underground mining permit applications. In brief summary, some of the OSMRE requirements that directly relate to this CWA regulation include requirements for coal mining operators to provide: a description of coal mining operations; a plan for reclaiming mined lands; a plan for revegetating mined lands; geologic information; hydrologic information including: a description of baseline ground water and surface water characteristics under seasonal conditions; and an analysis of the hydrologic impacts caused by the mining activity. Specifically, the plan must include a ''probable hydrologic consequences (PHC)'' determination to determine the impacts of the mining on existing hydrologic conditions and a hydrologic reclamation plan to show measures for reducing impacts and to meet water quality laws and regulations. Furthermore, the coal mining regulatory authority is required to conduct a cumulative hydrologic impact analysis of the proposed operation and all anticipated mining on surface water and ground water systems.

EPA believes that many requirements for the pollution abatement plan will be contained in the operations and reclamation sections of an approved SMCRA permit. However, EPA or the State NPDES permitting authority will retain the authority to require additional or expanded BMPs as necessary to ensure that implementation of the identified BMPs is consistent with Clean Water Act requirements. The permitting authority will evaluate the adequacy of the plan as part of its evaluation of whether the permit application is complete, pursuant to 40 CFR 124.3(c).

EPA is also requiring that this pollution abatement plan be developed to the extent practicable for the entire ''pollution abatement area,'' defined as the area that is causing or contributing to the baseline pollution load of the pre-existing discharge. The pollution abatement area shall include the part of the permit area that is causing or contributing to the baseline pollution load of pre-existing discharges. The pollution abatement area must include, to the extent practicable, areas adjacent to and nearby the remining operation that also must be affected to reduce the pollution load of the pre-existing discharges and may include the immediate location of the pre-existing discharges.

Commenters suggested that the definition of pollution abatement area be modified to include ''adjacent and nearby areas that must be affected to reduce pollution load.'' EPA agrees with commenters that the additional flexibility afforded by today's rule is needed to identify the entire pollution abatement area within which BMPs can affect improvement in water quality. EPA believes that this will further the intent of today's regulation by focusing on those areas that must be affected to achieve improved water quality. In this manner, the regulatory authority may require a different or larger permit boundary in order to demonstrate the potential for improvement in water quality, or to develop a holistic approach for water quality improvement in the context of related SMCRA programs such as the Acid Mine Drainage Treatment and Abatement Fund or the Title IV Abandoned Mine Reclamation Program. This definition reflects the often complex hydrologic relationships between discharges within or emanating from a permit area and those which originate on adjacent or nearby sites but which may affect pollution loadings on the permit site. This is also consistent with the definition in Pennsylvania's remining program (25 Pa. Code section 87.202).

EPA has defined a pre-existing discharge as ''any discharge resulting from mining activities that have been abandoned prior to the time of a remining permit application.'' EPA has modified the definition of pre-existing discharge from the proposal to address issues raised by commenters.

4. Pollution Abatement Plan and Passive Treatment

EPA received comments from stakeholders concerned that coal mining operators may be held perpetually liable for maintaining certain passive treatment technologies installed during the remining process. As discussed in section 4.0 of the *Coal Remining BMP Guidance Manual,* passive treatment encompasses a series of engineered treatment practices that require very little or no maintenance once constructed and operational. Passive water treatment generally involves natural physical, biochemical, and geochemical actions and reactions, such as calcium carbonate dissolution, sulfate/iron reduction, bicarbonate alkalinity generation, metals oxidation and hydrolysis, and metals precipitation. The systems are commonly powered by existing water pressure created by differences in elevation between the discharge point and the treatment facilities. Passive treatment technologies discussed in the *Coal Remining BMP Guidance Manual* include: limestone drains, constructed wetlands, successive alkalinity-producing systems, open limestone channels, Pyrolusite® systems, and alkalinity-producing diversion wells.

However, passive treatment may not meet the standard definition of a BMP. In general, BMPs consist of abatement, remediation, and/or prevention techniques that are conducted within the mining area during active remining operations.

Passive treatment, by its nature, is commonly accepted as an end-of-the-pipe solution to an existing source of acid mine drainage (AMD). A passive treatment system is designed to be a self-sustaining system that relies on chemical or biological processes that should require no external reagents, maintenance, or support to treat AMD. BMPs, on the other hand, may be performed as part of the mining or reclamation process to eliminate or prevent the formation of AMD. For example, EPA considers the application of lime to the overburden to be a BMP and not passive treatment.

Stakeholders expressed concern that the language concerning bond release in § 434.71 for remining operations could be debilitating if the language is interpreted to mean that any time passive treatment is incorporated into the pollution abatement plan, the operator will be perpetually liable for the operation and maintenance of the treatment facility. EPA recognizes that passive treatment technologies can be used as part of the overall abatement plan to reduce pollution loads discharging from remining sites and that there are situations where passive treatment may be employed to improve water quality above what was

acceptable through the use of BMPs alone.

Therefore, EPA clarifies that for those remining operations that include passive treatment as an inherent portion of an approved Pollution Abatement Plan, the passive treatment operation shall be treated as part of the Pollution Abatement Plan. Today's regulation requires that the Pollution Abatement Plan is incorporated into the permit as an effluent limitation and applies until the appropriate SMCRA authority has authorized bond release. In this manner, passive treatment technologies also can be incorporated into the Pollution Abatement Plan along with more traditional BMPs in order to further improve water quality. Therefore, coal mining operators are responsible for maintaining passive treatment technologies in accordance with the Pollution Abatement Plan until the appropriate SMCRA authority has authorized bond release.

5. Commingling of Waste Streams

Today's rule makes it clear that the requirements of this subcategory apply only to pre-existing discharges that are not commingled with waste streams from active mining areas and that are not intercepted by active mining. It is not the intention of this rule or of the Rahall Amendment to provide alternative standards for active discharges that are generated by mining and remining operations.

Any pre-existing discharge that is commingled with active mining wastewater for treatment or discharge is subject to the most stringent limitations applicable to any component of the waste stream. This maintains the current regulatory approach at § 434.61 for ''commingling of waste streams,'' which states that where waste streams that are subject to two different effluent limits are commingled for treatment or discharge, the combined discharge is subject to the more stringent limitation.

EPA also recognizes that during remining, it may be necessary or even preferable for an operator to intercept and/or commingle a pre-existing discharge with active mining wastewater. Unless the active wastewater has been previously treated and discharged, this combined wastewater would be required to meet the more stringent applicable limitations for active coal mining operations and would not be covered by the conditions of the Coal Remining Subcategory. However, in cases where a pre-existing discharge is not eliminated by the remining activity and remains after remining has been completed, the pre-existing discharge would no longer be commingled with active mining wastewater. A discharge that is no longer commingled with active wastewater becomes subject to the Coal Remining Subcategory requirements which bar an increase in pollutant loadings from baseline conditions.

In today's rule, a pre-existing discharge that has been intercepted by, or commingled with, an active discharge is not required to continue to meet the more stringent effluent limitations once commingling has ceased. If EPA were to require that these commingled discharges remain subject to effluent limitations designed for active mining operations once interception or commingling has ceased, EPA believes it would create a significant disincentive for remining activities. Based on anecdotal and historical evidence of current mining activities, mining companies may try to avoid intercepting pre-existing discharges because they do not want to assume the liability for future treatment of discharges that were not the result of their mining operations. This can result in a ''donut hole'' in the permitted area, to which BMPs are not applied and from which pre-existing degraded mine drainage continues to be discharged. In many cases, EPA believes that the most environmentally beneficial approach would be for the coal operation to physically intercept this pre-existing discharge, treat the discharge to the more stringent standards during active mining and reclamation, implement BMPs, and then allow the pre-existing discharge to continue discharging at or below baseline pollutant levels. This approach is consistent with the approach Pennsylvania has been using to implement the Rahall provisions. Another option for a remining operator would be to divert the discharge stream away from the active mining area. In this case, the pre-existing discharge that has been diverted would be subject to the Coal Remining Subcategory effluent limitations, and the mine operator would have to implement appropriate BMPs and demonstrate that the pollutant loadings of the diverted pre-existing discharge stream have not been increased.

6. Relocation of Pre-Existing Discharges

EPA recognizes that the implementation of certain BMPs, particularly hydrologic and sediment control BMPs (*e.g.,* daylighting, regrading, revegetation, spoil pile reclamation, and diversion ditches) within the pollution abatement area is often intended to redirect runoff and infiltration water. In these cases, BMP implementation may result in relocation or dispersion of the pre-existing discharges and of the infiltration water that contributes to these pre-existing discharges. It is the intention of the pollution abatement plan to improve both the pollution loading from pre-existing discharges and the overall environmental conditions. For this reason, today's regulations are also applicable to those pre-existing discharges that have been relocated as a result of the implementation of the best management practices contained in the Pollution Abatement Plan, and that are not commingled with discharges from active mining operations.

7. BMP-Only Permits

As explained in the preamble to the proposed rule (65 FR 19451), EPA interprets the definition of ''effluent limitation'' in section 502 of the CWA to include non-numeric effluent limitations where it is not feasible to establish numeric effluent limitations. This longstanding interpretation is implemented in 40 CFR 122.44(k), which provides that permits may include BMPs to supplement, or in lieu of, numeric effluent limitations when ''numeric effluent limitations are infeasible.''

In Section VI.A of the preamble to the proposal (65 FR 19449), EPA discussed the issue of BMP-only permits for the Coal Remining Subcategory. After considering comment on this approach, EPA included a limited provision in the final rule for ''BMP-only'' effluent limitations where numeric limitations are infeasible. EPA believes that in specific and limited cases, permit requirements may be based on implementation of an approved BMP plan in lieu of numeric limitations based on baseline pollutant levels. EPA has determined that in certain specific cases, it is infeasible to calculate and monitor baseline pollutant levels in pre-existing discharges. These limited circumstances include: a pre-existing discharge that exists as diffuse groundwater flow or as base flow to a receiving stream and is therefore inaccessible; a pre-existing discharge that is inaccessible due to steep or hazardous slopes; a pre-existing discharge that is too large to adequately assess via sample collection; or, a number of pre-existing discharges so extensive that monitoring of individual discharges is infeasible.

In today's final rule, EPA has included a provision for ''BMP-only'' permits for those cases in which determination and monitoring of baseline pollutant loading is infeasible and for which remining will result in

significant improvement that would not otherwise occur.

EPA considered requiring that the mine operator monitor the receiving stream to assess the impact the remining operation is having on the receiving stream when there are no numeric limitations on the pre-existing discharge. Pennsylvania's approved Coal Remining and Reclamation Project XL agreement that uses the BMP-based remining permit approach requires the operator to monitor the receiving stream. While EPA strongly supports and encourages monitoring the receiving stream as part of a BMP-based permit, EPA acknowledges that receiving stream monitoring may not be appropriate in all cases (such as a small AML discharge into a very large river), and EPA has not included a requirement for in-stream monitoring. EPA recommends that the regulatory authority review the site-specific factors of the discharge site and include in-stream monitoring wherever appropriate and useful.

8. Water Quality Variances

Section 303(d) of the Clean Water Act provides that States are to list waters for which point source technology-based limits do not ensure attainment of water quality standards, identify the pollutants causing a violation of the standards, and establish total maximum daily loads (TMDLs) that will meet water quality standards for each listed water. Generally, a TMDL identifies what must be done to meet water quality standards in a particular water or watershed. In recent years, EPA and the States have increased their emphasis on TMDL activities. When water quality impairments are identified and TMDLs are established, pollution allocations are determined and implemented. TMDL analyses have identified drainage emanating from abandoned mine land as the source of pollutants inhibiting attainment of water quality standards for thousands of stream miles.

EPA received comments requesting EPA to categorically allow water quality variances for pre-existing discharges at coal remining operations. Water quality variances under the Clean Water Act are a form of State water quality standards developed on a case-by-case basis. Effluent limitations guidelines are national technology-based regulations that establish restrictions on the discharge of pollutants to surface waters or to publicly owned treatment works by specific categories of industries. The requirements are developed by EPA based on the application of process or treatment technologies to control pollutant discharges. The effluent limitations guidelines promulgated under part 434 establish minimum national technology-based effluent standards for the coal mining industry. Therefore, EPA has not included potential variances on water quality standards in this guideline. Of course, a State may submit a proposed variance to EPA under the applicable provisions of 40 CFR part 131.

9. BAT for the Coal Remining Subcategory

Today, EPA promulgates BAT effluent limitations for the Coal Remining Subcategory to control identified toxic and non-conventional pollutants. EPA is defining BAT for the Coal Remining Subcategory through a combination of numeric and non-numeric limitations. Specifically, EPA is establishing that the best available technology economically achievable for remining operations is implementation of a pollution abatement plan that incorporates BMPs designed to improve pH (as acidity) and reduce pollutant loadings of iron, manganese and sediment, and a requirement that such pollutant levels do not increase over baseline conditions. This is essentially the level of treatment that is currently required under permits issued in accordance with the Rahall Amendment (with the exception of sediment), and that has been demonstrated to be currently available by remining facilities included in EPA's Coal Remining database (Record section 3.5.1), the *Coal Remining BMP Guidance Manual* and in Pennsylvania's study of 112 closed remining sites (Record section 3.5.3). These data support EPA's conclusion that site-specific pollution abatement plans have potential for significant removals of pollutant loadings compared to pre-existing discharge conditions. Based on these data, EPA determined that design and implementation of a pollution abatement plan should, in most cases, achieve reductions below baseline discharge levels.

In order to evaluate available technologies to determine BAT, EPA relied on data from 41 remining operations in Pennsylvania. These data are contained in section 3.2.4 of the regulatory record. All of these facilities used abatement plans implementing various combinations of BMPs as their pollutant control technology. Section 301(p) allows permit writers to use best professional judgment (BPJ) to set site-specific BAT limits determined for pre-existing discharges. Pennsylvania completed this BAT determination for 40 of the 41 remining operations. These 40 remining permit modules indicated that the only more stringent technology available (other than BMPs) included treatment (chemical addition, precipitation, and settling). In all 40 cases, remining was considered not economically feasible if treatment of pre-existing discharges to part 434 subpart C effluent limits was required. In the same 40 cases, remining was economically feasible if the abatement plan was implemented. Thus, the Pennsylvania remining permits issued under Rahall were issued as BAT permits. Congress recognized that remining was not being conducted on abandoned mine lands because of the cost and liability of requiring treatment to meet existing regulations and authorized less stringent requirements for remining operations. Therefore, EPA has determined that the implementation of a pollution abatement plan represents the BAT level of control.

The problem with setting numeric effluent limitations representing the reductions achieved through implementation of a pollution abatement plan is that it is difficult to project the results, in terms of measured improvements in pre-existing pollutant discharges, that will be produced through the application of any given BMP or group of BMPs at a particular site. EPA believes that the *Coal Remining BMP Guidance Manual* compiles the best information available on appropriate implementation and projected performance of all currently identified BMPs applicable to coal remining operations. However, the *Coal Remining BMP Guidance Manual* provides only reasonable estimates of projected performance and efficiency. There are numerous variables associated with the design, implementation, and effectiveness of a particular BMP or group of BMPs at a particular site. Additionally, application of these estimates is subject to substantial, site-specific uncertainties. In some cases, despite appropriate design and implementation of a BMP plan, there is the potential for little improvement over baseline discharges. For these reasons, it is not feasible to project the expected numeric improvements that will occur for a specific pre-existing discharge through application of a particular BMP plan. As a consequence, EPA is establishing a case-by-case non-numeric requirement to implement a pollution abatement plan incorporating BMPs designed to reduce the pollutant levels of acidity, iron, manganese, and solids (TSS or SS) in pre-existing discharges.

Although it is not feasible to establish numeric limits based on predicting pollutant removal efficiencies, it is possible to calculate baseline pollutant

levels in pre-existing discharges at most remining sites. Moreover, the record indicates that application of appropriately designed BMPs should be able to prevent any increase in these pollutant loadings. Today, EPA promulgates numeric effluent limitations that require that the pollutant levels for net acidity, iron, manganese, and solids do not exceed baseline levels. EPA is promulgating a uniform methodology to use for determining and monitoring these levels. Baseline level determination and monitoring procedures are presented in Appendix B of the regulation and in the *Coal Remining Statistical Support Document.*

EPA expects that these limitations and standards will apply primarily to new remining operations. In cases of existing remining operations with Rahall-type permits and established BPJ limitations, EPA believes that it may not be feasible for a remining operator to re-establish baseline pollutant levels during active remining because the BMPs implemented may have already affected the pre-existing discharge. In this case, it would be impossible to require additional baseline sampling after the baseline time window has passed. In situations where coal remining operations seek reissuance of an existing remining permit, the regulatory authority may determine that it is not feasible for a remining operator to re-establish baseline pollutant levels in accordance with the statistical procedures contained in today's rulemaking. Therefore, pre-existing discharges at existing remining operations would remain subject to baseline pollutant levels established during the original permit application.

In its determination of BAT, EPA also performs a cost analysis on the level of treatment required by the regulation. The cost methodology for this assessment was described in Section X.B of the proposal, and EPA has made no changes to the cost methodology for this final action. EPA projects that the annual compliance cost for this new subcategory will be approximately $330,000 to $759,000.

10. BPT for the Coal Remining Subcategory

As discussed above, EPA concluded that the requirement to design and implement a pollution abatement plan represents BAT and that there are no more stringent technologies that are economically achievable. Furthermore, EPA is aware that permits containing these BMPs are currently in place and are being implemented by a large number of operators. Thus, EPA determined that pollution abatement plans also represent the average of the best technology currently available. The pollution abatement plan is required to be designed to control conventional, toxic and non-conventional pollutants, and the plan must reflect levels of control consistent with BPT for conventional pollutants. The *Coal Remining BMP Guidance Manual* should be consulted to determine the adequacy of the plan. As discussed above, EPA concluded that it is infeasible to express BAT as a single numeric limit. Therefore, EPA has established a combination of site-specific numeric and non-numeric effluent limitation guidelines for BPT identical to the BAT limitations for net acidity, iron, manganese, and TSS.

11. BCT for the Coal Remining Subcategory

In July 1986, EPA promulgated a methodology for establishing BCT effluent limitations. EPA evaluates the reasonableness of BCT candidate technologies—those that are technologically feasible—by applying a two-part cost test: (1) A POTW test; and (2) an industry cost-effectiveness test.

EPA first calculates the cost per pound of conventional pollutant removed by industrial dischargers in upgrading from BPT to a BCT candidate technology and then compares this cost to the cost per pound of conventional pollutants removed in upgrading POTWs from secondary treatment. The upgrade cost to industry must be less than the POTW benchmark of $0.25 per pound (in 1976 dollars).

In the industry cost-effectiveness test, the ratio of the incremental BPT to BCT cost divided by the BPT cost for the industry must be less than 1.29 (*i.e.,* the cost increase must be less than 29 percent).

In today's notice, EPA is establishing BCT effluent limitations guidelines for TSS equivalent to the BPT guidelines for the Coal Remining Subcategory. In developing BCT limits, EPA considered whether there are technologies that achieve greater removals of conventional pollutants than established for BPT, and whether those technologies are cost-reasonable according to the BCT Cost Test. EPA identified no technologies that can achieve greater removals of conventional pollutants than established for BPT that are also cost-reasonable under the BCT Cost Test, and accordingly EPA is establishing BCT effluent limitations equal to the established BPT effluent limitations guidelines.

12. NSPS for the Coal Remining Subcategory

In the proposal, EPA did not consider any regulatory options for new sources for the Coal Remining Subcategory because pre-existing discharges at abandoned mine lands covered by the proposed regulation would be by definition in existence prior to permit application. Therefore, at proposal EPA defined all pre-existing discharges as existing sources. However, as described earlier, EPA requested comment in the NODA on applying the effluent limitations for the Remining Subcategory to coal mining operations conducted and abandoned after August 3, 1977. Based on comments received on the NODA, EPA has modified the definition of ''remining'' to include coal mining operations on sites where coal mining is conducted and abandoned after August 3, 1977. Therefore, despite SMCRA requirements and disincentives to bond forfeiture, it is possible that in the future there will be as-yet unmined sites that will be mined and abandoned for which remining permits will be sought. Pre-existing discharges from remining areas where active mining commenced after the effective date of today's rule and which are subsequently abandoned will be subject to new source performance standards. EPA is establishing NSPS equivalent to BPT, BCT, and BAT because EPA has not identified any economically achievable technology more stringent that BAT.

B. Western Alkaline Coal Mining Subcategory

1. Background

The effluent limitations and performance standards for the Western Alkaline Coal Mining Subcategory apply to alkaline mine drainage from reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas. This new subcategory is being created primarily because of negative impacts caused by the predominant use of sedimentation ponds necessary to meet the guidelines for Subpart D—Alkaline Mine Drainage. Additional information on the rationale for the new subcategory are explained in Section VI.B of the proposal.

Today's final regulation requires that a western coal mine operator develop and implement a site-specific sediment control plan for applicable areas. The sediment control plan must identify sediment control BMPs and present their design, construction, maintenance specifications, and their expected effectiveness. The final regulations require the operator to demonstrate, using watershed models accepted by the

permitting authority, that implementation of the selected BMPs will not increase sediment loads over pre-mined, undisturbed condition sediment levels. The permit must then incorporate the site-specific sediment control plan and require the operator to implement the plan.

Sediment control BMPs for the coal mining industry are well known and established and include regrading, revegetation, mulching, check dams, vegetated channels, straw bales, dikes, silt fences, small sumps and berms, contour terracing, sedimentation ponds, and other construction practices (*e.g.,* grass filters, serpentines, leaking berms, etc). In order to maintain pre-mined, undisturbed conditions on reclamation and associated areas, EPA is promulgating non-numeric effluent limits based on the design, implementation, and maintenance of these BMPs.

As noted in the proposal, EPA has determined that the predominant use of sedimentation ponds in order to meet the Subpart E numeric standards for settleable solids have caused negative impacts in arid and semiarid environments. This is predominantly due to the large land areas and volume of runoff that must be controlled through ponds in order to meet a sediment limit that is not appropriate for runoff in the arid and semiarid regions of the western United States. EPA notes that sedimentation ponds are considered an effective BMP for controlling sediment, and that sedimentation ponds may be used in conjunction with other BMPs in order to control sediment loads. EPA also recognizes that sedimentation ponds do not necessarily cause negative environmental impacts in all cases. EPA believes that ponds may be necessary in certain circumstances to ensure that sediment levels are not increased over pre-mined levels, or may be necessary to meet SMCRA requirements or to protect water quality. In certain cases, it may also be necessary for the regulatory authority to establish numeric limits to protect water quality. EPA notes that ponds are one in a suite of BMPs that a mine operator may install in order to meet reclamation standards. However, ponds may not be necessary in all circumstances and the use of other BMPs such as check dams, vegetation, silt fences, and other construction practices can be equally protective of the environment. Advantages of using other BMPs in lieu of, or in addition to, ponds is that less land is disturbed than for pond construction and removal and more water is available to maintain the hydrologic balance. EPA believes that the regulation promulgated today allows permitting authorities and mining operators sufficient flexibility to use the appropriate BMPs necessary to control sediment and protect water quality in these regions. EPA has provided information on the range and implementation of available BMPs in the *Development Document for Final Effluent Limitations Guidelines and Standards for the Western Alkaline Coal Mining Subcategory.*

Under today's regulation, EPA is establishing a requirement to develop and implement site-specific sediment control plans that apply in lieu of numeric limits. EPA is requiring that a mine operator develop a site-specific sediment control plan for these areas.

EPA is establishing requirements for site-specific sediment control plans based on computer modeling in lieu of nationally applicable numeric effluent limitations. As discussed above in section V.A.7, such requirements are authorized at 40 CFR 122.4(k) as non-numeric effluent limitations where it is infeasible to establish numeric effluent limitations.

EPA believes that determining compliance for settleable solids based on a single numeric standard for runoff from BMPs is infeasible at western coal mines due to the environmental conditions present. Precipitation events are often localized, high-intensity, short-duration thunderstorms and watersheds often cover vast and isolated areas. Rain may fall in one area of a watershed while other areas remain dry, making it extremely difficult to evaluate overall performance of the BMPs. These factors combine to take it burdensome for a permitting authority or mining operator to extract periodic, meaningful samples on a timely basis to determine if a facility is meeting effluent limitations for settleable solids. The difficulty of sample collection is described in the Phase I Report: Technical Information Package provided by the Western Coal Mining Work Group (Record Section 3.3.1).

Because it is infeasible in such areas to determine compliance and performance of the BMPs in numeric terms, EPA believes that establishment of non-numeric effluent limitations for sediment for this subcategory is authorized under, and is necessary to carry out the purposes and intent, of the CWA.

2. Inspection and Maintenance of BMPs

EPA believes a key factor in using BMPs is the opportunity for continual inspection and maintenance by permitting authorities and coal mine personnel to ensure that sediment control measures will continue to function as designed. EPA concludes that requirements based on site-specific control plans will ease the implementation burden of the rule and allow a permit authority to determine compliance on a regular basis. A permit authority will be able to visit the site and determine if BMPs have been implemented according to the site's sediment control plan. The permit authority would not have to wait for a significant precipitation event to determine compliance.

EPA believes that regular operation and maintenance inspections of BMPs are necessary to ensure compliance with the sediment control plan. EPA also recognizes that SMCRA establishes inspection and monitoring requirements for both surface coal mining and reclamation operations. These requirements include partial inspections at least once per month and complete inspections at least once per quarter. The monitoring requirements include maintenance of records and monitoring equipment, monthly reports to the permitting authority, and provision of other information as the permitting authority deems appropriate.

EPA received several comments on appropriate inspection frequencies and monitoring requirements. The State of New Mexico envisions monthly inspections during the first three years a watershed is in reclamation status and quarterly inspections thereafter. New Mexico believes that field notes or forms maintained on file in mine records and available for inspection is appropriate documentation of these inspections. Other States and mine operators have suggested that self inspections be conducted quarterly and after significant precipitation events.

EPA is not specifying a frequency or procedure for BMP inspections because EPA believes that these decisions should be left to discretion of the permitting authority and be made on a site-specific basis, in accordance with SMCRA and CWA requirements (40 CFR 122.41(i), 122.43, 122.48).

3. Affected Areas

In the proposal, EPA described that the Agency also was considering the use of alternative sediment controls for non-process areas in addition to reclamation areas. Such non-process areas include areas that are not directly in contact with the excavation and processing of coal materials. EPA received numerous comments on the issue in support of expanding the applicability of the final regulation to include these additional non-process areas. EPA also received additional data from the National

Mining Association, in a report entitled ''Western Alkaline Coal Mining Subcategory Modeling of Pre-mining Activities Supporting Reclamation and Performance Cost-Benefit Analysis.''

As described in the proposal, EPA determined that alternative sediment controls were appropriate for reclamation areas for several reasons. These reasons included: sediment is a natural component of runoff in arid watersheds; sediment is typically the only parameter of concern in runoff from western alkaline reclamation areas; BMPs are proven to be effective at controlling sediment; and computer modeling procedures are able to accurately predict sediment runoff conditions. Due to comments received in support of expanding the application of alternative sediment controls, EPA evaluated non-process areas in addition to reclamation areas under the same set of circumstances. Based on this rationale, in addition to comments and data received on the proposal, EPA determined that similar circumstances exist for runoff from some, but not all, non-process mine areas. Namely, that sediment is typically the only parameter of concern; BMPs can be implemented to maintain sediment levels below baseline; and modeling procedures are accurate for these areas. Therefore, EPA has expanded the Western Alkaline Subcategory to include ''brushing and grubbing areas,'' ''topsoil stockpiling areas,'' and ''regraded areas.''

- ''Brushing and grubbing area'' is defined to mean ''the area where woody plant materials that would interfere with soil salvage operations have been removed or incorporated into the soil that is being salvaged.'' BMPs modeled and/or utilized for sediment control of this area include infiltration berms, silt fences, porous rock check dams, and woody plant chipping/rotoclearing surface treatments.
- ''Topsoil stockpiling area'' is defined to mean ''the area outside the mined-out area where topsoil is temporarily stored for use in reclamation, including containment berms.'' BMPs modeled and/or utilized for sediment control of this area include establishing vegetation, infiltration berms, and silt fences.
- ''Regraded areas'' are defined to mean ''the surface area of a coal mine that has been returned to required contour.'' BMPs modeled and/or utilized for sediment control of this area include contour furrowing, establishing timely vegetation, silt fences, porous rock check dams, and woody plant chipping/rotoclearing surface treatments.

EPA concluded that these areas may be sufficiently consistent in slope, vegetative cover, and soil stability such that BMPs can be modeled and implemented to maintain sediment levels below pre-mined, undisturbed conditions. Due to lack of exposure to potential acid forming or toxic materials, EPA does not believe that runoff from these areas will cause degredation of water quality. Therefore, EPA believes that alternative sediment controls can be effectively used on disturbed areas where sediment is typically the only pollutant of concern in order to avoid additional land disturbance.

However, EPA does not believe that alternative sediment controls should be applicable to spoil piles. Spoil piles are areas where overburden is placed prior to regrading and revegetating. Overburden is the material that lies on top of the coal that is removed to gain access to the coal seam. First, EPA does not believe that computer modeling programs are sufficient to accurately model runoff from a highly erodible, unconsolidated land form with steep slopes, such as spoil piles. Second, in terms of BMPs that would be available to sufficiently control runoff from these areas, EPA notes that many of the traditional BMPs, including regrading, revegetating, mulching, check dams, vegetated channels, straw bales, dikes, silt fences, small sumps and berms, and contour terracing could not be implemented or adequate on unconsolidated steep slopes or highly erodible areas. EPA notes that the most likely form of sediment control for runoff from these areas would be site containment by means of temporary berms, ponds, diversion into pit area, and/or commingling with process waters. In contrast, the non-process areas where the Agency is allowing alternative sediment control structures are amenable to utilization of BMPs due to their level surfaces or more stable environment.

EPA generally considers spoil piles as part of the active mine due to the disturbed nature of the materials and the potential for toxic or acid forming materials to be present. Additionally, EPA believes there exists the potential for exposure to toxic or acid forming materials in runoff from spoil piles. EPA notes that, as part of SMCRA requirements, the mine operator must conduct an analysis of the potential toxic or acid forming materials present in the overburden and take appropriate action to prevent the discharge of these materials to surface waters. However, the appropriate action (such as covering material) may be concurrent with deposition of overburden, and EPA does not believe that the Agency has been presented with sufficient evidence that toxic or acid forming materials are guaranteed not to be present in runoff from spoil piles.

EPA believes that the exclusion of spoil pile areas from the Western Alkaline Subcategory will not significantly detract from the benefits of this new subcategory. OSMRE regulations restrict the size of the overburden salvaging area and require timely regrading and revegetation (SMCRA, Pub. L. 95–87 sections 508 and 515). In a report submitted in comments by the National Mining Association, the salvaging area was estimated to be 750 feet wide and 5,083 feet long. Although the spoil pile area has a fairly large footprint, EPA notes that the area generating runoff that EPA considered for inclusion of the Western Alkaline Subcategory is limited. EPA notes that the runoff from the spoil piles adjacent to the active mine pit will drain directly into the mine pit and will be treated as active mine water, regardless of EPA's decision. The only area that would be affected by EPA's decision is the area containing runoff from the outslope of the last spoil pile, and this area is relatively limited. Based on the decision not to include spoil piles in the Western Alkaline Coal Mining Subcategory, EPA envisions that the runoff from spoil pile areas will be rerouted back into the mine pit through temporary berms and dikes and will not likely involve construction of additional sedimentation ponds. Such spoil piles continue to be covered by existing regulations at subpart D—Alkaline Mine Drainage.

4. SMCRA Requirements

The SMCRA permit application process requires a coal mining operator to submit an extensive operation and reclamation plan, documentation, and analysis to OSMRE or the primacy permitting authority for approval. The requirements for the operation and reclamation plan are specified in 30 CFR part 780 for surface mining permit applications and part 784 for underground mining permit applications. In brief summary, some of the OSMRE requirements that directly relate to this CWA regulation include requirements for coal mining operators to provide: a description of coal mining operations; a plan for reclaiming mined lands; a plan for revegetating mined lands; geologic information; hydrologic information including: a description of baseline ground water and surface water characteristics under seasonal conditions; and an analysis of the

hydrologic and geologic impacts caused by the reclamation activity. Specifically, the plan requires a ''probable hydrologic consequences (PHC)'' determination to determine the impacts of the mining on existing hydrologic conditions and a hydrologic reclamation plan to show measures for reducing impacts and to meet water quality laws and regulations. Furthermore, the coal mining regulatory authority is required to conduct a cumulative hydrologic impact analysis of the proposed operation and all anticipated mining on surface water and ground water systems.

Additionally, SMCRA requires a chemical analysis of potentially acid or toxic forming sections of the overburden and chemical analysis of the stratum lying immediately underneath the coal (Section 507 (b)(15)). The mine operator must provide for avoiding acid or other toxic mine drainage by such measures as, but not limited to: preventing or removing water from contact with toxic producing deposits; treating drainage to reduce toxic content which adversely affects downstream water upon being released to water courses; and keeping acid or other toxic drainage from entering ground and surface waters (Section 515 (b) (10)). This analysis is required for the determination that the mine produces alkaline mine drainage and will be covered by the Alkaline Mine Drainage Subcategory. Based on the applicability of this regulation which restricts the Western Alkaline Coal Mining Subcategory to areas producing alkaline drainage in arid and semi arid areas, EPA does not believe that toxic or acid forming materials will be present in the runoff from non-process areas of alkaline coal mines. However, EPA acknowledges that SMCRA requirements are an additional measure of protection to ensure that any acid forming or toxic forming pockets will be identified and addressed as necessary to prevent the release of these materials in stormwater runoff.

EPA concluded that sediment control plans developed to comply with SMCRA requirements will usually fulfill the requirements in today's regulation. In general, the sediment control plan will largely consist of materials generated as part of the SMCRA permit application. The requirement to use modeling techniques also is not inconsistent with SMCRA permit application requirements, as mining facilities already submit a watershed model as part of their SMCRA reclamation plan.

EPA proposed and is finalizing the following language regarding acceptable computer models: ''The operator must use the same watershed model that was, or will be, used to acquire the SMCRA permit.'' EPA intends this to mean that a mine can use the upgraded version of a computer model that was used in the original application. For example, if the mine used SEDCAD 4.0 in their SMCRA permit application, then the mine operator can use SEDCAD 5.0 in subsequent modeling procedures for its CWA permit application. EPA believes that this language provides the necessary flexibility to use the most recent and appropriate modeling procedure. A guidance manual entitled ''Guidelines for the Use of the Revised Universal Soil Loss Equation (RUSLE) Version 1.06 on Mined Lands, Construction Sites, and Reclaimed Lands'' published by OSMRE in August, 1998 describes the use of RUSLE for sediment modeling and should be consulted for modeling approaches.

5. Bond Release

The new subpart for Western Alkaline Coal Mining includes the following language: ''The effluent limitations in this subpart apply until the appropriate SMCRA authority has authorized bond release.'' This language is consistent with the language in other subparts to part 434. As defined in § 434.11(d) General definitions: ''The term 'bond release' means the time at which the appropriate regulatory authority returns a reclamation or performance bond based upon its determination that reclamation work (including, in the case of underground mines, mine sealing and abandonment procedures) has been satisfactorily completed.'' EPA notes that this language does not necessarily mean ''final'' bond release (which may be applicable to an entire mining operation) and that reclamation work may be satisfactorily completed on a watershed or a specific part of a disturbed area before the entire mine site has been reclaimed (or even mined), i.e., ''partial bond release.'' Therefore, EPA intends this current definition to allow a facility to terminate NPDES discharge points when ''partial'' bond release is obtained.

6. Definition of Alkaline Mine Drainage

EPA received comment that the proposed definition for alkaline mine drainage imposes limitations for iron concentrations without regard to the form of the iron. The commenter noted that the primary mineral responsible for high total iron readings in certain western areas is magnetite. Magnetite (Fe_3O_4) is a naturally occurring iron mineral, which is in a form not typically associated with coal mining operations and acid mine drainage. In natural undisturbed conditions, the commenter cited that surface water samples register values for total iron as high as 40,000 mg/L (or 4%), due to the sediment, which is collected as part of the water sample. The commenter argued that the form of iron was not considered in the original mining regulations, and the commenter requested that EPA modify the definition of the Western Coal Mining Subcategory to include areas that have naturally-occurring high concentrations of iron due to magnetite.

Although EPA has not revised either the definition of alkaline mine drainage or western coal mining operations, EPA acknowledges the concern regarding the high levels of total iron that may be found in natural discharges from western alkaline coal regions. EPA recognizes that the geochemistry of the western arid and semiarid coal regions, which is predominated by sandstone and limestone, differs from that of the eastern coal regions. As a result, the production of acid mine drainage is much less typical due to the inherent buffering capacity. In addition, EPA recognizes that there is a low occurrence of pyrite in the west, which is the common culprit of acid mine drainage generation. Instead, iron often occurs in the form of magnetite (Fe_3O_4), an inert iron oxide that has no acid forming potential.

EPA evaluated the processes that produce acid mine drainage and the geologic conditions typical of the western alkaline coal regions to determine the most appropriate parameters for indicating alkaline mine drainage. In summary, EPA concluded that pyrite is generally uncommon in this coal region and that, if it does occur at a significant level, it can be identified by the presence of dissolved iron. For this reason, it is also appropriate to measure dissolved iron, in lieu of total iron, for surface runoff from the areas affected by the Western Alkaline Coal Mining Subcategory. Additionally, acid mine drainage in the western region is often prevented by the presence of carbonate minerals. Therefore, to ensure that acid-forming potential is not inherent to a particular discharge, EPA believes that an assessment of net alkalinity should be made. Determination of net alkalinity takes into account the effects of non-ferrous metals (e.g., Al, Mn), carbonates, and other substances, and, as such, negative values of net alkalinity are a true indication of potential acidity of drainage waters.

For these reasons, EPA has revised the applicability of the Western Alkaline Coal Mining Subcategory as follows: ''This subpart applies to drainage at western coal mining operations from

reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas where the discharge, before any treatment, meets all the following requirements: (1) pH is equal to or greater than 6; (2) dissolved iron concentration is less than 10 mg/L; and (3) net alkalinity is greater than zero.'' EPA believes that this will enable certain mines to use alternative sediment controls while maintaining the intent of the regulation that this subcategory does not apply to mines that produce acid mine drainage.

7. BPT for the Western Alkaline Coal Mining Subcategory

EPA is today promulgating BPT effluent limitations for the Western Alkaline Coal Mining Subcategory to control sediment in discharges from reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas. For further information on the basis for the limitations and technologies selected see the *Development Document for Effluent Limitations Guidelines and Standards for the Western Alkaline Coal Mining Subcategory.*

EPA determined that BPT for the Western Coal Mining Subcategory consists of designing and implementing BMPs to maintain the average annual sediment yield equal to or below pre-mined, undisturbed conditions. EPA has developed this new subcategory primarily to addresss the negative environmental impacts created by the previous requirements.

Requirements for reclamation areas (40 CFR part 434, subpart E) establish BPT, BAT, and NSPS based on the use of sedimentation pond technology, and set effluent limitations for settleable solids and pH. The Subpart E guidelines apply to all reclamation areas throughout the United States, regardless of climate, topography, or type of mine drainage (i.e., acid or alkaline).

Subpart E establishes controls on the amount of settleable solids that can be discharged into waterways from reclamation areas. Although sedimentation ponds are proven to be effective at reducing sediment discharge, EPA believes that there are numerous non-water quality impacts that may harm the environment when construction of large sedimentation ponds in arid and semi arid regions are necessary to meet current effluent limits. The negative non-water quality impacts associated with existing regulations include: disturbing the natural hydrologic balance of arid and semiarid western drainage areas; accelerating erosion; reducing groundwater recharge; reducing water availability; and impacting large areas of land for sedimentation pond construction. A further discussion of these impacts can be found in Section VIII of this document and in the *Development Document for the Western Alkaline Coal Mining Subcategory.*

EPA has concluded that the current numeric requirements at subpart E are not appropriate for arid and semiarid western reclamation areas because of the negative non-water quality impacts associated with the predominant use of sedimentation ponds to meet these limits, as discussed above. The appropriate goal for reclamation and discharges from post-mined lands should be to mimic conditions that were present prior to mining activities. In order to do this, it is necessary to maintain the hydrologic balance and sediment loadings of pre-mining, undisturbed conditions on post-mined lands. EPA believes that use of BMPs, including sedimentation ponds where appropriate, to control discharges is the most effective control technology. Therefore, EPA is establishing BPT that consists of designing and implementing BMPs that are projected to maintain the average annual sediment yield equal to or below pre-mined, undisturbed conditions. This would ensure that undisturbed conditions are maintained. In order to achieve these results, EPA requires that the coal mining operator develop a sediment control plan and demonstrate the effectiveness of the sediment controls through computer modeling. These requirements are detailed in the regulatory text.

EPA also evaluated the costs of BPT. As discussed in Section IX of this document, EPA estimates that today's regulation will result in a net cost savings to all affected surface mine operators, and will be at worst cost-neutral for affected underground operators (although EPA believes that most will also incur cost savings). Therefore, implementing these standards will result in no facility closures or negative economic impact to the industry. EPA projects that the new subcategory will result in cost savings of $12.8 million to $13.2 million annually.

8. BCT for the Western Alkaline Coal Mining Subcategory

EPA is establishing BPT and BAT to control conventional, toxic, and non-conventional pollutants based on a sediment control plan. EPA is not establishing numeric effluent limitations for any conventional pollutant and EPA is not promulgating BCT limitations for this subcategory at this time.

9. BAT for the Western Alkaline Coal Mining Subcategory

EPA has not identified any more stringent treatment technology that could represent BAT level of control for maintaining discharge levels of solids consistent with pre-mined conditions on post-mined land in the western alkaline coal region. EPA is therefore establishing that BAT standards be equivalent to BPT. Further, as discussed in Section IX of this document, EPA estimates that today's regulation will result in a net cost savings to all affected surface mine operators, and will be at worst cost-neutral for affected underground operators. Therefore, implementing BAT standards will result in no facility closures or negative economic impact to the industry.

10. NSPS for the Western Alkaline Coal Mining Subcategory

As discussed for BAT, EPA has not identified any more stringent treatment technology option that it considers to represent NSPS level of control. Further, EPA estimates that today's regulation will result in a net cost savings to all affected surface mine operators, and will be at worst cost-neutral to affected underground operators. Therefore, implementing NSPS standards will result in no barrier to entry based upon the establishment of this level of control for new sources. EPA has therefore determined that NSPS standards be established equivalent to BAT.

VI. Statistical and Monitoring Procedures for the Coal Remining Subcategory

A. Statistical Procedures for the Coal Remining Subcategory

EPA's statistical procedures are presented in Appendix B of the regulation and described in detail in the *Coal Remining Statistical Support Document.* The procedures in Appendix B apply to the Coal Remining Subcategory.

The regulatory text requires that calculations described in Appendix B be applied to pollutant loadings. Pollutant loadings are calculated as the product of a flow measurement and a pollutant concentration. As described in the proposal, EPA has interpreted the Rahall amendment's requirement not to exceed a pollutant baseline ''level'' as a requirement not to exceed a pollutant baseline loading. EPA's record demonstrates that BMPs applied during remining act principally by reducing discharge flow and pollutant loading. In fact, pollutant concentration may actually increase in some cases where the pollutant quantity (loading) is

reduced substantially. Setting limits based on concentrations would very likely inhibit beneficial remining projects and would be counter-productive and ineffective. To achieve pollutant reductions from remining, EPA concluded that it is essential to set limits for pollutant loadings rather than concentrations.

The objective of these statistical procedures is to provide a method for deciding when the pollutant levels of a discharge exceed baseline pollutant levels. These procedures are intended to detect a substantial, continuing state of exceedance, while reducing the likelihood of a ''false alarm.'' To do this, it is essential to a have an adequate duration and frequency of sample collection to determine baseline levels and to determine compliance with these levels.

In developing these procedures, EPA considered the statistical distribution and characteristics of discharge loadings data from pre-existing discharges, the suitability of parametric and non-parametric statistical procedures for such data, the number of samples required for these procedures to perform adequately and reliably, and the balance between false positive and false negative decision error rates. EPA also considered the cost involved with sample collection as well as delays in permit approval during the establishment of baseline, and considered the potential that increased sampling could discourage remining. In order to sufficiently characterize pollutant levels during baseline determination and during each annual monitoring period, EPA is requiring that the results of at least one sample be obtained per month for a period of 12 months.

EPA evaluated the statistical properties of eastern coal mine discharge data (EPA's Coal Remining Database, DCN 1335 and the *Statistical Analysis of Abandoned Mine Drainage in the Assessment of Pollution Load,* EPA (821–B–01–014). EPA verified its findings as discussed in the proposal on relative variability of pollutant loadings. EPA also characterized the serial correlation of loadings and flow. EPA found that (a) to a first approximation, loadings might reasonably be described by a first-order autoregressive model, and (b) the coefficient of serial correlation for loadings at a one-month time lag typically ranged from 0.35 to 0.65, with the median near 0.50.

EPA evaluated the proposed statistical procedures and a variety of parametric and non-parametric alternative procedures to determine their decision error rates, their suitability for serially correlated data, and their ability to accommodate zero loadings and negative loadings. As a result of these evaluations, EPA modified the proposed statistical procedures so as to achieve the objective stated in the preamble to the proposed rule: to have a power of at least 0.75 for detecting an increase of one standard deviation in the average for loadings, while minimizing the chance of 'false alarms' in the event that the average loading decreases or remains unchanged.

Zero loadings are expected to occur, at least for some remining sites, after regrading and contouring when discharge flows may be reduced greatly; zero flows have been observed after remining at some mine sites (EPA's Coal Remining Database, DCN 1335 and the *Coal Remining BMP Guidance Manual*). Negative values of loadings are possible and have been observed for net acidity at some mine sites.

Serial correlation has a profound influence over the power of statistical procedures. The statistical procedures, as proposed, were more suitable for uncorrelated data than for serially correlated data. EPA modified the procedures so that they have the intended power when applied to serially correlated loadings data of the sort typical of remining sites in the eastern U.S. (Record section 11.1). The modifications consisted of (a) increasing the number of times in succession that the baseline trigger value must be exceeded for additional sampling or treatment to be required, (b) changing numeric constants used in the calculation of baseline trigger values, and (c) under proposed Procedure B, dropping the parametric statistical methods and providing a nonparametric calculation for the single-observation trigger.

In the preamble to the proposed rule, EPA discussed the potential problem of unrepresentative baseline years and optional measures that could mitigate the uncertainty of characterizing the baseline loadings. It is possible that one year of sampling may not accurately characterize baseline levels, because discharge flows can vary among years in response to inter-year variations in rainfall and ground water flow. There is some risk that the particular year chosen to characterize baseline flows and loadings will be a year of atypically high or low flow or loadings. There may be a need to evaluate differences among baseline years in loadings and flows. Therefore, EPA investigated optional procedures that could be used to account for the uncertainty in characterizing baseline from a one-year sample duration, or that could be used to account for the unrepresentative character of a baseline sampling year. EPA evaluated correlations between discharge flow and various parameters of existing mine discharge data and indices for which data spanning over many years are available to the public (i.e., Palmer Indices, Standardized Precipitation Index, Crop Moisture Index, Surface Water Supply Index, and USGS Current and Historical Daily Streamflow). EPA concluded that historical stream flow data from a USGS gage station associated with a discharge could be used to test whether the given baseline year was significantly different from the previous years. This would be done by comparing the mean stream flow for the baseline year to the 2.5th and 97.5th percentiles of annual mean stream flows prior to the baseline year. If the mean stream flow for the baseline year falls below the 2.5th percentile or above the 97.5th percentile, corrective action can be taken on the baseline data, and EPA recommends that the operator or permitting authority conduct additional monitoring to establish a meaningful baseline. However, due to the site-specific nature of discharges and the variability of streamflow compared to discharge data, EPA was unable to establish any optional procedure that could incorporate existing data from public sources into a meaningful baseline calculation.

Stakeholders have commented that, occasionally, a pre-existing discharge may contain iron or manganese concentrations that are lower than the current subpart E effluent limitations established for active mine wastewater. In these circumstances, the baseline standards may be a disincentive for remining because the operator may have to treat a discharge to levels below those currently required by BAT for active mine discharges. This may be a disincentive for remining operations. Therefore, EPA has incorporated a methodology in the statistical procedure for determining baseline so that the BAT concentration limit is substituted for certain baseline measurements when a measured concentration is below the BAT limit.

B. Evaluation of Statistical Triggers

EPA evaluated the power of the statistical triggers in Section VIII of the proposed rule. Power can be defined in plain language as the frequency with which a statistical decision procedure will declare that remining loadings exceed baseline loadings when the remining loadings truly are greater than baseline loadings.

The ideal statistical procedure would always declare ''not larger'' when

remining pollutant loadings are less than or equal to baseline loadings, and would always signal ''larger'' when remining loadings exceeded baseline. No such ideal procedure exists. Instead, the rate of signaling ''larger'' will increase as the average difference between baseline and remining loadings increases in magnitude. Statistical triggers may be ''tuned'' by choosing their numeric constants so that a compromise is achieved between false alarms (that is, signaling ''larger'' when remining loadings are not larger than baseline loadings) and correct alarms (when remining loadings truly are greater).

Power of the statistical triggers was evaluated by simulating a 60-month monitoring program for 5000 discharges, and recording the frequency with which the triggers indicated that the remining loadings exceeded baseline. The evaluations of power led to a choice of numeric constants that achieve a reasonable balance between false alarms and correct alarms.

This reasonable balance was considered to be achieved when a trigger produced the following results:

(1) When there was no change in loadings from the baseline to remining time period, the power (''false alarm rate''; type-I error rate) was not larger than that for the triggers used by Pennsylvania's successful remining program;

(2) When there was a decrease of 0.5 standard deviations in the mean loading after the baseline period, the power (''false alarm rate,'' in this case the probability of concluding that loadings increased during remining when they actually decreased) was smaller than 5%;

(3) When the mean loading increased by 1 to 2 standard deviations after the baseline period, the power (''correct alarm rate'') was maximized.

EPA reached several conclusions about the proposed statistical triggers based on these evaluations.

(1) The proposed Cumulative Sum Control Chart (CUSUM) method under Procedure B did not add value to the simpler monthly and annual comparisons. Accordingly, the CUSUM method is omitted from Appendix B to the final rule.

(2) The magnitude of serial correlation has a substantial effect on power. Statistical triggers that have reasonable power when there is no serial correlation could be unreasonable when there is substantial serial correlation, because they could then have very high rates of type I errors (false alarms). It was necessary to select numeric constants for the statistical triggers that are appropriate to data having autocorrelation. For evaluating and comparing statistical methods and triggers, EPA relied primarily upon the power in simulations for which the first-order autocorrelation coefficient took the value of 0.5.

(3) The Single Observation Trigger of the proposed Procedure A had a high rate of declaring loadings to be larger than baseline when they were not. The Single Observation Trigger was therefore modified to agree with the method that has long been used successfully in the State of Pennsylvania. The statistical modification was to change the Single Observation Trigger at Step 5 from *''If any two observations exceed L during weekly monitoring, * * *''* to the following: *''If all four weekly observations exceed L during weekly monitoring, * * *''*

(4) Proposed Procedure B, ''E. Annual Comparisons,'' also had a high rate of declaring loadings to be larger than baseline when they were not. This part of proposed Procedure B was modified to require use of Tables for the 99.9% level (alpha = 0.001) rather than the 95% level (alpha = 0.05) for the Wilcoxon-Mann-Whitney Test.

(5) The Single Observation Limit of the proposed Procedure B was changed from a parametric to a nonparametric method which has similar power. The nonparametric method accommodates zero flows (which may occur during remining) and negatively-valued loading data (which may occur for net acidity) without requiring additional or complex modifications (as the proposed parametric method would).

(6) The annual (subtle trigger) and single-observation (quick trigger) triggers long used in Pennsylvania were included in the simulations. EPA believes that the error rates and power of these triggers were acceptable in practice because BMPs reduced discharge loadings substantially. Hawkins (1994) reviewed the application of these triggers to remining operations in Pennsylvania, and concluded that the rates of triggering were low because remining almost always reduced loadings substantially. EPA's *Coal Remining Best Management Practices Guidance Manual* includes an extensive analysis of remining discharges that supports this conclusion. EPA concluded that the statistical triggers that Pennsylvania uses in its remining program are acceptable and effective. Method 1 of the Final Rule follows the Pennsylvania triggers exactly except that a different constant (1.815 = 1.96 * 1.25 / 1.35) is used in the formula for the Annual Procedure in order to decrease the likelihood of obtaining false positives. Pennsylvania uses a more stringent number (1.58 = 1.7 * 1.25 / 1.35). For a complete discussion of EPA's rationale and selection of statistical methodology, see the *Coal Mining Statistical Support Document.*

(7) The evaluation of power applies to a worst-case situation. In particular, the rate of declaring loadings to be larger than baseline when they are not is over-stated by the results. It is evaluated in terms of the percentage of mines that would experience at least one finding that loadings exceed the baseline level over a period of five years (60 months), when in fact there has been no change from baseline. In practice, the area contributing to a discharge should be remined and regraded in less time, after which the discharge flow and loading will be substantially reduced. Thus, the time period during which one can expect loadings at the baseline level typically will be shorter than five years. This in turn will mean lower percentages than reported in Table 1 for the condition of no change from baseline loadings.

(8) The procedures as proposed had unreasonably high ''false alarm rates'' because they were designed for uncorrelated data. The modified procedures provided for the final regulation have reasonable performance when applied to serially-correlated, lognormally-distributed data typical of coal mine discharge loadings.

The power of statistical triggers for the final regulation is shown in Table VI.B.1. The results show that Method 1 and Method 2 have comparable power. The main difference stems from the Monthly Procedure, which has higher power when Method 1 is used. Note that the Annual Procedure used without the Monthly Procedure would not have a high rate of detecting an increase of one standard deviation above baseline. Used in combination, the monthly and annual triggers provide power over 90% to detect substantial increases above baseline at least once during five years, although in practice the power will be smaller for reasons discussed above under (7).

TABLE VI.B.1.—STATISTICAL TRIGGERS AS MODIFIED FOR FINAL REGULATION: PERCENTAGE OF MINES DECLARED TO EXCEED BASELINE LEVEL (AT LEAST ONCE DURING 5 YEARS OF SIMULATED MONTHLY MONITORING) [1]

Annual trigger [3]	Monthly trigger [4]	Shift from baseline to remining period [2]			
		−0.5	0	+1	2
None	Method 1	10	33	89	99
Method 1 (a=1.96)	none	3	11	59	94
Method 1 (a=1.96)	Method 1	12	39	93	100
Method 1 (a=1.96)	Method 2	7	29	91	100
None	Method 2	5	22	86	100
Method 2 (α=0.001)	none	2	11	65	97
Method 2 (α=0.001)	Method 2	7	28	91	100
Method 2 (α=0.001)	Method 1	12	38	93	100

[1] Assumes monthly serial correlation of 0.5 for log(x), with x distributed lognormally. Percentages were rounded to the nearest 1%.
[2] The shift was scaled in terms of standard deviation units (sigma symbol = standard deviation)
[3] Annual procedures: Method 1 of the final regulation is the Subtle Trigger under Procedure A of the proposed regulation, with the leading constant changed from 1.58 to 1.96. Method 2 of the final regulation is the Wilcoxon-Mann-Whitney Test under Procedure B (E. Annual Comparisons) of the proposed regulation, with the significance level changed from 0.05 to 0.001.
[4] Monthly procedures: Method 1 of the final regulation is the Single-Observation Trigger under Procedure A of the proposed regulation. Method 2 of the final regulation is a nonparametric replacement for the parametric Single-Observation Trigger under Procedure A of the proposed regulation.

C. Sample Collection To Establish Baseline Conditions and To Monitor Compliance for the Coal Remining Subcategory

EPA evaluated the duration and frequency of sampling necessary to apply the statistical procedures. Those procedures are used to compare the levels of baseline loadings to the levels of loadings during remining or the period when the discharge is permitted. Without an adequate duration and frequency of sampling, the statistical procedures would often fail to detect genuine exceedance of baseline conditions or could establish baseline levels that are established as either too low or too high.

Based on the considerations described below, EPA proposed that the smallest acceptable number and frequency of samples is 12 monthly samples, taken consecutively over the course of one year. In the proposal, EPA raised the possibility that seasonal stratification might have the potential to provide a basis for more precise estimates of baseline characteristics, if the sampling plan is designed and executed correctly and if results are calculated using appropriate statistical estimators, and that there may be alternative plans that could be based upon subdivision of the year into distinct time periods. These time periods might be sampled with different intensities, or could be based on other types of stratified sampling plans that attempt to account for seasonal variations. EPA received several comments stating that a baseline sampling period of less than 12 months may be appropriate.

EPA considers an adequate number of samples to be that number that would allow an appropriate statistical procedure to detect an increase of one standard deviation in the mean or median loading between a baseline year and a monitoring year with a probability (power) of at least 0.75.

The power analysis used in the proposed statistical procedures was based on a two-sample t-test. The t-test can be an appropriate statistical procedure for a yearly comparison because loadings from mine discharges appear to be approximately distributed log-normally, and thus logarithms of loadings are expected to be approximately distributed normally. The (non-parametric) Wilcoxon-Mann-Whitney test is also appropriate for yearly comparisons and has a power nearly equal to that of the t-test when applied to normally distributed data. EPA determined that annual comparisons of baseline to remining years based upon 12 samples in each year were expected to have a power 0.75 to detect a difference of one standard deviation. While the t-test was dropped as a statistical procedure for assessing baseline in the Final Rule, the analyses defined in Appendix B, including the Wilcoxon-Mann-Whitney test, were designed to have similar power if 12 baseline samples were collected. If significant autocorrelation is present between samples (as discussed in section VI.B), the estimated power is likely to be less than 0.75; therefore, 12 samples should be considered the minimum acceptable for determining baseline.

An increase of one standard deviation can represent a large increase in loading, given the large variability of flows and loadings observed in mine discharges. The coefficient of variation (CV) is the ratio of the standard deviation to the mean of the observations. Sample CVs for iron loadings range approximately from 0.25 to 4.00, and commonly exceed 1.00. Sample CVs for manganese loadings range approximately from 0.24 to 5.00. When the CV equals 1.00, an increase of the average loading by one standard deviation above baseline implies a doubling of the loading.

The duration, frequency, and seasonal distribution of sampling are important aspects of a sampling plan, and can affect the precision and accuracy of statistical estimates as much as can the number of samples. To avoid systematic bias, sampling, during and after baseline determination, should systematically cover all periods of the year during which substantially high or low discharge flows can be expected.

Unequal sampling of months could bias the baseline mean or median toward high or low loadings by oversampling of high-flow or low-flow months. However, unequal sampling of different time periods can be accounted for using statistical estimation procedures appropriate to stratified sampling. Stratified seasonal sampling, possibly with unequal sampling of different time periods, is a suitable alternative to regular monthly sampling, provided that correct statistical estimation procedures for stratified sampling are applied to estimate the mean, median, variance, interquartile range, and other quantities used in the statistical procedures, and provided that at least one sample be taken per month over the course of 1 year.

In conclusion, EPA is promulgating a statistical procedure that requires a minimum of 12 monthly samples, taken

consecutively over the course of one year to determine baseline.

D. Regulated Pollutant Parameters in Pre-Existing Discharges

EPA proposed to regulate iron, manganese, and pH, which are the parameters addressed by the Rahall Amendment and are a subset of the parameters directly regulated in 40 CFR part 434. Additionally, EPA solicited comment in the proposal and NODA on regulating acidity instead of pH, on establishing alternative limits for sediment, and on establishing limitations or monitoring requirements for additional parameters such as sulfate. Based on comments received and on further data evaluation, EPA is establishing limitations for iron, manganese, net acidity, and solids. These issues are addressed below.

1. Acidity

The Rahall Amendment provides an exemption for remining operations from BAT effluent limitations for the pH level in pre-existing discharges. In the proposed rule, EPA solicited comment on the use of acidity instead of pH for pre-existing discharges. In very dilute or pure water, pH can be considered a measurement of acidity. In drainage from abandoned coal mines, however, pH is an indication of the instantaneous hydrogen ion concentration, and does not measure the potential of the solution to produce additional hydrogen from metals or carbon dioxide during neutralization or further oxidation. Because hydrogen ions are only one component of the acidity that can occur in acid mine drainage, there can be instances where, although the pH is nearly neutral, acidity exceeds alkalinity. Therefore, EPA concluded that the reduction of pollutant loadings can best be achieved by evaluating acidity, which includes pH.

In the final rule, pollutant loading is used to define baseline conditions for remining operations because loading captures both pollutant concentration and discharge flow. Although it is possible to determine a pH load (*i.e.*, load of H^+ ions), it is not very meaningful because pH load does not account for the latent acidity that is present in the form of dissolved metals or carbon dioxide. Additionally, in cases where treatment of discharges is required, the amount of treatment is based on acidity or net alkalinity rather than on pH. For this reason, acidity data already are typically submitted with remining permit applications and reporting. Pollutant loading is also used to determine mass balances and the effects of a discharge on a receiving waterbody. Such a determination is possible for acidity, net acidity, or alkalinity, but is not likely to be meaningful for pH because mixing can result in precipitation or dissolution of ions.

EPA notes that commenters were unanimous in their support for the use of acidity instead of pH. For these reasons, EPA has modified the limitations in the final rule to require compliance with baseline net acidity determinations.

2. Sulfate

EPA also solicited comments and data regarding the merits of using sulfate as a parameter for assessment of pollution loading from pre-existing discharges. Commenters agreed that this is a useful parameter for determining whether or not a pre-existing discharge is affected by mine drainage, and how remining BMPs have affected the discharge. However, commenters noted that it should be assessed as part of the baseline and for the potential effects of remining, but should not be included as a baseline effluent limit.

EPA concluded that sulfate is a useful parameter for evaluating the effectiveness of BMPs implemented under a Pollution Abatement Plan, and is aware that current State remining programs request that sulfate data are submitted during permit application and periodic reporting. EPA encourages this practice, but EPA agrees with commenters that effluent limitations for sulfate are unnecessary to determine that pre-existing discharge loadings are not increased over baseline.

3. Solids

EPA did not initially propose alternative limits for solids. However, due to comments received on the proposal, EPA issued a Notice of Data Availability (NODA) presenting commenters' concerns and new data submitted to EPA regarding solids levels in pre-existing discharges. EPA received numerous comments on the NODA which supported EPA's decision to adopt alternative limits for solids.

Based on the existing conditions of sediment present at some AML, EPA concluded that the benefits of remining may be severely limited if EPA does not address sediment in the final rule. Consistent with the intent of the Rahall Amendment, which seeks to encourage remining while ensuring that the remining activity will potentially improve and reclaim AML, EPA is establishing alternative limits for TSS such that the sediment load of the pre-existing discharge cannot be increased over baseline during remining and reclamation activities.

EPA believes that the final regulation is consistent with SMCRA which mandates the prevention of additional contribution of suspended solids to streamflow to the extent possible using the best technology currently available. EPA has adopted what is essentially a compliance schedule so that, during remining and reclamation activities, the operator cannot contribute sediment levels beyond the baseline discharge loading. After remining and reclamation has been completed, the operator must meet the standards for TSS and SS contained in subpart E—Post Mining areas prior to bond release. EPA concluded that the implementation of successful sediment control BMPs should, in most cases, be able to meet the BPT standards contained in subpart E—Post Mining areas regardless of whether the area has been disturbed due to remining or virgin mining.

Based on comments provided, however, EPA believes that there may be some exceptions where the post-mining sediment standards may not be economically feasible and may be detrimental for remining areas. Therefore, EPA has provided an exclusion from the post-mining sediment standards for ''steep-slope'' areas and other areas where the permitting authority determines it is infeasible or impractical based on the site-specific conditions of soil, climate, topography, or baseline conditions. In these instances, the pre-existing discharge must still meet the alternative baseline standards.

An example of when it would be impractical to establish subpart E numeric standards would be a tract of AML in the pollution abatement area that is not disturbed by remining. In this case, voluntary vegetative growth may have already been established and sediment runoff may be minimal. In this case, however, the AML area may not support 100% plant coverage and the discharge may contain a moderate amount of sediment that does not meet the subpart E numeric standards. In this case, the NPDES permitting authority may decide that it would be excessively costly and may even be more harmful to disturb the area, reclaim the land, revegetate the area and incorporate BMPs to meet the subpart E standards. EPA believes that this exclusion establishes necessary flexibility to permit authorities to adopt the most environmentally beneficial and cost-effective approach to reclamation.

During remining, the alternative limits for TSS are to be established in a manner consistent with the alternative

limits established for acidity, iron, and manganese (*i.e.*, based on the statistical methodology provided in Appendix B of the final regulation). The statistical procedures are described in Section VI.A above. This protocol requires a minimum of 12 monthly samples to establish baseline. EPA recommends that baseline sediment sampling include precipitation events in order to adequately characterize the baseline where runoff contributes directly to the sediment load.

VII. Non-Water Quality Environmental Impacts of Final Regulations

The elimination or reduction of pollution has the potential to aggravate non water quality environmental problems. Under sections 304(b) and 306 of the CWA, EPA is required to consider these non-water quality environmental impacts (including energy requirements) in developing effluent limitations guidelines and NSPS. In compliance with these provisions, EPA has evaluated the effect of this regulation on air pollution, solid waste generation, energy consumption, and safety. Today's rule does not require the implementation of treatment technologies that result in any increase in air emissions, in solid waste generation or in energy consumption over present industry activities.

Non-water quality environmental impacts are a major consideration for this rule because the rule is intended to improve or eliminate a number of existing non-water quality environmental and safety problems. Remining operations have improved or eliminated adverse non-water quality environmental conditions such as abandoned and dangerous highwalls, dangerous spoil piles and embankments, dangerous impoundments, subsidence, mine openings, and clogged streams that pose a threat to health, safety, and the general welfare of people. EPA projects that remining has the potential to eliminate nearly three million feet of dangerous highwall in the Appalachian and mid-Continent coal regions.

EPA also does not expect today's rule to have an adverse impact on health, safety, and the general welfare of people in the arid and semiarid western coal region. The intent of the rule is to allow runoff to flow naturally from disturbed and reclaimed areas. EPA believes that, in most cases, this is preferable to retention in sedimentation ponds that is accompanied by periodic releases of runoff containing sediment imbalances potentially disruptive to land stability. Alternate sediment control technologies in these regions address and alleviate adverse non-water quality environmental conditions such as: quickly eroding stream banks, water loss through evaporation, soil and slope instability, and lack of vegetation.

Based on this evaluation, EPA concluded that the regulations being promulgated today under these new subcategories will improve existing AML conditions in the eastern United States and will improve the hydrologic imbalances produced by application of current regulations in the western arid and semiarid United States.

VIII. Environmental Benefits Analysis

EPA presented estimates of the environmental benefits of today's regulation in Section IX of the proposal. The benefits assessment for the Coal Remining Subcategory is identical to the assessment performed at proposal. For the Western Alkaline Coal Mining Subcategory, the methodology for the assessment is identical to that performed at proposal. However, the calculations have changed due to the incorporation of additional data provided by two model mine studies submitted during the comment period.

EPA's complete benefits assessment can be found in *Benefits Assessment of Effluent Limitations Guidelines and Standards for the Coal Mining Industry: Remining and Western Alkaline Subcategories* (hereafter referred to as the ''Benefits Assessment''). A detailed summary is also contained in Chapter 8 of *Economic and Environmental Impact Analysis of Effluent Limitations Guidelines and Standards for the Coal Mining Industry: Remining and Western Alkaline Subcategories* (hereafter referred to as the ''EA'').

A. Coal Remining Subcategory

The water quality improvements associated with today's rule for remining depend on (1) changes in annual permitting rates for remining; (2) characteristics of sites selected for remining; and (3) the type and magnitude of the environmental improvements expected from remining. Remining permits in Pennsylvania increased by an estimated factor of three to eight following State implementation of a regulation that is similar to today's remining rule. EPA believes that implementing today's rule is likely to have a similar effect on other States with remineable coal reserves and similar abandoned mine drainage problems. The type and magnitude of site-specific water quality improvements under the final rule are not expected to be dramatically different than those that have occurred under existing requirements in Pennsylvania.

Of approximately 9,500 miles of acid mine drainage impacted streams in States where coal mining has previously occurred (Record Section 3.2.2), EPA estimates that remining operations have the potential to improve 2,900 to 4,800 miles of impacted streams, and that 1,100 to 2,100 miles of these streams may demonstrate significant improvement. EPA estimates that one to six miles of stream may see improvement for every 1,000 acres of abandoned mine land reclaimed. Based on an average of 38 acres of AML reclamation per permit, EPA estimates approximately 0.04 to 0.2 miles of stream improvement per remining project. EPA estimates that AML sites affected by the rule have an average of 70 highwall feet per acre. EPA also estimates that an additional 216,000 to 307,000 feet of highwall (41 to 58 miles) will be targeted for removal each year as a result of today's rule.

EPA assessed the potential impacts of remining BMPs on water quality using pollutant loadings data from pre-existing discharges at 13 mines included in EPA's Coal Remining Database (Record Section 3.5.1). Approximately 58 percent of the post-baseline observations showed a decrease in mean pollutant loadings. Approximately half of these sites (27 percent of the post-baseline observations) showed a statistically significant decrease in loadings. The 13 mines examined by EPA are active remining operations; decreases in pollutant loads are expected to become more significant with time. In comparison, Pennsylvania's Remining Site Study of 112 closed remining sites (Record Section 3.5.3) found that the Pennsylvania program for these sites was effective in improving or eliminating acidity loading in 45 percent of the pre-existing discharges, total iron loading in 44 percent of the discharges, and total manganese in 42 percent of the discharges. The Pennsylvania Remining Site Study focused on sites reclaimed to at least Stage II bond release standards, so that the mitigating impacts of BMPs had ample time to take effect.

Remining generates human health benefits by reducing the risk of injury at AML sites and reducing discharge of acid mine drainage to waterways. However, the human health benefits associated with consumption of water and organisms are not likely to be significant because (1) acid mine drainage constituents are not bioaccumulative, and adverse health effects associated with fish consumption are therefore not expected; and (2) public drinking water sources are

treated for most acid mine drainage constituents associated with adverse health effects. Eliminating safety hazards by closing abandoned mine openings, eliminating highwalls, stabilizing unstable spoils, and removing hazardous waterbodies potentially prevents injuries and saves lives.

EPA evaluated the potential impacts to human and aquatic life by comparing the number of water quality criteria exceedances in receiving waterbodies in the baseline (pre-remining) and post-baseline sampling periods for 11 remining sites in the Coal Remining Database for which relevant data exist. Exceedances of the human health criterion for pH (water plus organism consumption, field pH) were eliminated at two sites while exceedances of chronic aquatic life criteria were eliminated for pH (field pH) and iron at two sites. Exceedances of the acute aquatic life criterion for manganese also were eliminated at two sites. Although surface water quality data examined indicate changes in the number of water quality exceedances due to remining, nine of the 11 sites consist of active remining operations where the full environmental impacts of BMPs have yet to be realized. Correlations between pre-existing discharge loads and pollutant concentrations in receiving water can be used to determine the extent to which remining BMPs are responsible for changes in surface water quality. However, the lack of sufficient data on relevant sources of acid mine drainage upstream from pre-existing discharges at the selected mine sites made it difficult to estimate these correlations.

Remining and the associated reclamation of AML is expected to generate ecological and recreational benefits by (1) improving terrestrial wildlife habitat, (2) reducing pollutant concentrations below levels that adversely affect aquatic biota, and (3) improving the aesthetic quality of land and water resources. EPA was able to quantify and monetize some of the benefits expected from increased remining using a benefits transfer approach. The benefits transfer approach relies on information from existing benefit studies applicable to assessing the benefits of improved environmental conditions at remining sites. Benefits are estimated by multiplying relevant values from the literature by the additional acreage reclaimed under the remining subcategory.

EPA used the following assumptions to estimate annual benefit values for ecological improvements: (1) 3,100 to 4,400 acres will be permitted annually under the subcategory; (2) 57 percent of the acres permitted will actually be reclaimed (1,800 to 2,500 acres) ; (3) 38 percent to 44 percent of acres reclaimed per year are expected to be associated with significant decreases in acid mine drainage (AMD) pollutant loads to surface water bodies; and (4) annualized benefits from remining begin to occur five years after permit issuance and are calculated for a five year period. EPA assumed that 57 percent of the acres permitted would actually be reclaimed based on a study of 105 remining permits in Pennsylvania (Hawkins, 1995, *Characterization and Effectiveness of Remining Abandoned Coal Mines in Pennsylvania*). The study found that on average, a remining site had 67 AML acres, of which 38 acres (or 57 percent) were actually reclaimed. The assumption that 38 to 44 percent of acres reclaimed would be associated with significant decreases in AMD pollutant loads was based on the results of Pennsylvania's study of 112 closed remining sites. A detailed explanation of all assumptions is provided in the Benefits Assessment document for the proposed rule.

EPA estimated water-related ecological benefits using the benefits transfer approach with values taken from a benefit-cost study of surface mine reclamation in central Appalachia by Randall et al. (1978, *Reclaiming Coal Surface Mines in Central Appalachia: A Case Study of the Benefits and Costs*). EPA's analysis is based on two values from the study: (1) Degradation of life-support systems for aquatic and terrestrial wildlife and recreation resources, valued at $37 per acre per year (1998$); and (2) aesthetic damages, valued at $140 per acre per year (1998$). EPA estimated nonuse benefits using a widely accepted approach developed by Fisher and Raucher (1984, *Intrinsic Benefits of Improved Water Quality: Conceptual and Empirical Perspectives*), where nonuse benefits are estimated as one-half of the estimated water-related recreational use benefits. The estimated water-related benefits range from $0.53 to $0.89 million per year.

Reclaiming the surface area at AML sites will enhance the sites' appearance and improve wildlife habitats, positively affecting populations of various wildlife species, including game birds. This is likely to have a positive effect on wildlife-oriented recreation, including hunting and wildlife viewing. EPA estimated land-related ecological benefits using the benefits transfer approach with values taken from a study of improved opportunities for hunting and wildlife viewing resulting from open space preservation by Feather et al. (1999, *Economic Valuation of Environmental Benefits and the Targeting Conservation Programs*). EPA's analysis is based on two values from the study: (1) The average wildlife viewing value of $21 per acre per year; and (2) the improved pheasant hunting value of $7 per acre per year. Based on an aggregate value of $28 per acre per year, EPA estimates land-related benefits of $0.20 to $0.29 million per year.

The sum of the estimated monetary values of the different benefit categories results in total annual benefits of $0.73 to $1.17 million from implementing the remining subcategory. This estimate does not include benefit categories that EPA was unable to quantify and/or monetize, which include human health and safety impacts. EPA examined a number of data sources to determine the annual rate of accidents associated with exposed highwall and other hazardous features of AML in order to estimate the benefits attributable to the decreased risk resulting from remining safety improvements. EPA contacted State and Federal agencies responsible for AML statistics as well as agencies responsible for maintaining public health statistics and concluded that the necessary information was not available to support such an analysis.

B. Western Alkaline Coal Mining Subcategory

Only a small percentage of potentially affected western coal mines discharge to permanent or perennial water bodies. Information about receiving waters is available for 39 of the existing surface coal mines affected by this rule, and 30 of these discharge to intermittent or ephemeral creeks, washes, or arroyos. Only two of these mines list a permanent water body as the primary receiving water. It is therefore difficult to describe the benefits of the Western Alkaline Coal Mining Subcategory in terms of the use designations referenced in the section 101(a) goals of the Clean Water Act.

The environmental conditions and naturally high sediment yields in arid and semiarid coal regions were discussed in Section IV of the proposal. The potential impacts of the predominant use of sedimentation ponds to control settleable solids in these regions include reduced sediment loads to natural drainage features, reduced downstream flood peaks and runoff volumes, and downstream channel bed and bank changes. The environmental and water quality effects of these hydrologic impacts include: (1) Reducing ground water recharge, (2)

shrinking biological communities consisting of and reliant upon riparian and hydrophytic vegetation, (3) degrading downstream channel beds by cleaner waters, resulting from retention of water and sediment runoff, and (4) accelerating erosion. Because of the depletion of runoff associated with such ponds, the potential impact to endangered fish species exists in some watersheds in the West. Therefore, construction of sedimentation ponds in Utah, Colorado or Southern Wyoming that results in an additional water depletion to the upper Colorado or Platte River system triggers formal Section 7 Endangered Species Act consultation with the U.S. Fish and Wildlife Service.

Site-specific alternative sediment control plans incorporating BMPs designed and implemented to control sediment and erosion have the potential to provide both land and water-related benefits. Land-related benefits include decreased surface area disturbance, increased soil conservation, and improved vegetation. Surface disturbance is estimated to decrease by approximately 600 acres per year across all existing potentially affected surface mine sites in the western region. Vegetative cover may increase by five percent when BMPs are used.

EPA was only able to monetize land-related benefits associated with decreased surface area disturbance. Hunting benefits from increased availability of undisturbed open space were estimated to be between $0.37 and $2.46 per acre per year based on Feather et al. (1999) and Scott (Scott, M., G.R. Bilyard, S.O. Link, C.A. Ulibarri, H. Westerdahl, P.F. Ricci, and H.E. Seely. 1998. Valuation of Ecological Resources and Functions. *Environmental Management, Vol. 22, No 1:49–68*). Annual land-related benefits of the subcategory range from $2,000 to $13,000 per year, based on the value of enhanced hunting opportunities. However, this estimate does not account for a number of benefit categories, including nonuse ecological benefits that may account for the major portion of land-related benefits in relatively unpopulated areas such as those affected by this rule.

Water-related benefits include improved hydrologic and fluvial stability in the watersheds affected by western mining operations. These benefits will be site-specific and depend upon the nature of environmental quality changes; the current in-stream water uses, if any, and; the population expected to benefit from increased water quantity. EPA estimated water-related benefits using the estimated mean ''willingness to pay'' (WTP) values for preservation of perennial stream flows adequate to support abundant stream side plants, animals and fish from Crandall et al. (1992, *Valuing Riparian Areas: A Southwestern Case Study*). The WTP value is applied to water-based recreation consumers residing in counties affected by western mining operations discharging to, or affecting, water bodies with perennial flow. EPA identified seven perennial streams located in six counties that are likely to be affected by today's rule. The estimated monetary value of recreational water-related benefits for these streams ranges from $25,000 to $488,000. As noted above, EPA estimates that nonuse benefits are equal to one-half of the water-related recreational benefits, or $12,500 to $244,000 per year.

Total estimated annualized benefits for the subcategory range from $39,500 to $745,000. This estimate does not include benefit categories that EPA was unable to quantify and/or monetize, which include increased vegetative cover and some additional recreational and nonuse benefits associated with western alkaline coal mine reclamation areas. A more detailed discussion of the benefits analysis is contained in the EA.

IX. Economic Analysis

A. Introduction, Overview, and Sources of Data

This section presents EPA's estimates of the economic impacts attributed to the final regulation. The economic impacts are evaluated for each subcategory for BPT, BCT, BAT, and NSPS as applicable. A description of the regulatory requirements for each subcategory is given in Section V of today's document. EPA's detailed economic impact assessment can be found in *Economic and Environmental Impact Analysis of Final Effluent Limitations Guidelines and Standards for the Coal Mining Industry: Remining and Western Alkaline Subcategories* (referred to as the ''EA''). Additional information can be found in *Coal Remining and Western Alkaline Mining: Economic and Environmental Profile,* which EPA prepared in support of the proposed rulemaking.

This section of today's document describes the segment of the coal industry that would be impacted by the final rule (*i.e.,* the number of firms and number of mines that would incur costs or realize savings under the final rule), the financial condition of the potentially affected firms, the aggregate cost or cost savings to that segment, and the economic impacts attributed to the final rule. The section also discusses impacts on small entities and presents a cost-benefit analysis. This discussion will form the basis for EPA's findings on regulatory flexibility, presented in Section X.B. All costs are reported in 1998 dollars unless otherwise noted.

EPA developed this regulation using an expedited rulemaking procedure. Therefore, EPA's economic analysis relied on industry profile information voluntarily provided by stakeholders, on data compiled from individual mining permits, and on data from publicly available sources. For the Coal Remining Subcategory, EPA obtained information on abandoned mine lands from the Abandoned Mine Lands Information System (AMLIS) maintained by the Office of Surface Mining (Record Section 3.5.2), the National Abandoned Lands Inventory System (NALIS) database maintained by the Pennsylvania Department of Environmental Protection (Record Section 3.5.5), and a survey of States conducted by the Interstate Mining Compact Commission (Record Section 3.2.2). For the Western Alkaline Coal Mining Subcategory, EPA relied on industry profile data developed and submitted to EPA by the Western Coal Mining Work Group as described in Section V of the proposal. Specifically, the work group provided data on coal mine operators, mine locations, annual production, reclamation permit numbers, acres of land reclaimed, and reclamation bond amounts. This information is included in Section 3.3 of the Record.

Data on the coal industry as a whole, including coal production, employment, and prices, as well as information on individual western alkaline underground mines, were obtained from various Energy Information Administration sources, including the 1997 *Coal Industry Annual,* the 1998 *Annual Energy Outlook,* and the 1992 *Census of Mineral Industries.* EPA used the Security and Exchange Commission's Edgar database, which provides access to various filings by publicly held firms, such as 8Ks and 10Ks, for financial data and information on corporate structures. EPA also used a database maintained by Dun & Bradstreet, which provides estimates of employment and revenue for many privately held firms, and obtained industry financial performance data from Leo Troy's *Almanac of Business and Industrial Financial Ratios.*

B. Method for Estimating Compliance Costs

The costs and savings of the final regulation are associated with BMP

implementation, baseline monitoring, and performance monitoring. For each subcategory, EPA estimated economic baseline conditions based on existing State and Federal regulations and current industry practices. For remining, EPA assumed as economic baseline conditions remining under a Rahall permit, pursuant to section 301(p).

1. Coal Remining Subcategory

As discussed in the proposal, EPA projected costs for each remining site by calculating the cost of monitoring requirements for determining baseline, the cost of potential increases in reclamation permit numbers, acres of land reclaimed, and reclamation bond amounts. This information is included in Section 3.3 of the Record.

Data on the coal industry as a whole, including coal production, employment, and prices, as well as information on individual western alkaline underground mines, were obtained from various Energy Information Administration sources, including the 1997 *Coal Industry Annual,* the 1998 *Annual Energy Outlook,* and the 1992 *Census of Mineral Industries.* EPA used the Security and Exchange Commission's Edgar database, which provides access to various filings by publicly held firms, such as 8Ks and 10Ks, for financial data and information on corporate structures. EPA also used a database maintained by Dun & Bradstreet, which provides estimates of employment and revenue for many privately held firms, and obtained industry financial performance data from Leo Troy's *Almanac of Business and Industrial Financial Ratios.*

B. Method for Estimating Compliance Costs

The costs and savings of the final regulation are associated with BMP implementation, baseline monitoring, and performance monitoring. For each subcategory, EPA estimated economic baseline conditions based on existing State and Federal regulations and current industry practices. For remining, EPA assumed as economic baseline conditions remining under a Rahall permit, pursuant to section 301(p).

1. Coal Remining Subcategory

As discussed in the proposal, EPA projected costs for each remining site by calculating the cost of monitoring requirements for determining baseline, the cost of potential increases in compliance monitoring requirements, and the potential costs associated with implementing the required pollution abatement plan. To assess the increased baseline determination and monitoring requirements of the rule, EPA evaluated current State requirements for operations permitted under the Rahall provision and calculated the costs under this final regulation that exceed the current State requirements. Current State sample collection requirements for determining and monitoring baseline are included in the Record at Section 3.4.

Although EPA estimated that the Coal Remining Subcategory would be applicable to 64 to 91 remining sites and 3,810 to 5,400 acres annually, EPA projects that fewer sites would realize costs or benefits from this proposal. As noted throughout the proposal, the Commonwealth of Pennsylvania has an advanced remining program and EPA does not believe that the rule will have a measurable impact on Pennsylvania's remining activities. Therefore, EPA did not include Pennsylvania's remining sites in the estimation of costs or benefits. EPA's cost and benefit analysis were calculated for a total of 43 to 61 sites representing 3,100 to 4,400 permitted acres each year. EPA estimates that approximately 1,800 to 2,500 of these acres would actually be reclaimed each year. Table IX. B.1 shows the various estimates EPA used in the estimation of costs and benefits (these are the same estimates used in the proposal).

TABLE IX. B.1: ANNUAL ESTIMATES OF AFFECTED REMINING SITES USED IN THE ECONOMIC ANALYSES

Additional sites permitted	Number of sites	Acres	Used in analysis of
All types, all States (initial estimate)	64–91	3,812–5,401	
All types, excluding PA	43–61	3,111–4,407	Monitoring costs for selected States; NPDES permitting authority costs.
10% of surface & underground sites only (no coal refuse piles), excluding PA.	3.9–5.6	309–438	Costs of additional BMPs.
Additional acres reclaimed: (57% of acres permitted, all types excluding PA).	.....	1,773–2,512	Benefits from recreational use of reclaimed land.
Additional acres reclaimed expected to have significant decreases in AMD pollutant loads (37.6–44.4% of additional reclaimed acres).	.....	667–1,115	Benefits from recreational use of improved water bodies; Aesthetic improvements in water bodies; Non-use benefits.

2. Western Alkaline Coal Mining Subcategory

EPA's *Coal Remining and Western Alkaline Mining: Economic and Environmental Profile* prepared for proposal provides profile information on the 47 surface coal mines and 24 underground coal mines initially believed to be in scope of the subcategory. As discussed in the proposal, EPA determined that one of the surface mines profiled was already in the final reclamation stage and would not be affected by the rule. EPA also determined that any savings to underground producers were likely to be small given the limited acreage and lack of complexity associated with these reclamation areas, and did not calculate these benefits. The remainder of this section considers only the 46 active existing surface mines in its discussion.

In the proposal, the only incremental cost attributed to the subcategory was associated with the watershed modeling requirements. Although information provided by OSMRE during the comment period (Record Section 7.2) indicates that all coal mine operators already perform modeling (to support their SMCRA permit applications) that is sufficient for purposes of this rulemaking, EPA has chosen to maintain the proposed costing approach that conservatively allows for some additional modeling costs due to this regulation.

C. Costs and Cost Savings of the Final Rule

1. Coal Remining Subcategory

Under the final rule, EPA is requiring operators to conduct one year of monthly sampling to determine the baseline pollutant levels for net acidity, iron (total), TSS, and manganese (total) (see part 434 Appendix B). Although most States with remining activities

have similar requirements, remining sites in Alabama and Kentucky will be required to add six samples annually. EPA did not have data for Illinois, Indiana, or Tennessee because the remining operations that occur in these States do not incorporate Rahall provisions for pre-existing discharges. EPA has conservatively assumed sample collection costs for 12 additional samples annually for these States. Information representing current state sampling requirements is included in the Record at Section 5.

EPA has generated compliance costs based on monthly monitoring. Most States already have similar requirements, with the exception of Ohio, which currently requires quarterly modeling. Again, EPA did not have data for Illinois, Indiana, or Tennessee because these States do not incorporate Rahall provisions in their remining permits. For these States, EPA has conservatively assumed that an additional 12 compliance monitoring samples per year would be required for five years.

Because each remining site will typically have more than one pre-existing discharge, EPA reviewed Pennsylvania remining sites to estimate the average number of pre-existing discharges per site. EPA used this calculated average of four pre-existing discharges per site for estimating baseline determination and compliance monitoring costs (Record Section 3.3.1). Additionally, EPA assumed that remining operators would have to purchase and install flow weirs to comply with the baseline monitoring requirements in the States that do not currently incorporate Rahall provisions in their remining permits. These assumptions result in an upper-bound estimate of additional monitoring costs for the 43 to 61 potentially affected sites per year.

EPA estimates the total annual incremental monitoring costs to be in the range of $133,500 to $193,500. Of this, between $83,000 and $120,000 is associated with incremental baseline monitoring requirements and between $50,500 and $73,500 results from incremental compliance monitoring during the five-year mining period. Detailed assumptions and calculations are presented in the EA.

In addition to baseline determination and compliance monitoring, remining operators must develop and implement a site-specific pollution abatement plan for each remining site. In many cases, EPA believes that the requirements for the pollution abatement plan will be satisfied by an approved SMCRA plan. However, EPA recognizes that some operators may be required to implement additional or more intensive BMPs under the rule beyond what is included in a SMCRA-approved pollution abatement plan.

EPA developed a general estimate of the potential costs of additional BMPs based on review of the existing remining permits contained in the Coal Remining Database (Record Section 3.5.1) , and on information provided in the *Coal Remining BMP Guidance Manual.* EPA determined that the most likely additional BMP that NPDES permit writers might require would be a one-time increase in the amount of alkaline material used as a soil amendment to prevent or ameliorate the formation of acid mine drainage. EPA assumed that an average mine facility requiring additional BMPs would need to increase its alkaline addition by a rate of 50 to 100 tons per acre to meet the additional NPDES permit review requirements. EPA estimated an average cost for alkaline addition of $12.90/ton, and assumed that 10 percent of surface and underground remining sites would be required to incur these additional BMP costs. Because the typical BMP for coal refuse piles is simply removal of the pile, no incremental BMP costs would be incurred for these sites. Based on EPA's estimate that between 309 and 438 acres could be required to implement additional or more intensive BMPs each year, the estimated annual cost of additional BMP requirements would range from $199,500 to $565,000.

Based on the above assumptions, the total estimated incremental costs associated with the final rule range from $333,000 to $758,500 per year for the Coal Remining Subcategory. These costs are based on EPA's estimates of what is likely to happen in the future, and they would be incurred by new remining operations. Table IX. C.1 summarizes the incremental costs associated with the subcategory. These are the same estimates presented in the proposal.

TABLE IX. C.1.—ANNUAL COSTS FOR THE REMINING SUBCATEGORY
[1998$]

Monitoring Costs	$133,500–$193,500
Additional BMPs	$199,500–$565,000
Total Compliance Costs	*$333,000–$758,500*

2. Western Alkaline Coal Mining Subcategory

The cost impacts of the subcategory will vary, depending on site-specific conditions at each eligible coal mine. However, based on available data and information, EPA believes that the costs of reclamation under today's rule will be less than or equal to reclamation costs for Subpart E for each individual operator, and thus for the subcategory as a whole.

EPA expects that the sediment control plan will consist entirely of materials generated as part of the SMCRA permit application. The SMCRA permit application process requires that a coal mining operator submit an extensive reclamation plan, documentation and analysis to OSMRE or the permitting authority for approval. Based on these requirements, EPA believes that plans developed to comply with SMCRA requirements will fulfill the EPA requirements for sediment control plans. The requirement to use watershed modeling techniques is not inconsistent SMCRA permit application requirements. As discussed in the proposal, EPA believes that none of the coal mine operators will incur incremental modeling costs. However, because modeling requirements for this regulation may differ in some circumstances from SMCRA requirements, EPA has conservatively assumed that each surface mine operator will incur $50,000 in watershed modeling costs in the economic impact analysis. Total incremental modeling costs (annualized at seven percent over ten years) for the 46 surface mines are estimated to be $327,000 based on this assumption.

EPA projects that cost savings for this subcategory would result from lower capital and operating costs associated with implementing the BMP plans, and from an expected reduction in the reclamation bonding period. The cost savings for controls based on BMPs were calculated for three representative model mines differentiated by geographic region: Desert Southwest (DSW), Intermountain (IM), and Northern Plains (NP). The cost models were submitted by the Western Coal

Mining Work Group (WCMWG, 1999a, 2001). The cost models are discussed in detail in the *Development Document for Final Effluent Limitations Guidelines and Standards for the Western Alkaline Coal Mining Subcategory* and are included in the Record at Section 3.3.2. The cost estimates for each model mine relied on data taken from case study mine permit applications, mine records, technical resources and industry experience. The models estimated capital costs (design, construction and removal of ponds and implementation of BMPs) and operating costs (inspection, maintenance, and operation) over the anticipated bonding period.

EPA classified each mine by region within the subcategory (DSW, IM, or NP). Cost savings for reclamation at each mine were calculated by extrapolating the cost savings per disturbed acre calculated for the appropriate model mine. Costs are discounted at a seven percent real rate over a ten-year period. Although individual input data changed with the addition of the two new representative model mine types, EPA's methodology did not change from proposal. The present value of cost savings for the DSW model mine was calculated to be $672,000 ($1,760 per acre). For the IM model mine, the present value of expected cost savings is $199,000 ($522 per acre). Finally, the NP model mine is expected to achieve a present value of cost savings of $235,000 ($617 per acre) under the new subcategory.

EPA used the projected disturbance acreage divided by the remaining mine life to estimate the annual acres reclaimed at each existing mine site. This information was available for 26 mines: two DSW mines, one IM mine, and 23 NP mines. The 20 mines without data available on expected mine life and disturbance acres are located in the NP (18 mines) and IM (two mines) regions. EPA used the average annual acres reclaimed for mines with available data in these two regions (305 acres per year) to estimate reclamation cost savings. For each mine site, annual acres reclaimed were multiplied by the present value of savings per acre for the appropriate regional model mine and totaled. Estimated annual reclamation cost savings total $12.7 million for the 46 producing surface mines in the subcategory, significantly smaller than the estimate for proposed rulemaking of $30.8 million. The decrease in total estimated annual reclamation savings is primarily due to the lower savings per acre at IM and NP mines which comprise the majority of the subcategory. A detailed analysis of this difference as it relates to the additional model mines that account for different geographical features is contained in the EA.

EPA has also calculated cost savings that may result from earlier Phase II bond release. The OSMRE hydrology requirement to release performance bonds at Phase II, requires compliance with the previously applicable 0.5 ml/L effluent standard for SS (30 CFR part 800.40(c)(1)). The Western Coal Mining Work Group, in its draft Mine Modeling and Performance Cost Report (Record Section 3.3.2) estimates that the typical post-mining Phase II bonding period can be ten years or more under the previous effluent guidelines. Reclamation areas must achieve considerable maturity before they are capable of meeting this standard. The BMP-based approach in today's rule uses the inspection of BMP design, construction, operation and maintenance to demonstrate compliance instead of the current sampling and analysis of surface water drainage for reclamation success evaluations. The report estimates that the BMP-based approach would reduce the time it takes reclaimed lands to qualify for Phase II bond release by about five years. 3

EPA used the following assumptions to estimate cost savings due to earlier Phase II bond release: (1) A post-mining Phase II bonding period of ten years under the numeric effluent guidelines and five years under the new subcategory; (2) twenty-five percent of the reported bond amount would be released at the end of Phase II; and (3) surety bonds were used, with annual fees between $3.75 and $5.50 per thousand. Twenty-six mines provided information necessary to calculate associated bond savings. The total estimated savings for these mines range from $0.2 to $0.3 million when annualized at seven percent over the five-year permit period. EPA assumes that the remaining 20 mines for which savings could not be calculated would achieve the average savings per mine ($7,200 to $10,600) resulting in total annualized savings between $0.1 and $0.2 million. Detailed assumptions and calculations are contained in the EA. Projected bond savings for the entire subcategory thus total from $0.3 to $0.5 million. These estimated bond savings are about 2 percent less than the estimated bond savings presented at proposal. The difference in the two estimates is entirely attributable to lower expected disturbance acres per permit period in IM and NP mines.

The estimated net savings in compliance costs associated with the subcategory, considering the savings to mining operations in sediment control and bonding costs, is estimated to be approximately $12.8 million, as shown in Table IX. C.2.

TABLE IX. C.2.—ANNUAL COST SAVINGS FOR THE WESTERN ALKALINE COAL MINING SUBCATEGORY

[$1998]

Modeling Costs	($ 327,000)
Sediment Control Cost Savings	$12,721,000
Earlier Phase 2 Bond Release Savings	$341,900–$501,400
Total Compliance Cost Savings	$12,735,900–$12,895,400

D. Economic Impacts of the Final Rule

1. Economic Impacts for the Coal Remining Subcategory

As discussed in Section V, EPA is promulgating BPT, BCT, BAT, and NSPS that have the same technical basis. EPA believes that the final rule will not impact existing remining permits. For new permits, remining operators will have the ability to choose among potential remining sites, and will only select sites that they believe are economically achievable to remine. Furthermore, any additional BMPs required by the NPDES authority under the final rule will be site-specific. Today's requirements will not create any barriers to entry in coal remining, but instead are specifically designed to encourage new remining operations. Hence, the Agency finds no significant negative impacts to the industry associated with the subcategory.

The implementation of a pollution abatement plan containing BMPs may impose additional costs beyond what is included in a SMCRA-approved pollution abatement plan. At the same time, the profits may increase at remining sites because the new regulations provide an incentive to mine coal from abandoned mine land areas

that may have been avoided in the absence of implementing regulations. The subcategory will also affect the relative profitability of remining different types of sites, with the potential to encourage remining of the sites with the worst environmental impacts. An analysis by the Department of Energy (DOE) of potential remining sites estimated an average coal recovery of between 2,300 and 3,300 tons per acre of remined land (1993, *Coal Remining: Overview and Analysis*). At these coal recovery rates, the estimated steady state annual increase in acres being remined would produce between 7.1 and 14.5 million tons of coal per year. This represents only 1.5 to 3.1 percent of total 1997 Appalachian coal production of 468 million tons. The same DOE report noted that, given the general excess capacity in the coal market, it is likely that coal produced from new remining sites will simply displace coal produced elsewhere, with no net increase in production overall. The Coal Remining Subcategory is therefore not expected to have a significant impact on overall coal production or prices.

2. Economic Impacts for the Western Alkaline Coal Mining Subcategory

As discussed in Section V, EPA is promulgating BPT, BAT, and NSPS limitations that have the same technical basis. EPA concludes that all economic impacts are positive, that compliance will result in a cost savings to the industry, and that the rule is economically achievable. Because reclamation costs under today's rule will be less than or equal to those previously incurred by all individual operators, and thus, to the subcategory as a whole, no facility closures or direct job losses associated with post-compliance closure are expected. However, EPA did estimate potential changes in labor requirements attributable to the rule caused by changes in labor hours associated with the types of erosion and sediment control structures used.

EPA based its estimates of changes in labor requirements on the detailed cost estimates developed for the three model mines submitted by the WCMWG (1999, 2001). Dividing the full time equivalent (FTE) reduction for each model mine by the 10 year project life results in an estimated annual reduction of 0.22 FTE at the DSW model mine, 0.11 FTE at the NP model mine, and 0.09 FTE at the IM model mine. Applying these reductions in FTE to each mine in the appropriate region results in an estimated annual reduction of 5.2 FTEs per year. This represents less than 0.1 percent of the total 1997 coal mine employment (6,862 FTEs) in the western alkaline region States.

The cost savings associated with the subcategory are not expected to have a substantial impact on the industry average cost of mining per ton of coal, and therefore are not expected to have major impacts on coal prices. While the savings are substantial in the aggregate (and for some individual mine operators), on average they represent a small portion of the total value of coal produced from the affected mines. As described in the EA, the overall estimated cost savings are, on average, 3 cents per ton or about 0.4 percent of the value of production. In addition, the value of production reflects the value of coal at the minehead. Transportation costs of coal, especially from the western alkaline region to the Midwestern utilities and other consumers, are significant and the estimated savings as a percent of delivered price will be smaller than 0.4 percent. Thus, as with the Coal Remining Subcategory, the Western Alkaline Coal Mining Subcategory is not expected to result in significant industry-level changes in coal production or prices.

EPA is promulgating NSPS equivalent to the limitations for BPT and BAT for the Western Alkaline Coal Mining Subcategory. In general, EPA believes that new sources will be able to comply at costs that are similar to or less than the costs for existing sources, because new sources can apply control technologies more efficiently than sources that need to retrofit for those technologies. Specifically, to the extent that existing sources have already incurred costs associated with installing sedimentation ponds, new sources would be able to avoid such costs. There is nothing about today's rule that would give existing operators a cost advantage over new mine operators; therefore, NSPS limitations will not present a barrier to entry for new facilities.

E. Additional Impacts

1. Costs to the NPDES Permitting Authority

Additional costs will be incurred by the NPDES permitting authority to review new permit applications and issue revised permits based on the rule. Under the final rule, NPDES permitting authorities will review baseline pollutant levels and pollution abatement plans for the Coal Remining Subcategory and watershed modeling results and sediment control plans for the Western Alkaline Coal Mining Subcategory.

EPA estimates that permit review will require an average of 35 hours of a permit writer's time per site and that permit writers receive an hourly wage of $31.68. Based on these assumptions, total annual costs to the NPDES permitting authorities range from $47,500 to $67,500 for the 43 to 61 additional sites that can be expected to be permitted under the Coal Remining Subcategory. An upper-bound estimate of costs associated with implementing the western subcategory assumes that all 46 existing surface mine permits are renewed. The total incremental annual cost would be $12,500 when annualized over a 5-year permit (using a seven percent discount rate). Total additional permit review costs for the rule are therefore estimated to be between $60,000 and $80,000 per year. A detailed analysis is contained in the EA.

2. Community Impacts

EPA considered whether the rule would significantly alter the competitive position of coal produced in different regions of the country, or lead to growth or reductions in employment in different regions and communities. EPA concluded that the final rule would not have a significant impact on relative coal production in the West versus the East. The annualized cost savings estimates for Western Alkaline surface mines affected by today's regulation average about $0.033 per ton, or only 0.4 percent of the value of coal production from these mines. Data from the Department of Energy indicate that the average cost of rail transportation for coal from western to midwestern States is approximately $0.00912 per ton-mile. Therefore, the potential cost savings that would be realized by this rule in western mines would not affect the price competitiveness of coal because Western Alkaline mines would be able to ship their coal about 4 additional miles while maintaining the same delivered price. The coal from western mines appears to compete directly with eastern coal in about eight States, where the $0.033 savings per ton comprises only 0.13 percent of the average delivered price (the average delivered price of coal was about $25.51 per ton in 1998). Therefore, EPA concluded that the cost savings generated for Western Alkaline Coal Mines as a result of today's rule will have minimal impact on coal production in the West versus the East coal regions.

For the Coal Remining Subcategory, it is likely that production and employment will shift toward eligible abandoned mine lands, but will not to increase national coal production and

employment or affect coal prices significantly overall.

EPA projects that impacts of the Western Alkaline Coal Mine Subcategory on mine employment will also be minor. As discussed above, EPA estimated a reduction in labor requirements of 5.2 FTEs per year by extrapolating from the model mine results for each region. This represents less than 0.1 percent of the total 1997 coal mine employment in the western alkaline region States. The estimated annual 5.2 FTE direct mine job losses would result in an additional 8.7 FTE indirect job losses based on RIMSII regional employment multipliers (U.S. Bureau of Economic Analysis, *Regional Input-Output Modeling Systems, ''RIMSII''*). Therefore, the total impact on employment, direct and indirect, that may result from the Western Alkaline Coal Mining Subcategory is a reduction of approximately 13.9 FTEs per year. This reduction in employment might be offset if lower costs under the subcategory encourage growth in coal mining in the western alkaline region.

3. Foreign Trade Impacts

EPA does not project any foreign trade impacts as a result of the final effluent limitations guidelines and standards. U.S. coal exports consist primarily of Appalachian bituminous coal, especially from West Virginia, Virginia and Kentucky (U.S. DOE/EIA, Coal Data: A Reference; U.S. DOE/EIA Coal Industry Annual 1997). Coal imports to the U.S. are insignificant. Impacts are difficult to predict, since coal exports are determined by economic conditions in foreign markets and changes in the international exchange rate for the U.S. dollar. However, no foreign trade impacts are expected given the relatively small projected increase in production and projected lack of impact on costs of production or prices.

F. Cost Effectiveness Analysis

Cost-effectiveness calculations are used during the development of effluent limitations guidelines and standards to compare the efficiency of regulatory options in removing toxic and non-conventional pollutants. Cost-effectiveness is calculated as the incremental annual cost of a pollution control option per incremental pollutant removal. The results for an option are considered relative to another option or to a benchmark, such as existing treatment. In EPA's cost-effectiveness analysis for effluent guidelines, pollutant removals are measured in toxicity normalized units called ''pounds-equivalent.'' The cost-effectiveness value, therefore, represents the unit cost of removing an additional pound-equivalent of pollutants. In general, the lower the cost-effectiveness value, the more cost-efficient the technology will be in removing pollutants, taking into account their toxicity. While not required by the CWA, cost-effectiveness analysis is a useful tool for evaluating regulatory options for the removal of toxic pollutants.

While cost-effectiveness results are usually reported in the Notice of Final Rulemaking for effluent guidelines, such results are not presented in today's document because of the nature of the two subcategories. For the Coal Remining Subcategory, EPA is unable to predict pollutant reductions that would be achieved at future remining operations. As described in Section V, it is difficult to project the results, in terms of measured improvements in pollutant discharges, that will be produced through the application of any given BMP or group of BMPs at a particular site. EPA is therefore unable to calculate cost-effectiveness. For the Western Alkaline Coal Mining Subcategory, cost-effectiveness was not calculated because there are no incremental costs attributed to the rule.

G. Cost Benefit Analysis

EPA estimated and compared the costs and benefits for each of the subcategories. Both subcategories have the potential to create significant environmental benefits at little or no additional cost to the industry. The monetized annual benefit estimates for the Coal Remining Subcategory ($734,000 to $1,175,500) substantially outweigh the projected annual costs ($380,500 to $826,000).

In addition to the monetized benefits, the increase in remining is projected to result in the removal of some 216,000 to 307,000 feet of highwall each year. As described in the EA, EPA was not able to find reliable data to evaluate the decreased risk of serious injury or death resulting from remining safety improvement. It is clear that AMLs are dangerous sites and that implementation of the Coal Remining Subcategory will result in benefits by making these sites less hazardous. The increase in remining also has the potential to recover an estimated 7.1 to 14.5 million tons of coal per year that might otherwise remain unrecovered, with a value of approximately $188.5 to $385.0 million (based on an average 1997 value per ton of coal in Appalachia of $26.55).

The Western Alkaline Coal Mining Subcategory is projected to result in net cost savings while increasing environmental benefits. The industry compliance cost savings associated with the final rule arise from reduced costs for sediment control and earlier Phase II bond release. Total annual cost savings to society are expected to be approximately $13 million. Annual environmental benefits are valued between $39,500 and $745,000—with the majority of benefits resulting from recreational use of waters with improved water flow. Table IX.G.1 summarizes the total social costs/cost savings and benefits attributed to today's rulemaking.

TABLE IX.G.1.—TOTAL ANNUAL SOCIAL COSTS/(COST SAVINGS) AND BENEFITS OF THE RULE

[$1998]

Social Costs/Cost Savings:	
Total Social Costs—Remining	$380,500–$826,000
Total Social Cost Savings—Western Alkaline	($12,723,500–$12,882,500)
Total Social Cost Savings	($12,343,000–$12,056,500)
Monetized Social Benefits:	
Total Monetized Benefits—Remining	$734,000–$1,175,500
Total Monetized Benefits—Western Alkaline	$39,500–$745,000
Total Monetized Benefits	$773,500–$1,920,500

X. Regulatory Requirements

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735 (October 4, 1993)), the Agency must determine whether the regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a ''significant regulatory action'' under the terms of Executive Order 12866 and is therefore not subject to OMB review.

B. Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA)

The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis for any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business that has 500 or fewer employees (based on SBA size standards); (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impact of today's final rule on small entities, I certify that this action will not have significant economic impact on a substantial number of small entities. In determining whether a rule has significant economic impact on a substantial number of small entities, the impact of concern is any significant *adverse* economic impact on small entities, since the primary purpose of the regulatory flexibility analysis is to identify and address regulatory alternatives ''which minimize any significant economic impact of the rule on small entities.'' 5 U.S.C. 603 and 604. Thus, an agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, or otherwise has a positive economic effect on all of the small entities subject to the rule.

EPA projects that the new subcategory for western alkaline mines results in cost savings for all small surface mine operators. For all small underground mine operators, EPA projects no incremental costs, and the Agency believes that many are likely to experience some cost savings. Section IX of this document discusses the likely cost savings associated with the subcategory in more detail. As described in Section V of this document, the previous regulations at 40 CFR part 434 create a disincentive for remining by imposing limitations on pre-existing discharges for which compliance is cost prohibitive. Despite the statutory authority for exemptions from these limitations provided by the Rahall Amendment, coal mining companies and States remain hesitant to pursue remining without formal EPA guidelines. The remining subcategory provides standardized procedures for developing effluent limits for pre-existing discharges, thereby eliminating the uncertainty involved in interpreting and implementing current Rahall requirements. This subcategory is intended to remove barriers to the permitting of remining sites with pre-existing discharges, and is therefore expected to encourage remining activities by small entities. Thus, we have concluded that today's final rule will relieve regulatory burden for all small entities.

C. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). This rule will be effective February 22, 2002.

D. Paperwork Reduction Act

The Office of Management and Budget (OMB) has approved the information collection requirements contained in this rule under the provisions of the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* and has assigned OMB control number 2040–0239.

Today's rule requires an applicant to submit baseline monitoring and a pollution abatement plan for coal mining operations involved in remediation of abandoned mine lands and the associated acid mine drainage during extraction of remaining coal resources. In addition, today's rule requires an applicant involved in reclamation of coal mining areas in arid regions to submit a sediment control plan for sediment control activities. Information collection is needed to determine whether these plans will achieve the reclamation and environmental protection pursuant to the Surface Mining Control and Reclamation Act and the Clean Water Act. Without this information, Federal and State regulatory authorities cannot review and approve permit application requests. Data collection and reporting requirements associated with these activities are substantively covered by the ''Surface Mining Permit Applications—Minimum Requirements for Reclamation and Operation Plan—30 CFR part 780'' ICR, OMB Control Number 1029–0036. Data collection and reporting requirements from today's rule that may not be included in the 30 CFR part 780 ICR are: some incremental baseline and annual monitoring and some sediment yield modeling.

The initial burden for coal mining and remining sites under the rule is estimated at 1,890 hours and $314,538 for baseline determination monitoring at coal remining sites. The initial burden associated with preparation of a site's pollution abatement plan or sediment control plan is already covered by an applicable SMCRA ICR. The annual burden for coal mining and remining sites under the rule is estimated at 3,024 hours per year and $189,302 per year for

annual monitoring at coal remining sites.

The initial burden for NPDES control authorities is estimated at 9,800 hours and $310,464 for review of SMCRA remining and reclamation plans (which include BMPs) and preparation of the NPDES permit. The annual burden for NPDES control authorities is estimated at 2,340 hours per year and $74,131 per year for review of annual monitoring data at coal remining sites.

For the Coal Remining Subcategory, the reporting burden is estimated to average 15.6 hours per respondent per year ((1,890 hours/3 years + 3,024 hours/year)/234 coal remining sites). This estimate includes time for collecting and submitting baseline and annual monitoring results. For the Western Alkaline Coal Mining Subcategory, there is projected to be no additional reporting burden.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15. EPA is amending the table in 40 CFR part 9 of currently approved ICR control numbers issued by OMB for various regulations to list the information requirements contained in this final rule.

E. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, Section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this final rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local and Tribal governments, in the aggregate, or the private sector in any one year. Although the rule will impose some permit review and approval requirements on regulatory authorities, EPA has determined that this cost burden will be less than $80,000 annually. Accordingly, today's regulation is not subject to the requirements of sections 202 and 205 of UMRA. EPA has determined that this regulation contains no regulatory requirements that might significantly or uniquely affect small governments. Thus, it is not subject to the requirements of Section 203 of the UMRA. The regulation does not establish requirements that apply to small governments.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by Tribal officials in the development of regulatory policies that have tribal implications.'' ''Policies that have tribal implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on one or more Indian Tribes, on the relationship between the Federal government and the Indian Tribes, or on the distribution of power and responsibilities between the Federal government and Indian Tribes.''

This final rule does not have tribal implications. It will not have substantial direct effects on Tribal governments, on the relationship between the Federal government and Indian Tribes, or on the distribution of power and responsibilities between the Federal government and Indian Tribes, as specified in Executive Order 13175. Although EPA has identified sites in the western United States with existing coal mining operations that are located on Tribal lands, EPA projects that this regulation will generate a net cost savings for these mine sites. Thus, Executive Order 13175 does not apply to this rule.

Nevertheless, EPA consulted with representatives of tribal governments. EPA has identified sites in the western United States with existing coal mining operations that are located on Tribal lands. With assistance from its American Indian Environmental Office, EPA has identified five Tribes as having lands in the western U.S. with, or having an interest in, coal mining activities. The Tribes are the Navajo Nation, the Hopi Tribe, the Crow Tribe, the Southern Ute Indian Tribe, and the Northern Cheyenne Tribe. EPA representatives met with Tribal officials from the Navajo Nation during coal mine site visits in New Mexico and Arizona in August 1998 to review environmental conditions and the applicability of the proposed regulation. In December 1999, EPA sent meeting invitations to Tribal Chairmen, Directors of Tribal Environmental Departments, and other representatives of the five Tribes with existing or potential interest in coal mining, and met with Tribal representatives from the Navajo Nation and Hopi Tribes in Albuquerque, NM on December 16, 1999 to consult on the proposed amendments to the existing effluent limitations guidelines, and to discuss plans for involvement at public meetings in western locations. As a result of this consultation, EPA agreed to an initial comment period on the proposal of 90 days. EPA later granted an extension to the comment period of 60 days. EPA provided a copy of the

relevant portions of the Rulemaking Record at the western location identified in the **ADDRESSES** section of this document to be available for Tribal representatives. During the comment period, EPA held public meetings in three locations that were convenient for attendance by Tribal representatives. No significant issues were raised by the Tribes. In response to the proposed rule, EPA received written comments from the Navajo EPA, which indicated general support for the Western Alkaline Coal Mining Subcategory.

G. Executive Order 13132: Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999) requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The rule will not impose substantial costs on States and localities. The rule establishes effluent limitations imposing requirements that apply to coal mining facilities. The rule does not apply directly to States and localities and will only affect State and local governments when they are administering CWA permitting programs. The rule, at most, imposes minimal administrative costs on States that have an authorized NPDES program. (These States must incorporate the new limitations and standards in new and reissued NPDES permits). Thus, Executive Order 13132 does not apply to this rule. Although Executive Order 13132 does not apply to this rule, EPA did consult with representatives of State governments throughout this regulatory development. State authorities raised numerous issues which are discussed in Section XII of this document. In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicited comment on the proposed rule from State and local officials.

H. National Technology Transfer and Advancement Act

As noted in the proposed rule, section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995, Public Law No. 104–113 section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, business practices, etc.) that are developed or adopted by voluntary consensus standard bodies. The NTTAA directs EPA to provide Congress, through the Office of Management and Budget (OMB), explanations when the Agency decides not to use available and applicable voluntary consensus standards.

Today's rule does not establish any technical standards, thus, NTTAA does not apply to this rule. It should be noted, however, that today's rule requires dischargers to monitor for total suspended solids (TSS), settleable solids (SS), manganese, iron, and acidity. Facilities monitoring for these analytes need to use previously-approved technical standards already specified in the tables at 40 CFR 136.3.

I. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The Executive Order ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children; and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. This rule is not subject to Executive Order 13045 because it is neither ''economically significant'' as defined under Executive Order 12866, nor does it concern an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children.

J. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This rule is not subject to Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)) because it is not a significant regulatory action under Executive Order 12866.

XI. Regulatory Implementation

Upon promulgation of these regulations, the effluent limitations for the appropriate subcategory must be applied in all Federal and State NPDES permits issued to affected facilities in the Western Alkaline Coal Mining Subcategory and Coal Remining Subcategory. This section discusses upset and bypass provisions, variances and modifications, and monitoring requirements.

A. Upset and Bypass Provisions

A ''bypass'' is an intentional diversion of waste streams from any portion of a treatment facility. An ''upset'' is an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. EPA's regulations concerning bypasses and upsets are set forth at 40 CFR 122.41(m) and (n), and 40 CFR 403.16 (upset) and 403.17 (bypass).

B. Variances and Modifications

The CWA requires application of the effluent limitations established pursuant to section 301 or the pretreatment standards of section 307 to all direct and indirect dischargers. However, the statute provides for the modification of these national requirements in a limited number of circumstances. Moreover, the Agency has established administrative mechanisms to provide an opportunity for relief from the application of national effluent limitations guidelines and pretreatment standards for categories of existing sources for priority, conventional and non-conventional pollutants.

1. Fundamentally Different Factors Variances

EPA will develop effluent limitations guidelines or standards different from the otherwise applicable requirements if an individual existing discharging facility is fundamentally different with respect to factors considered in establishing the guidelines or standards applicable to the individual facility. Such a modification is known as a

''fundamentally different factors'' (FDF) variance.

Early on, EPA, by regulation, provided for FDF modifications from BPT effluent limitations, BAT limitations for priority and non-conventional pollutants and BCT limitation for conventional pollutants for direct dischargers. FDF variances for priority pollutants were challenged judicially and ultimately sustained by the Supreme Court. (*Chemical Manufacturers Ass'n* v. *NRDC*, 479 U.S. 116 (1985)).

Subsequently, in the Water Quality Act of 1987, Congress added section 301(n) explicitly to authorize modification of the otherwise applicable BAT effluent limitations or categorical pretreatment standards for existing sources if a facility is fundamentally different with respect to the factors specified in section 304 (other than costs) from those considered by EPA in establishing the effluent limitations or pretreatment standards. Section 301(n) also defined the conditions under which EPA may establish alternative requirements. Under section 301(n), an application for approval of an FDF variance must be based solely on (1) information submitted during the rulemaking raising the factors that are fundamentally different or (2) information the applicant did not have an opportunity to submit. The alternate limitation or standard must be no less stringent than justified by the difference and must not result in markedly more adverse non-water quality environmental impacts than the national limitation or standard.

EPA regulations at 40 CFR part 125, subpart D, authorizing the Regional Administrators to establish alternative guidelines and standards, further detail the substantive criteria used to evaluate FDF variance requests for existing direct dischargers. Thus, 40 CFR 125.31(d) identifies six factors (*e.g.*, volume of process wastewater, age and size of a discharger's facility) that may be considered in determining if a facility is fundamentally different. The Agency must determine whether, on the basis of one or more of these factors, the facility in question is fundamentally different from the facilities and factors considered by EPA in developing the nationally applicable effluent guidelines. The regulation also lists four other factors (*e.g.*, infeasibility of installation within the time allowed or a discharger's ability to pay) that may not provide a basis for an FDF variance. In addition, under 40 CFR 125.31(b)(3), a request for limitations less stringent than the national limitation may be approved only if compliance with the national limitations would result in either (a) a removal cost wholly out of proportion to the removal cost considered during development of the national limitations, or (b) a non-water quality environmental impact (including energy requirements) fundamentally more adverse than the impact considered during development of the national limits. EPA regulations provide for an FDF variance for existing indirect dischargers at 40 CFR 403.13. The conditions for approval of a request to modify applicable pretreatment standards and factors considered are the same as those for direct dischargers.

The legislative history of section 301(n) underscores the necessity for the FDF variance applicant to establish eligibility for the variance. EPA's regulations at 40 CFR 125.32(b)(1) are explicit in imposing this burden upon the applicant. The applicant must show that the factors relating to the discharge controlled by the applicant's NPDES permit which are claimed to be fundamentally different are, in fact, fundamentally different from those factors considered by EPA in establishing the applicable guidelines. FDF variance requests with all supporting information and data must be received by the permitting authority within 180 days of publication of the final effluent limitations guideline. The specific regulations covering the requirements for and the administration of FDF variances are found at 40 CFR 122.21(m)(1), and 40 CFR 125 Subpart D. FDF variances are not available for new sources.

2. Permit Modifications

Even after EPA (or an authorized State) has issued a final NPDES permit to a direct discharger, the permit may still be modified under certain conditions. (When a permit modification is under consideration, however, all other permit conditions remain in effect.) A permit modification may be triggered in several circumstances. These could include a regulatory inspection or information submitted by the permittee that reveals the need for modification. There are two classifications of modifications: major and minor. From a procedural standpoint, they differ primarily with respect to the public notice requirements. Major modifications require public notice while minor modifications do not. Virtually any modification that results in less stringent conditions is treated as a major modification, with provisions for public notice and comment. Conditions that would necessitate a major modification of a permit are described in 40 CFR 122.62. Minor modifications are generally non-substantive changes. The conditions for minor modifications are described in 40 CFR 122.63.

C. Relationship of Effluent Limitations to NPDES Permits and Monitoring Requirements

Effluent limitations act as a primary mechanism to control the discharges of pollutants to waters of the United States. These limitations are applied to individual facilities through NPDES permits issued by EPA or authorized States under section 402 of the Act.

The Agency has developed the limitations for this regulation to cover the discharge of pollutants for these industrial categories. In specific cases, the NPDES permitting authority may elect to establish technology-based permit limits for pollutants not covered by this regulation. In addition, if State water quality standards or other provisions of State or Federal law require limits on pollutants not covered by this regulation (or require more stringent limits on covered pollutants), the permitting authority must apply those limitations.

All mining operations subject to today's regulation must also comply with SMCRA requirements. EPA has worked extensively with OSMRE in the preparation of this rule in order to ensure that today's requirements are consistent with OSMRE requirements. EPA believes that, in most cases, CWA requirements for a pollution abatement plan and sediment control plan will be satisfied by the requirements contained in an approved SMCRA permit.

EPA believes that compliance determinations under today's rule will encourage coordination and cooperation between SMCRA and NPDES authorities. EPA believes that, in some cases, the NPDES permit authority may not have the mining expertise or resources to adequately review pollution abatement plans, sediment control plans and associated modeling efforts and recognizes that the requirements for permit application provided under SMCRA, section 507, reclamation plans under SMCRA section 508, and inspections and monitoring provided under SMCRA section 517 are, in most cases, substantial and adequate. EPA envisions that approval by OSMRE or the delegated authority on the modeling effort and sediment control plan will often be sufficient review to satisfy the NPDES permitting authority. The coordination of regulatory agencies may require a memorandum of understanding to be developed between regulatory agencies or other

mechanisms in order to implement alternative sediment control standards efficiently.

D. Analytical Methods

Section 304(h) of the Clean Water Act directs EPA to promulgate guidelines establishing test methods for the analysis of pollutants. Facilities use these methods to determine the presence and concentration of pollutants in wastewater, and EPA, State and local control authorities use them for compliance monitoring and for filing applications for the NPDES program under 40 CFR 122.21, 122.41, 122.44 and 123.25.

The final rule requires facilities in the Coal Remining Subcategory to monitor for net acidity, TSS, SS, iron, and manganese. EPA has previously approved test methods for all these pollutants at 40 CFR 136.3.

XII. Summary of EPA Responses to Significant Comments on Proposal

The following section summarizes significant comments received on the proposed rule and the NODA, and a summary of EPA's response. Thirty-two stakeholders provided comments on the April 11, 2000 proposal addressing over 40 separate issues, and ten stakeholders provided comment on the NODA.

The complete comment summary and response document can be found in the public record for this final rule (DCN 3056). In selecting comments and responses for summary, the Agency selected those major and controversial issues that received considerable comment. Alternatively, comments and responses on other less controversial issues and issues where EPA essentially agrees with the commenters are not included below.

A. Coal Remining Subcategory

Comment: The implications of the language concerning bond release for remining operations could be debilitating if the language is interpreted to mean that any time passive treatment is incorporated into the pollution abatement plan, the operator will be perpetually liable for the operation and maintenance of the treatment facility. The ultimate result could be that the operator is never able to achieve complete bond release due to the existence of a passive treatment system.

Response: EPA understands the concern regarding perpetual liability for remining operations implementing passive treatment operations. EPA clarifies that for those remining operations that include passive treatment as an inherent portion of an approved Pollution Abatement Plan, the passive treatment operation should be considered a BMP and treated as part of implementing the Pollution Abatement Plan. See section V.A.4 of this document.

Comment: The requirements for baseline data collection for remining sites with pre-existing discharges should be no more stringent than baseline data collection requirements for permit applications that do not include remining. If existing water quality and seasonal variation requirements are more stringent, burdensome, and expensive for remining applicants, this will present another barrier for remining.

Response: There are no baseline data collection requirement for NPDES permit applications. However, EPA is aware that baseline data collection requirements for coal mining permits under SMCRA that do not include remining may be less stringent than those for remining permits. For mining permits that do not include remining operations, baseline information is typically collected from undisturbed areas and is used for a number of purposes. These purposes include: indicating overburden quality; predicting post-mining water quality; establishing background conditions for affected and unaffected groundwater (for permit decision making); providing background data for water supplies; and establishing circumstances for which a mining operation resulted in environmental improvement or degradation. The baseline data collected for these mining permits is not used to establish effluent limitations, and the collection of baseline data is not required for establishing effluent limitations.

Part 434 does not require baseline data collection for mines not involved in remining. The differing baseline sampling requirements reflect the different purpose and use of the baseline data in each circumstance. In the case of remining, baseline pollutant discharge samples are collected for the establishment of baseline conditions which are then used to establish site-specific effluent limitations for the pre-existing discharge. The effluent limitations based on this data collection are incorporated into the NPDES permit. Therefore, EPA believes that an adequate baseline sampling program must be used in order to accurately characterize baseline conditions that are used to establish effluent limitations. Therefore, EPA believes that the baseline data collection for Coal Remining Subcategory, while more stringent than that associated with non-remining permits, is necessary due to the site-specific nature of the Coal Remining Subcategory NPDES effluent limitations.

Comment: Where incentives are offered to encourage remining, those incentives should not include a lowering of environmental protection standards, but rather should focus on financial incentives that encourage remining without compromising the post-remining environmental quality of the area. Predictably, the resulting proposed rule is skewed towards assisting coal operators to cut costs in remining previously disturbed areas, while sacrificing the ability to achieve meaningful improvements in baseline conditions from previously mined areas.

Response: EPA agrees that coal operators should be provided financial incentives that encourage remining without compromising the post-remining environmental water quality. However, EPA does not agree that it has lowered environmental standards in order to achieve this goal. The issue with AML is that there is no responsible party for cleaning abandoned mine land, and discharges from abandoned mine lands continue to be a very serious problem affecting many areas of the Appalachian coal region. As noted in the proposal, there are over 1.1 million acres of abandoned coal mine lands in the United States which have produced over 9,709 miles of streams polluted by acid mine drainage.

Under SMCRA, a fund was established to pay for damage associated with abandoned mine lands. Expenditures from this fund are authorized through the regular congressional budgetary and appropriations process. Additionally, the funds are prioritized to fix problems that pose immediate health and safety risks, such as highwalls and open mine shafts. In 1999, $2.5 billion of the $3.6 billion of high priority coal related AML problems in OSMRE's AML inventory had yet to be funded and reclaimed. Due to the vast expense of reclaiming all AML, EPA believes that remining is a timely and cost-efficient means of reclaiming AML.

EPA does not agree that the remining regulations are sacrificing the ability to achieve meaningful environmental improvements. As noted in comments submitted by the Commonwealth of Pennsylvania, over 100 sites containing over 200 pollution discharges and 34,000 acres have been successfully reclaimed as a result of remining. This has been done at no expense to the taxpayer and has resulted in the reduction of discharge of acid loading by 15,918 pounds/day. A detailed

assessment of the water quality improvements and BMP implementation at these sites was provided in EPA's proposed rulemaking record and in Chapter 6 of EPA's *Coal Remining BMP Guidance Manual.*

Comment: The rule should include provision for BMP-based permit requirements in lieu of specific loading-based effluent limits for remining sites because remining is virtually certain to result in improvement.

Response: The goal of this rule is to improve water quality. EPA agrees that in most cases, remining operations will result in improved water quality. In fact, EPA's record on the rule contains data that overwhelmingly demonstrate improvement in water quality and environmental conditions resulting from remining operations. At these remining operations, most pre-existing discharges demonstrated a significant improvement in water quality. However, numerous pre-existing discharges demonstrated no change in water quality, and a small number demonstrated a decrease in water quality. At these sites, other non-water quality benefits may have been achieved. Therefore, EPA concluded that implementing BMPs is not a guarantee of success, and EPA concluded that numeric monitoring is necessary in most cases to ensure that a mine operator is not contributing additional quantities of pollutant loads to the nation's waterways. While EPA believes that there is a high likelihood of improvement in pre-existing discharges due to remining, EPA also acknowledges that improper or inadequate BMPs may increase pollutant loadings. EPA concluded that it is necessary for mine operators to adequately demonstrate that they are not increasing pollutant loadings over baseline, as required by the Rahall amendment.

EPA does not believe that monitoring poses an undue burden on the mine operator. EPA notes that monitoring costs are less than $3000 per year per discharge. If BMPs are appropriately incorporated into the plan and implemented accordingly, then the mine operator should be able to comply with the baseline numeric limits established in this regulation without incurring additional cost. Therefore, EPA has concluded that numeric limits, in addition to a pollution abatement plan, is the Best Available Technology for the Coal Remining Subcategory.

EPA has included a provision in the final rule for BMP-based effluent limitations where numeric limitations are infeasible. EPA believes this provision will allow improvement of AML that otherwise would continue to remain unreclaimed. EPA has determined that in certain specific cases, it is infeasible to calculate and monitor baseline pollutant levels in pre-existing discharges.

Comment: Under the current language in the law the States have some flexibility on how they would approach their respective remining programs. This enables a State program to develop rules and policies in concert with their State water quality authority that work for their specific region. A one-size-fits-all approach as contained in this rule does not necessarily work for all of the States' mining areas.

Response: In this final rule, EPA is balancing the need to provide guidance and clarification of the provisions of the Rahall Amendment with a recognition of the authority and flexibility given States to allow alternative requirements for remining permits. EPA is specifying the minimum requirements necessary for determining baseline. The permit authority then has the discretion to determine appropriate remining standards (which can be set at baseline or better) and site-specific BMPs. EPA is providing guidance on appropriate BMPs, but is not specifying the actual selection of BMPs. Thus, the final rule assumes that the coal remining expertise available from State and regional agencies will be used heavily in the review and approval of appropriate BMPs for each remining site's Pollution Abatement Plan.

Comment: A twelve-month sampling program to determine baseline pollution loads is a significant disincentive to remining due to the cost and time involved.

Response: The comment asserts that the monitoring requirements of a minimum of 12 monthly samples is too restrictive and will serve as disincentives to remining. EPA disagrees with this assertion. EPA has considered the findings by R.D. Zande & Associates and the Ohio Coal Development Office, which included responses to a questionnaire given to mine operators. While the responses did identify the number of samples as a disincentive to remining, responses also expressed concern over ''the risk operators take that the information they are getting from the sampling will not give an accurate picture of how the remining will affect the effluent for the NPDES discharge,'' which is precisely the reason EPA has established the requirement for at least 12 representative baseline samples. Although EPA agrees there are likely to be some circumstances where the requirements for baseline sample collection may discourage remining, there are clearly other disincentives for remining that this rule will reduce. Namely, this regulation will establish formal EPA procedures for remining procedures based on standardized statistical procedures and the use of BMPs.

Moreover, EPA does not agree with the commenter's assertion that the requirement for 12 monthly baseline samples is a significant deterrent to obtaining a mining permit because this would cause an unreasonable delay in getting a permit. This has not been the experience of Ohio's neighbor, Pennsylvania, which has required 12 monthly samples since 1986. As explained in one of the documents supporting the proposed rule (*i.e.,* Coal Remining Statistical Support Document (EPA 821–R–00–011)), since 1985, PADEP has issued approximately 300 remining permits, with a 98 percent success rate. This document defines a successful remining site as one that has been mined without incurring treatment liability as the result of exceeding the baseline pollution load of the pre-existing discharges. The comment does not explain why the requirement for 12 monthly samples would act as disincentives in Ohio when Pennsylvania has demonstrated its success.

EPA further notes that planning, collecting data, completing the paperwork, and processing SMRCA mine permits is a time-consuming process of about a year during which the baseline samples can be collected. In particular, meeting the SMCRA requirements before preparing and submitting a permit application will require several months, during which a mine operator has the opportunity to begin baseline sampling. For example, the PA DEP requires at least three samples to have been collected prior to submission of a remining permit application. In theory, this can be accomplished within 60 days (by sampling on days 1, 30 and 60). EPA also believes, optimistically, that it will take at least 2 months for an operator to prepare a permit application due to the necessity of complying with SMCRA, and a minimum of 6 months for permit review and approval. Thus, if the permit were approved in an unusually short time, a mine operator would need to obtain an additional 2 or 3 monthly samples in order to accumulate 12 months of baseline data, and more likely, a 12-month sampling program could be completed before permit approval. Thus, because of the SMCRA requirements and Pennsylvania's success, EPA does not believe that requiring 12 monthly samples places an

undue burden on mine operators, and EPA believes it is more likely that a mine operator will be able to obtain 12 samples during the permitting process if the operator identifies and plans for baseline sampling early in the remining process.

In addition, EPA notes that the baseline sample collection requirements of this rule protect both the remining operator and the environment. If baseline characterization of pre-existing pollutant discharges is inadequate (for example, if it is based on too few samples), there is a chance that an operator could consistently face noncompliance by discharging pollutant loadings above an underestimated baseline that did not adequately incorporate natural variation in pollutant loading. In addition, there is the chance that environmental improvement could be jeopardized by allowing for pollutant loading discharges at high levels that still fall below an overestimated baseline.

Finally, as discussed in the Coal Remining Statistical Support Document (EPA–821–B–01–011), and in Statistical Analysis of Abandoned Mine Drainage in the Assessment of Pollution Load (EPA–821–B–01–014), EPA believes that 12 monthly samples are the minimum to derive a statistically sound estimate of baseline.

Comment: EPA should consider expanding the rule to allow for alternative remining limits for other parameters, including suspended solids and settleable solids. The same rationale justifying alternative limits for acid mine drainage should apply to all existing water quality problems from abandoned mine lands. For instance, in Virginia, the State's 1998 303(d) list identifies fifteen streams in the coalfields impaired by resource extraction. Only two of those streams are identified as impaired by AMD and only one by active coal mining. The majority of the impaired streams have been impacted by discharges from abandoned underground mines or drainage from unreclaimed surface mines containing high levels of dissolved, settleable, and suspended solids. Coal companies will continue to be discouraged from assuming these significant drainage and discharge liabilities without some alternative effluent limitations.

Response: Based on the baseline conditions of sediment present at some AML, EPA believes that the benefits of remining may be severely limited if EPA does not address sediment in the final rule. In accordance with the intent of the Rahall Amendment, which seeks to encourage remining while ensuring that the remining activity will potentially improve and reclaim AML, and due to comments received on the NODA, EPA is establishing alternative limits for sediment in pre-existing discharges.

Comment: EPA does not have the authority to promulgate alternative standards for sediment because this is inconsistent with the Rahall amendment.

Response: The authority for today's rule is section 304(b) of the Clean Water Act, which requires the Agency to adopt and revise regulations providing guidelines for effluent limitations as appropriate. The Rahall Amendment, section 301(p) of the Act, provided specific authority for modified, less stringent effluent limitations for specified coal remining operations. Because the effluent limitations guidelines for the Coal Mining Point Source Category did not provide any different requirements for coal remining operations, the Rahall Amendment provided the only basis for issuing permits containing modified requirements to remining operations. In promulgating today's regulations adopting effluent limitation guidelines for the coal remining subcategory, EPA is adopting requirements that are consistent with, but not necessarily identical to, the provisions of the Rahall Amendment. The applicability of these effluent limitation guidelines to remining operations in AML abandoned after the enactment of SMCRA is within EPA's discretion under section 304(b).

B. Western Alkaline Coal Mining Subcategory

Comment: EPA documents related to the rule assume that the proposed Western Alkaline Coal Mining Subcategory would have no ''significant impacts on relative coal production in the West versus the East'' but fail to detail the basis for this assumption.

Response: EPA further examined the potential impact of the proposed guidelines on the competitiveness of coal production in the East relative to coal production in the West. This analysis supported EPA's conclusions that the rule would have no significant impact on competitiveness. The revised estimated cost savings comprise an average of about $0.033 saved per ton of coal produced in western alkaline surface mines or about 0.4 percent of the value of coal production. This relatively small percentage decrease in delivered price, combined with the effect of transportation costs, suggest that the impact of the savings on the relative competitiveness of eastern and western coal should be very small. A detailed analysis of this issue is presented in the economic analysis, included in the rulemaking record.

Comment: The commenter believes that if modeling can demonstrate compliance it does not matter where the runoff originates. The commenter supports the expansion of the Western Alkaline Coal Mining Subcategory to include drainage from active mining areas.

Response: The Agency has considered the use of alternative sediment controls for non-process areas in addition to reclamation areas. EPA determined that alternative sediment controls were appropriate for reclamation areas for several reasons. These reasons included that sediment is a natural component of runoff in arid watersheds, that sediment is typically the only parameter of concern in runoff from western alkaline reclamation areas, that BMPs are proven to be effective at controlling sediment, and that computer modeling procedures are able to accurately predict sediment runoff conditions. Due to comments received in support of expanding the area of alternative sediment controls, EPA evaluated additional non-process areas under the same set of circumstances. Based on this rationale, in addition to comments and data received on the proposal, EPA determined that similar circumstances exist for runoff from some non-process mine areas including brushing and grubbing areas, topsoil stockpiling areas, and regraded areas. In each of these areas, sediment is typically the only parameter of concern, BMPs can be implemented to maintain sediment levels below baseline, and modeling procedures are appropriate. Therefore, EPA has expanded the Western Alkaline Coal Mining Subcategory to include these areas in addition to the mining reclamation area. However, EPA decided not to include spoil piles in the Western Alkaline Coal Mining Subcategory due to the lack of applicable BMPs, the lack of adequate modeling procedures for an unconsolidated land area, and the potential for contamination of the runoff. See section V.B.3 for further explanation.

Comment: If indeed there are serious negative impacts to retaining sedimentation ponds after active mining has ceased, then EPA has chosen the wrong solution. The obvious remedy is to enforce the existing regulations, not change them to accommodate these negative impacts that violate Federal and State mining laws.

Response: EPA notes that it has received comments from other stakeholders which have both agreed and disagreed with EPA's assertion that

sedimentation ponds may be causing negative environmental impacts. EPA believes that sedimentation ponds, when constructed to meet numeric discharge standards, may cause negative environmental impacts in certain circumstances. EPA listed the potential impacts in the proposal which include loss of water due to evaporation, additional land disturbance, accelerated erosion, and upset of the natural hydrologic balance. While in many cases sedimentation ponds are not causing negative impacts, EPA also believes that there are instances where sedimentation ponds are causing upsets to the natural hydrologic balance. As discussed in the preamble, EPA believes that the most environmentally responsible goal is to maintain sediment loads at pre-disturbed conditions.

The negative impacts caused by the exclusive use of sedimentation ponds cannot necessarily be remedied by enforcing existing regulations. For example, water loss from a sedimentation pond cannot reasonably be controlled. Additionally, land must be disturbed during the construction, maintenance, and removal of the sedimentation ponds. Although this land must eventually be reclaimed in order to meet existing regulations, EPA estimates that 600 acres per year will not be disturbed due to implementation of the sediment control plan required by the Western Alkaline Coal Mining Subcategory.

OSMRE regulations require that mine operators ''minimize the disturbances to the prevailing hydrologic balance at the mine-site and in associated offsite areas and to the quality and quantity of water in surface and ground water systems both during and after surface coal mining operations and during reclamation * * *'' (SMCRA section 515(b)(10)). While existing EPA regulations at 40 CFR part 434, subpart E Post-Mining Areas require that wastewater discharges from reclamation areas contain less than 0.5 ml/L settleable solids, EPA has concluded that background sediment concentrations in the arid and semiarid west are significantly higher than the 0.5 ml/L standard. EPA has recognized this discrepancy by adopting the Western Alkaline Subcategory.

Comment: In Colorado, all of the coal mines rely extensively on approved and permitted sedimentation ponds to ensure compliance with applicable discharge standards, to control sediment and to protect downstream water quality. Colorado's topography and hydrologic regime generally dictate the need for sedimentation ponds to achieve this compliance and protection. The proposed alternative standards and practices may also be applicable in some cases and such options should be allowed. However, we recommend that the rules clearly include a ''grandfather clause'' which states that mines can continue to utilize, now and in the future, sedimentation ponds with numeric standard methods.

Response: EPA notes that in many cases, sedimentation ponds may be necessary to meet water quality standards or to protect receiving streams and has concluded that the use of sedimentation ponds should be determined on a site by site basis in accordance with computer modeling, NPDES permit authorities and SMCRA permit authorities. EPA does not believe that a ''grandfather clause'' is necessary to address the commenter's concerns. EPA has clearly stated in the proposed and final preamble that sedimentation ponds are considered a BMP which may be necessary in certain circumstances to protect water quality. EPA also believes that numeric limitations may be necessary in certain circumstances to protect water quality, and recognizes that the NPDES authority can impose numeric effluent limits on point source discharges from reclamation areas where necessary to meet water quality standards.

Comment: A commenter would like further clarification regarding the use of the term ''natural'' in reference to sediment loading, background levels and undisturbed conditions. In New Mexico most land cannot be considered ''natural'' since it has been disturbed some way. There is nothing that could be considered ''natural''.

Response: EPA agrees with the commenter that ''natural'' conditions are not the same as ''background'' conditions because much of the applicable land has been disturbed in some way by activities such as grazing or development. EPA erroneously used these two terms interchangeably in the proposal. EPA has revised its language in the final preamble and rule to correct this error by using the term ''pre-mined, undisturbed'' to indicate the level of sediment present prior to disturbance by surface coal mining.

Comment: The successful enforcement of both SMCRA and Clean Water Act requirements on the coal industry is, at best, a tenuous situation. EPA proposes to eliminate numeric effluent limitations in the western alkaline coal mining subcategory and instead place its trust in control plans based on computer modeling. This rather subjective standard would be difficult to enforce.

Response: As documented by comments submitted by the Office of Surface Mining, State and Tribal regulatory authorities, and mine operators, EPA does not agree that enforcement of both SMCRA and CWA requirements will be difficult. In fact, EPA believes that the new subcategory requirements will be much easier to enforce than numeric limits. As described in the proposal, implementation of a sediment control plan based on computer modeling will allow inspectors to determine compliance at any time, regardless of whether or not precipitation has occurred. Additionally, EPA does not agree that computer modeling produces a ''subjective'' standard. The RUSLE and SEDCAD models are well documented models based on many years of experience. As documented by comments submitted, these models are commonly used by regulatory authorities to determine sediment loadings.

Comment: The requirements for the proposed western alkaline coal mining subcategory have the potential to duplicate many permitting, inspection, and enforcement provisions of SMCRA.

Response: EPA does not intend for the new subcategory requirements to result in a duplication of work. Rather, EPA believes that compliance determinations under today's rule will encourage coordination and cooperation between SMCRA and NPDES authorities. EPA believes that, in many cases, the NPDES permit authority may not have the expertise or resources to adequately review mining related sediment control plans and associated modeling efforts. EPA recognizes that the requirements for permit application provided under SMCRA section 507, reclamation plans provided under SMCRA section 508, and inspections and monitoring provided under SMCRA section 517 are, in most cases, substantial and adequate. EPA envisions that approval by OSMRE or the delegated authority on the modeling effort and sediment control plan will often be sufficient to satisfy the NPDES permitting authority. As stated in Section XI.2.C of this document, this may require a Memorandum of Understanding to be developed to further the cooperation between regulatory agencies.

Comment: Some experience with sedimentation ponds in the arid and semiarid West is that downstream erosion caused by ''clear water discharge,'' while theoretically possible, is not generally a problem because storm runoff at most western mines is stored and rarely discharges from these ponds. Water is mostly lost to

evaporation and seepage. Also, in northwest Colorado, coal mine operators may also discharge into streams that, by contrast, are shrub lined, stable and not subject to additional erosion or scouring. Thus, sedimentation ponds produce environmental benefits and are generally used by coal mine operators in the Uinta Basin to meet applicable discharge requirements.

Response: EPA thanks the commenter for clarification that ''clear water discharge'' may not typically be a problem. Comment on this issue has been varied. Some commenters have supported the claim that sedimentation ponds disturb downstream hydrologic balances and the ''clear water'' discharge from such ponds can cause erosion to receiving streams. Other commenters have noted that they have not found this to be the case.

EPA agrees that sedimentation ponds do not necessarily result in adverse environmental impacts. EPA believes that ponds may be necessary in certain circumstances to ensure that sediment levels are maintained below pre-mine levels. EPA notes that ponds are one of a suite of BMPs that a mine may install in order to meet reclamation standards. However, ponds may not be necessary in all circumstances and the use of other BMPs such as check dams, vegetation, silt fences, and other construction practices may be equally protective of the environment. One advantage of using BMPs in lieu of, or in addition to, ponds is that less land is disturbed for pond construction and removal.

EPA also acknowledges there are differences in background conditions among sites in the West. For this reason, EPA has established a regulatory structure for the Western Alkaline Coal Mining Subcategory that allows mine sites to design site-specific sediment control plans that demonstrate that the discharge of sediment will not be greater than pre-mined, undisturbed conditions. Therefore, the sediment control plan and discharge limitations for a mine in northwest Colorado will likely be different from a mine site in New Mexico.

Comment: Models are constantly in a state of upgrade, thus model predictions written into an operator's permit application package can become outdated. New models may be released that better predict sediment yield for reclaimed areas than one used for the original reclamation and hydrologic analysis. The commenter recommends that EPA stipulate in the final regulation flexibility with regard to models that OSMRE validates for developing sediment yield standards.

Response: EPA proposed and finalized the following language regarding acceptable computer models: ''The operator must use the same watershed model that was or will be used to acquire the SMCRA permit .'' EPA intends this to mean that a mine can use the upgraded version of a computer model that was used in the original application. For example, if the mine used SEDCAD 4.0 in their application, then the mine operator could use SEDCAD 5.0 in subsequent modeling procedures. This does not mean that the operator could switch to an entirely new model that was not approved in the original mine permit. EPA believes that this language provides the necessary flexibility that the commenter desires to use the most recent and appropriate modeling procedure.

Appendix A: Definitions, Acronyms, and Abbreviations Used in This Document

Act—Clean Water Act
Agency—U.S. Environmental Protection Agency
Alkaline mine drainage—mine drainage which, before any treatment, has a pH equal to or greater than 6.0 and total iron concentration of less than 10 mg/l.
AMD—Acid mine drainage, which means mine drainage which, before any treatment, either has a pH of less than 6.0 or a total iron concentration equal to or greater than 10 mg/l.
AML—Abandoned mine land
BAT—The best available technology economically achievable, under section 304(b)(2)(B) of the Clean Water Act
BCT—Best conventional pollutant control technology under section 304(b)(4)(B) of the Clean Water Act
BMP—Best management practice
BPT—Best practicable control technology currently available, under section 304(b)(1) of the Clean Water Act
Brushing and grubbing area—The area where woody plant materials that would interfere with soil salvage operations have been removed or incorporated into the soil that is being salvaged.
CFR—Code of Federal Regulations
Clean Water Act—Federal Water Pollution Control Act Amendments (33 U.S.C. 1251 *et seq.*)
Conventional pollutants—Constituents of wastewater as determined by Section 304(a)(4) of the Clean Water Act, including pollutants classified as biochemical oxygen demanding, suspended solids, oil and grease, fecal coliform, and pH
CWA—Clean Water Act
EPA—U.S. Environmental Protection Agency
FTE—Full-time employees
ICR—Information Collection Request
NAICS—North American Industry Classification System
NPDES—National Pollutant Discharge Elimination System
NSPS—New source performance standards under Section 306 of the Clean Water Act
OMB—Office of Management and Budget
OSMRE —Office of Surface Mining, Reclamation and Enforcement
Pollution abatement area—The part of the permit area that is causing or contributing to the baseline pollution load of pre-existing discharges. The pollution abatement area must include, to the extent practicable, areas adjacent to and nearby the remining operation that also must be affected to reduce the pollution load of the pre-existing discharges and may include the immediate location of the pre-existing discharges.
POTW—Publicly-owned treatment works
PPA—Pollution Prevention Act of 1990
Pre-existing discharge—Any discharge resulting from mining activities that have been abandoned prior to the time of the remining permit application.
Pre-mined, undisturbed—The conditions present at the time of a mining permit application.
PSNS—Pretreatment standards for new sources
Reclamation area—the surface area of a coal mine that has been returned to required contour and on which revegetation (specifically, seeding or planting) work has been commenced.
Regraded area—The surface area of a coal mine which has been returned to required contour.
Remining—Coal remining refers to a coal mining operation at a site on which coal mining was previously conducted and where the site has been abandoned or the performance bond has been forfeited.
RFA—Regulatory Flexibility Act
RUSLE—Revised Universal Soil Loss Equation
SBA—Small Business Administration
SBREFA—Small Business Regulatory Enforcement Fairness Act
Sediment—All undissolved organic and inorganic material transported or deposited by water.
Sediment Yield—The sum of the soil losses from a surface minus deposition in macro-topographic depressions, at the toe of the hillslope, along field boundaries, or in terraces and channels sculpted into the hillslope.
SIC—Standard Industrial Classifications
SMCRA—Surface Mining Control and Reclamation Act
SS—Settleable Solids
Topsoil stockpiling area—The area outside the mined-out area where topsoil is temporarily stored for use in reclamation, including containment berms.
Toxic Pollutants—The pollutants designated by EPA as toxic in 40 CFR 401.15.
TSS—Total Suspended Solids
UMRA—Unfunded Mandates Reform Act
U.S.C.—United States Code
WTP—Willingness to pay

List of Subjects

40 CFR Part 9

Reporting and recordkeeping requirements.

40 CFR Part 434

Environmental protection, Mines, Reporting and recordkeeping requirements, Waste treatment and disposal, Water pollution control.

Dated: December 27, 2001.

Christine Todd Whitman,

Administrator.

For the reasons set forth in the preamble, 40 CFR Parts 9 and 434 are amended as follows:

PART 9—[AMENDED]

1. The authority citation for part 9 continues to read as follows:

Authority: 7 U.S.C. 135 et seq., 136–136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601–2671; 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251 et seq., 1311, 1313d, 1314, 1318, 1321, 1326, 1330, 1342, 1344, 1345 (d) and (e), 1361; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp. p. 973; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–1, 300j–2, 300j–3, 300j–4, 300j–9, 1857 et seq., 6901–6992k, 7401–7671q, 7542, 9601–9657, 11023, 11048.

2. In § 9.1 the table is amended by adding a new heading with entries in numerical order to read as follows:

§ 9.1 OMB approvals under the Paperwork Reduction Act.

* * * * *

40 CFR citation	OMB control No.
* * * * *	
Coal Mining Point Source Category	
434.72–434.75	2040–0239
434.82–434.83	2040–0239
434.85	2040–0239
Appendix B	2040–0239
* * * * *	

PART 434—[AMENDED]

2. The authority citation for part 434 continues to read as follows:

Authority: 33 U.S.C. 1311, 1314(b), (c), (e), and (g), 1316(b) and (c), 1317(b) and (c), and 1361.

3. Revise § 434.50 to read as follows:

§ 434.50 Applicability.

The provisions of this subpart are applicable to discharges from post-mining areas, except as provided in subpart H—Western Alkaline Coal Mining of this part.

4. Revise § 434.60 to read as follows:

§ 434.60 Applicability.

The provisions of this subpart F apply to this part 434 as specified in subparts B, C, D, E and G of this part.

5. Add subpart G, consisting of §§ 434.70 through 434.75, to read as follows:

Subpart G—Coal Remining

Sec.

434.70 Specialized definitions.
434.71 Applicability.
434.72 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
434.73 Effluent limitations attainable by application of the best available technology economically achievable (BAT).
434.74 Effluent limitations attainable by application of the best conventional pollutant control technology (BCT).
434.75 New source performance standards (NSPS).

Subpart G—Coal Remining

§ 434.70 Specialized definitions.

(a) The term *coal remining operation* means a coal mining operation at a site on which coal mining was previously conducted and where the site has been abandoned or the performance bond has been forfeited.

(b) The term *pollution abatement area* means the part of the permit area that is causing or contributing to the baseline pollution load of pre-existing discharges. The pollution abatement area must include, to the extent practicable, areas adjacent to and nearby the remining operation that also must be affected to reduce the pollution load of the pre-existing discharges and may include the immediate location of the pre-existing discharges.

(c) The term *pre-existing discharge* means any discharge resulting from mining activities that have been abandoned prior to the time of a remining permit application. This term shall include a pre-existing discharge that is relocated as a result of the implementation of best management practices (BMPs) contained in the Pollution Abatement Plan.

(d) The term *steep slope* means any slope above twenty degrees or such lesser slope as may be defined by the regulatory authority after consideration of soil, climate, and other characteristics of a region or State. This term does not apply to those situations in which an operator is mining on flat or gently rolling terrain, on which an occasional steep slope is encountered and through which the mining operation is to proceed, leaving a plain or predominantly flat area.

(e) The term *new source remining operation* means a remining operation at a coal mine where mining first commences after February 22, 2002 and subsequently becomes an abandoned mine.

§ 434.71 Applicability.

(a) This subpart applies to pre-existing discharges that are located within or are hydrologically connected to pollution abatement areas of a coal remining operation.

(b) A pre-existing discharge that is intercepted by active mining or that is commingled with waste streams from active mining areas for treatment is subject to the provisions of § 434.61 Commingling of waste streams. For the purposes of this subpart, § 434.61 requires compliance with applicable BPT, BAT, BCT, and NSPS effluent limitations in subparts C, D, and F of this part. Section 434.61 applies to the commingled waste stream only during the time when the pre-existing discharge is intercepted by active mining or is commingled with active mine wastewater for treatment or discharge. After commingling has ceased, the pre-existing discharge is subject to the provisions of this part.

(c) In situations where coal remining operations seek reissuance of an existing remining permit with BPJ limitations and the regulatory authority determines that it is not feasible for a remining operator to re-establish baseline pollutant levels in accordance with the statistical procedures contained in Appendix B of this part, pre-existing discharge limitations at existing remining operations shall remain subject to baseline pollutant levels established during the original permit application.

(d) The effluent limitations in this subpart apply to pre-existing discharges until the appropriate SMCRA authority has authorized bond release.

§ 434.72 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

(a) The operator must submit a site-specific Pollution Abatement Plan to the permitting authority for the pollution abatement area. The plan must be approved by the permitting authority and incorporated into the permit as an effluent limitation. The Pollution Abatement Plan must identify characteristics of the pollution abatement area and the pre-existing discharges. The Pollution Abatement Plan must be designed to reduce the pollution load from pre-existing discharges and must identify the

selected best management practices (BMPs) to be used. The plan must describe the design specifications, construction specifications, maintenance schedules, criteria for monitoring and inspection, and expected performance of the BMPs. The BMPs must be implemented as specified in the plan.

(b) (1) Except as provided in 40 CFR 125.30 through 125.32 and paragraph (b)(2) of this section, the following effluent limits apply to pre-existing discharges:

EFFLUENT LIMITATIONS

Pollutant	Requirement
(i) Iron, total	May not exceed baseline loadings (as defined by Appendix B of this part).
(ii) Manganese, total	May not exceed baseline loadings (as defined by Appendix B of this part).
(iii) Acidity, net	May not exceed baseline loadings (as defined by Appendix B of this part).
(iv) TSS	During remining and reclamation, may not exceed baseline loadings (as defined by Appendix B of this part). Prior to bond release, the pre-existing discharge must meet the applicable standards for TSS or SS contained in Subpart E.[1]

[1] A pre-existing discharge is exempt from meeting standards in Subpart E of this part for TSS and SS when the permitting authority determines that Subpart E standards are infeasible or impractical based on the site-specific conditions of soil, climate, topography, steep slopes, or other baseline conditions provided that the operator demonstrates that significant reductions of TSS and SS will be achieved through the incorporation of sediment control BMPs into the Pollution Abatement Plan as required by paragraph (a) of this section.

(2) If the permitting authority determines that it is infeasible to collect samples for establishing the baseline pollutant levels pursuant to paragraph (b)(1) of this section, and that remining will result in significant improvement that would not otherwise occur, then the numeric effluent limitations in paragraph (b)(1) of this section do not apply. Pre-existing discharges for which it is infeasible to collect samples for determination of baseline pollutant levels include, but are not limited to, discharges that exist as a diffuse groundwater flow that cannot be assessed via sample collection; a base flow to a receiving stream that cannot be monitored separate from the receiving stream; a discharge on a steep or hazardous slope that is inaccessible for sample collection; or, a number of pre-existing discharges so extensive that monitoring of individual discharges is infeasible.

§ 434.73 Effluent limitations attainable by application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32 and 434.72(b)(2), a pre-existing discharge must comply with the effluent limitations listed in § 434.72(b) for net acidity, iron and manganese. The operator must also submit and implement a Pollution Abatement Plan as required in § 434.72(a) .

§ 434.74 Effluent limitations attainable by application of the best conventional pollutant control technology (BCT).

Except as provided in 40 CFR 125.30 through 125.32 and 434.72(b)(2), a pre-existing discharge must comply with the effluent limitations listed in § 434.72(b) for total suspended solids. The operator must also submit and implement a Pollution Abatement Plan as required in § 434.72(a).

§ 434.75 New source performance standards (NSPS).

Except as provided in § 434.72(b)(2), a pre-existing discharge from a new source remining operation must comply with the effluent limitations listed in § 434.72(b) for iron, manganese, acidity and total suspended solids. The operator must also submit and implement a Pollution Abatement Plan as required in § 434.72(a).

6. Add subpart H, consisting of §§ 434.80 through 434.85, to read as follows:

Subpart H—Western Alkaline Coal Mining

Sec.

434.80 Specialized definitions.
434.81 Applicability.
434.82 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
434.83 Effluent limitations attainable by application of the best available technology economically achievable (BAT).
434.84 Effluent limitations attainable by application of the best conventional pollutant control technology (BCT). [Reserved]
434.85 New source performance standards (NSPS).

Subpart H—Western Alkaline Coal Mining

§ 434.80 Specialized definitions.

(a) The term *brushing and grubbing area* means the area where woody plant materials that would interfere with soil salvage operations have been removed or incorporated into the soil that is being salvaged.

(b) The term *regraded area* means the surface area of a coal mine that has been returned to required contour.

(c) The term *sediment* means undissolved organic and inorganic material transported or deposited by water.

(d) The term *sediment yield* means the sum of the soil losses from a surface minus deposition in macro-topographic depressions, at the toe of the hillslope, along field boundaries, or in terraces and channels sculpted into the hillslope.

(e) The term *topsoil stockpiling area* means the area outside the mined-out area where topsoil is temporarily stored for use in reclamation, including containment berms.

(f) The term *western coal mining operation* means a surface or underground coal mining operation located in the interior western United States, west of the 100th meridian west longitude, in an arid or semiarid environment with an average annual precipitation of 26.0 inches or less.

§ 434.81 Applicability.

(a) This subpart applies to alkaline mine drainage at western coal mining operations from reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas.

(b) This subpart applies to drainage at western coal mining operations from reclamation areas, brushing and grubbing areas, topsoil stockpiling areas, and regraded areas where the discharge, before any treatment, meets all the following requirements:

(1) pH is equal to or greater than 6.0;

(2) Dissolved iron concentration is less than 10 mg/L; and

(3) Net alkalinity is greater than zero.

(c) The effluent limitations in this subpart apply until the appropriate SMCRA authority has authorized bond release.

§ 434.82 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, the following effluent limitations apply to mine drainage from applicable areas of western coal mining operations:

(a) The operator must submit a site-specific Sediment Control Plan to the permitting authority that is designed to prevent an increase in the average annual sediment yield from pre-mined, undisturbed conditions. The Sediment Control Plan must be approved by the permitting authority and be incorporated into the permit as an effluent limitation. The Sediment Control Plan must identify best management practices (BMPs) and also must describe design specifications, construction specifications, maintenance schedules, criteria for inspection, as well as expected performance and longevity of the best management practices.

(b) Using watershed models, the operator must demonstrate that implementation of the Sediment Control Plan will result in average annual sediment yields that will not be greater than the sediment yield levels from pre-mined, undisturbed conditions. The operator must use the same watershed model that was, or will be, used to acquire the SMCRA permit.

(c) The operator must design, implement, and maintain BMPs in the manner specified in the Sediment Control Plan.

§ 434.83 Effluent limitations attainable by application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing western coal mining operation with drainage subject to this subpart must meet the effluent limitations in § 434.82.

§ 434.84 Effluent limitations attainable by application of the best conventional pollutant control technology (BCT). [Reserved]

§ 434.85 New source performance standards (NSPS).

Any new source western coal mining operation with drainage subject to this subpart must meet the effluent limitations in § 434.82.

6. Part 434 is amended by adding appendix B to part 434 as follows:

Appendix B to Part 434—Baseline Determination and Compliance Monitoring for Pre-existing Discharges at Remining Operations

I. General Procedure Requirements

a. This appendix presents the procedures to be used for establishing effluent limitations for pre-existing discharges at coal remining operations, in accordance with the requirements set forth in Subpart G; Coal Remining. The requirements specify that pollutant loadings of total iron, total manganese, total suspended solids, and net acidity in pre-existing discharges shall not exceed baseline pollutant loadings. The procedures described in this appendix shall be used for determining site-specific, baseline pollutant loadings, and for determining whether discharge loadings during coal remining operations have exceeded the baseline loading. Both a monthly (single-observation) procedure and an annual procedure shall be applied, as described below.

b. In order to sufficiently characterize pollutant loadings during baseline determination and during each annual monitoring period, it is required that at least one sample result be obtained per month for a period of 12 months.

c. Calculations described in this appendix must be applied to pollutant loadings. Each loading value is calculated as the product of a flow measurement and pollutant concentration taken on the same date at the same discharge sampling point, using standard units of flow and concentration (to be determined by the permitting authority). For example, flow may be measured in cubic feet per second, concentration in milligrams per liter, and the pollutant loading could be calculated in pounds per year.

d. Accommodating Data Below the Maximum Daily Limit at subpart C of this part. In the event that a pollutant concentration in the data used to determine baseline is lower than the daily maximum limitation established in subpart C of this part for active mine wastewater, the statistical procedures should not establish a baseline more stringent than the BPT and BAT effluent standards established in subpart C of this part. Therefore, if the total iron concentration in a baseline sample is below 7.0 mg/L, or the total manganese concentration is below 4.0 mg/L, the baseline sample concentration may be replaced with 7.0 mg/L and 4.0 mg/L, respectively, for the purposes of some of the statistical calculations in this Appendix B. The substituted values should be used for all methods in this Appendix B with the exception of the calculation of the interquartile range (R) in Method 1 for the annual trigger (Step 3), and in Method 2 for the single observation trigger (Step 3). The interquartile range (R) is the difference between the quartiles M_{-1} and M_1; these values should be calculated using actual loadings (based on measured concentrations) when they are used to calculate R. This should be done in order to account for the full range of variability in the data.

II. Procedure for Calculating and Applying a Single-Observation (Monthly) Trigger

Two alternative methods are provided for calculating a single-observation trigger. One method must be selected and applied by the permitting authority for any given remining permit.

A. Method 1 for Calculating a Single Observation Trigger (L)

(1) Count the number of baseline observations taken for the pollutant of interest. Label this number n. In order to sufficiently characterize pollutant loadings during baseline determination and during each annual monitoring period, it is required that at least one sample result be obtained per month for a period of 12 months.

(2) Order all baseline loading observations from lowest to highest. Let the lowest number (minimum) be $x_{(1)}$, the next lowest be $x_{(2)}$, and so forth until the highest number (maximum) is $x_{(n)}$.

(3) If fewer than 17 baseline observations were obtained, then the single observation trigger (L) will equal the maximum of the baseline observations ($x_{(n)}$).

(4) If at least 17 baseline observations were obtained, calculate the median (M) of all baseline observations:

Instructions for calculation of a median of n observations:

If n is odd, then M equals $x_{(n/2 + 1/2)}$.

For example, if there are 17 observations, then $M = X_{(17/2+1/2)} = x_{(9)}$, the 9th highest observation.

If n is even, then M equals $0.5 * (x_{(n/2)} + x_{(n/2 + 1)})$.

For example, if there are 18 observations, then M equals 0.5 multiplied by the sum of the 9th and 10th highest observations.

(a) Next, calculate M_1 as the median of the subset of observations that range from the calculated M to the maximum $x_{(n)}$; that is, calculate the median of all x larger than or equal to M.

(b) Next, calculate M_2 as the median of the subset of observations that range from the calculated M_1 to $x_{(n)}$; that is, calculate the median of all x larger than or equal to M_1.

(c) Next, calculate M_3 as the median of the subset of observations that range from the calculated M_2 to $x_{(n)}$; that is, calculate the median of all x larger than or equal to M_2.

(d) Finally, calculate the single observation trigger (L) as the median of the subset of observations that range from the calculated M_3 to $x_{(n)}$.

Note: When subsetting the data for each of steps 3a–3d, the subset should include all observations greater than or equal to the median calculated in the previous step. If the median calculated in the previous step is not an actual observation, it is not included in the new subset of observations. The new median value will then be calculated using the median procedure, based on whether the number of points in the subset is odd or even.

(5) Method for applying the single observation trigger (L) to determine when the baseline level has been exceeded

If two successive monthly monitoring observations both exceed L, immediately begin weekly monitoring for four weeks (four weekly samples).

(a) If three or fewer of the weekly observations exceed L, resume monthly monitoring

(b) If all four weekly observations exceed L, the baseline pollution loading has been exceeded.

B. Method 2 for Calculating a Single Observation Trigger (L)

(1) Follow Method 1 above to obtain M_1 (the third quartile, that is, the 75th percentile).

(2) Calculate M_{-1} as the median of the baseline data which are less than or equal to the sample median M.

(3) Calculate interquartile range, R = (M_1 − M_{-1}).

(4) Calculate the single observation trigger L as

$L = M_1 + 3 * R$

(5) If two successive monthly monitoring observations both exceed L, immediately begin weekly monitoring for four weeks (four weekly samples).

(a) If three or fewer of the weekly observations exceed L, resume monthly monitoring

(b) If all four weekly observations exceed L, the baseline pollution loading has been exceeded.

III. Procedure for Calculating and Applying an Annual Trigger

A. Method 1 for Calculating and Applying an Annual Trigger (T)

(1) Calculate M and M_1 of the baseline loading data as described above under Method 1 for the single observation trigger.

(2) Calculate M_{-1} as the median of the baseline data which are less than or equal to the sample median M.

(3) Calculate the interquartile range, R = (M_1 − M_{-1}).

(4) The annual trigger for baseline (Tb) is calculated as:

$$Tb = M + \frac{(1.815 * R)}{\sqrt{n}}$$

where n is the number of baseline loading observations.

(5) To compare baseline loading data to observations from the annual monitoring period, repeat steps 1–3 for the set of monitoring observations. Label the results of the calculations M′ and R′. Let m be the number of monitoring observations.

(6) The subtle trigger (Tm) of the monitoring data is calculated as:

$$Tm = M' - \frac{(1.815 * R')}{\sqrt{m}}$$

(7) If Tm > Tb, the median loading of the monitoring observations has exceeded the baseline loading.

B. Method 2 for Calculating and Applying an Annual Trigger (T)

Method 2 applies the Wilcoxon-Mann-Whitney test to determine whether the median loading of the monitoring observations has exceeded the baseline median. No baseline value **T** is calculated.

(1) Steps for Conducting the Wilcoxon-Mann-Whitney Test

(a) Let n be the number of baseline loading observations taken, and let m be the number of monitoring loading observations taken. In order to sufficiently characterize pollutant loadings during baseline determination and during each annual monitoring period, it is required that at least one sample result be obtained per month for a period of 12 months.

(b) Order the combined baseline and monitoring observations from smallest to largest.

(c) Assign a rank to each observation based on the assigned order: the smallest observation will have rank 1, the next smallest will have rank 2, and so forth, up to the highest observation, which will have rank n + m.

(1) If two or more observations are tied (have the same value), then the average rank for those observations should be used. For example, suppose the following four values are being ranked:

3, 4, 6, 4

Since 3 is the lowest of the four numbers, it would be assigned a rank of 1. The highest of the four numbers is 6, and would be assigned a rank of 4. The other two numbers are both 4. Rather than assign one a rank of 2 and the other a rank of 3, the average of 2 and 3 (*i.e.*, 2.5) is given to both numbers.

(d) Sum all the assigned ranks of the n baseline observations, and let this sum be S_n.

(e) Obtain the critical value (C) from Table 1. When 12 monthly data are available for both baseline and monitoring (*i.e.*, n = 12 and m = 12), the critical value C is 99.

(f) Compare C to S_n. If S_n is less than C, then the monitoring loadings have exceeded the baseline loadings.

(2) Example Calculations for the Wilcoxon-Mann-Whitney Test

BASELINE DATA											
8.0	9.0	9.0	10.0	12.0	15.0	17.0	18.0	21.0	23.0	28.0	30.0
MONITORING DATA											
9.0	10.0	11.0	12.0	13.0	14.0	16.0	18.0	20.0	24.0	29.0	31.0
BASELINE RANKS											
1.0	3.0	3.0	5.5	8.5	12.0	14.0	15.5	18.0	19.0	21.0	23.0
MONITORING RANKS											
3.0	5.5	7.0	8.5	10.0	11.0	13.0	15.5	17.0	20.0	22.0	24.0

Sum of Ranks for Baseline is Sn = 143.5, critical value is $C_{n,m}$ = 99.

(3) Critical Values for the Wilcoxon-Mann-Whitney Test

(a) When n and m are less than 21, use Table 1.

In order to find the appropriate critical value, match column with correct n (number of baseline observations) to row with correct m (number of monitoring observations)*.

TABLE 1.—CRITICAL VALUES (C) OF THE WILCOXON-MANN-WHITNEY TEST
(for a one-sided test at the 0.001 significance level)

n m	10	11	12	13	14	15	16	17	18	19	20
10	66	79	93	109	125	142	160	179	199	220	243
11	68	82	96	112	128	145	164	183	204	225	248
12	70	84	99	115	131	149	168	188	209	231	253
13	73	87	102	118	135	153	172	192	214	236	259
14	75	89	104	121	138	157	176	197	218	241	265
15	77	91	107	124	142	161	180	201	223	246	270
16	79	94	110	127	145	164	185	206	228	251	276
17	81	96	113	130	149	168	189	211	233	257	281
18	83	99	116	134	152	172	193	215	238	262	287
19	85	101	119	137	156	176	197	220	243	268	293
20	88	104	121	140	160	180	202	224	248	273	299

(b) When n or m is greater than 20 and there are few ties, calculate an approximate critical value using the following formula and round the result to the next larger integer. Let N = n + m.

$$\text{CriticalValue} = 0.5 * n * (N+1) - 3.0902 * \sqrt{n * m\,(N+1)/12}$$

For example, this calculation provides a result of 295.76 for n = m = 20, and a result of 96.476 for n = m = 12. Rounding up produces approximate critical values of 296 and 97.

(c) When n or m is greater than 20 and there are many ties, calculate an approximate critical value using the following formula and round the result to the next larger integer. Let S be the sum of the squares of the ranks or average ranks of all N observations. Let N = n + m.

$$\text{CriticalValue} = 0.5 * n * (N+1) - 3.0902 * \sqrt{V}$$

In the preceding formula, calculate V using

$$V = \frac{n * m * S}{N * (N-1)} - \frac{n * m * (N+1)^2}{4 * (N-1)}$$

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