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Inventory of Federally-Funded Projects and Programs Related to Anthracite

MASTER

June 1980

Prepared for

U.S. Department of Energy

Assistant Secretary for Resource Applications

Office of Coal Resource Management

Division of Anthracite

Washington, D.C. 20461

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Dr. 1508

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June 1980

Prepared by
Berger Associates
Camp Hill, Pennsylvania 17011
Contract No. DE-AC01-79RA20005

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U.S. Department of Energy
Assistant Secretary for Resource Applications
Office of Coal Resource Management
Division of Anthracite
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EXECUTIVE SUMMARY

This report is a compilation of descriptions of federal projects and programs that are concerned in some way with anthracite. It is the first inventory of its type to be prepared. Among the projects and programs described are ones completed in the latter half of 1979, ones that are currently active, and others that will start soon.

Of the 43 projects described in this report, 8 involve research, development, and demonstration (RD&D) of technologies aimed at enhancing the use of anthracite or anthracite mining waste; 6 address environmental problems associated with anthracite mining or use; 9 provide information on the anthracite industry; 16 involve studies related to anthracite; and 4 are miscellaneous projects and programs. These projects and programs represent federal government expenditures of \$27.1 million, excluding current military purchases of anthracite for use in European bases of \$33.6 million, and U.S. Bureau of Mines mined land demonstration and reclamation projects of \$38.3 million. The total federal funding for each category of project (with identifiable funding) is as follows:

RD&D	\$23.2 million
Environment	2.9 million
Studies	<u>1.0 million</u>
Total	<u>27.1 million.</u>

Table 1 shows the number of projects with identifiable federal funding and total funding by agency.

This report is organized by agencies conducting or sponsoring the programs and projects. In cases in which more than one agency is involved, a program is classified by the agency whose contribution is greatest. In those cases, abbreviations of the names of other agencies involved are included with the project titles used in the table of contents.

The descriptions of projects and programs that follow usually include information on: the objective of the effort; tasks being performed; participants; the expected schedule; site where work is being conducted; funding source and amount; and persons who can be contacted for more information. While most of the descriptions are complete, some are incomplete because information is not available or because the topic is not applicable (e.g., "site" is not applicable to work that is not being undertaken in the field). Formats vary, depending on the kind of program.

Table 1. Summary Table of Federally-Funded Projects by Agency

<u>Agency</u>	<u>Number of Projects</u>	<u>Total Funding</u>	<u>Pages</u>
Appalachian Regional Commission	3	\$0.4 million	7-14
U.S. Department of Agriculture	5	\$2.6 million	15-23
U.S. Department of Commerce	1	\$4.6 million	24-28
U.S. Department of Energy	9	\$16.0 million	33-63
U.S. Department of the Interior	4	\$3.2 million	64-70
U.S. Department of Labor	1	\$65-75,000	88-90
U.S. Environmental Protection Agency	1	\$0.3 million	91-92
SUBTOTAL	24	\$27.1 million	
U.S. Department of Defense; anthracite purchases	1	\$33.6 million	29-32
U.S. Department of the Interior; Bureau of Mines demonstration and reclamation projects	1	\$38.3 million	71-80
GRAND TOTAL	26	\$99.1 million	

INTRODUCTION

Anthracite is a hard coal whose characteristics include low sulfur content, low volatility, high fixed-carbon content, and a relatively high ignition temperature. It is estimated that 96 percent of the anthracite in the United States is located in northeastern Pennsylvania, with the bulk of the remaining 4 percent in the Narragansett Basin of Rhode Island and Massachusetts.

Anthracite was once one of the most widely-used fuels in the United States. At the turn of the century, anthracite production constituted 19 percent of total U.S. energy production; in 1917, when anthracite production reached its peak of over 100 million tons, it represented 13 percent of U.S. energy production. Since that year, anthracite production has declined precipitously. Production in recent years has averaged only about 6 million tons annually, or less than 1 percent of all U.S. coal production. Yet recoverable anthracite reserves in Pennsylvania are estimated to be 7 to 8 billion tons (about 200 quadrillion British thermal units heat value, which is equivalent to 34.4 billion barrels of oil). Anthracite resources represent enormous potential at a time when the United States is in need of domestic energy resources.

Interest in anthracite has increased substantially in the United States in recent years. This interest has manifested itself, in part, in the active participation of the federal government in a wide variety of anthracite-related efforts.

INTRODUCTION (continued)

In recognition of the high level of interest of the anthracite community in federal activities related to anthracite, the Division of Anthracite (DA) in the U.S. Department of Energy (DOE) engaged Berger Associates and its subcontractor, Resource Planning Associates, Inc. (RPA), to prepare this inventory of federal projects and programs related to anthracite. The purpose of the inventory, which is the first such inventory to be prepared, is to provide industry and government personnel with a single source of information on anthracite-related projects being undertaken or sponsored by the federal government, and to promote further interest in the projects and programs. Table 2 provides a list of all projects included in this inventory that have identifiable federal funding.

In preparing this inventory, RPA staff contacted agencies and organizations that we or staff of DA or Berger Associates deemed likely to be involved with anthracite.

In addition, we asked initial contacts to refer us to other contacts. We used several data bases and bibliographies of projects and publications as secondary sources.

In preparing the inventory, RPA sought current projects and programs (i.e., programs that were active through the second half of 1979). By limiting the inventory to projects and programs that are active or recently completed, we have tried to provide readers with an opportunity to contact project participants first-hand.

The descriptions that follow provide enough information about projects and programs to allow readers to determine whether they wish to pursue particular interests further. To help users find out more about each activity, where applicable, we have included the names of persons representing the federal government or organization(s) undertaking the effort (e.g., a principal investigator or project manager). Either contact can be used as a source of further information about each activity.

INTRODUCTION (continued)

Readers may obtain copies of all of the listed DOE Energy Information Administration (EIA) publications free of charge from:

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Room 850
1726 M Street, NW
Washington, D.C. 20461

except for Monthly Energy Review, which is available on a subscription basis from:

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U.S. Government Printing Office
Washington, D.C. 20402

for \$23.00 per year, or \$33.00 for first-class mail. Single copies cost \$2.50 each. Ask for Report No. DOE/EIA 0035.

This inventory should include most of the current activities of the federal government in the area of anthracite. If we have missed any projects or programs, please bring them to the attention of:

Dr. Jerry Pell, Director
Division of Anthracite
Office of Coal Resource Management
Resource Applications, Mail Room 3344
U.S. Department of Energy
Washington, D.C. 20461
(202) 633-9058.

We believe that this document will be of use to persons interested in furthering the use of anthracite. We appreciate the cooperation of all the people who helped us in preparing this inventory.

Table 2. Summary Table of Anthracite Projects and Programs

<u>Agency</u>	<u>Project</u>	<u>Funding</u>	<u>Page(s)</u>
Appalachian Regional Commission	• Coal Development Analysis of the SEDA-Council of Governments (COG) Region	\$35,850	7-8
	• Pennsylvania Coal Model, Phase III	\$13,000	9-10
	• Study the Feasibility of Developing Economical Uses for Anthracite Culm and Ash from the Combustion of Culm	\$370,220	11-14
U.S. Department of Agriculture	• Pending Application for Loan Guarantee to Increase Production of Anthracite Coal	Guarantee 90% of \$20-million loan	15-16
	• Evaluation of Various Revegetation Species for Anthracite Refuse Banks	\$80,000-\$100,000 per year	17-18
	• Reclamation and Revegetation of Mined Land Using Urban Sludge	\$23,874	19-20
	• Utilization of Municipal Sludge for the Revegetation of Anthracite Refuse Banks	\$20,000	21
	• Rural Abandoned Mine Program	\$2.5 million	22-23
U.S. Department of Commerce	• Anthracite Data	-----	24-25
	• CAN DO, Inc., Anthracite Coal Gasification Project (includes joint funding with ARC and DOE)	\$4.56 million	26-28

Table 2. Summary Table of Anthracite Projects and Programs (continued)

<u>Agency</u>	<u>Project</u>	<u>Funding</u>	<u>Page(s)</u>
U.S. Department of Defense	● Purchase and Shipment of Anthracite to U.S. Army Bases in Europe	\$33.6 million FY 1979	29-32
U.S. Department of Energy	● Anthracite Data	-----	33-40
	● Anthracite Culm Combustion	\$13.23 million	41-43
	● Extraction/Preparation R&D Needs for Anthracite	\$98,050	44-46
	● Monitoring a Wellman-Galusha Gasifier at the Glen-Gery Brick Company	\$1.554 million	47-48
	● Site Selection and Financial Analysis of Deep Surface Mining of Anthracite	\$86,561	49-50
	● Software System to Simulate Coal Plant Sulfur and Particulate Controls	-----	51-52
	● An Assessment of the Effects on Anthracite Development of Flexible New Source Performance Standards (NSPS) for Industrial Boilers	\$49,371	53-54
	● Evaluation of Anthracite Deposits in the Narragansett Basin	\$400,000	55-56
	● Nanticoke Gasification Project	\$299,375	57-59
	● Narragansett Basin Core Drilling Program Plan	\$100,000	60-61
	● Support Services for the Division of Anthracite	\$199,852	62-63

Table 2. Summary Table of Anthracite Projects and Programs (continued)

<u>Agency</u>	<u>Project</u>	<u>Funding</u>	<u>Page(s)</u>
U.S. Department of the Interior	• Anthracite Refuse Preparation Demonstration Plant	\$3 million	64-65
	• Development of Anthracite Probe Drill	\$80,000	66-67
	• Environmental Factors Affecting Surface Mining of Steeply Pitching Coal Seams	\$85,269	68-70
	• Mined Land Demonstration and Reclamation Projects	\$38.3 million	71-80
	• Classification of Government Coal Lands in the Paonia-Somerset and Crested-Butte Coal Fields, Gunnison County, Colorado	\$40,000	81
	• USGS Models and Mapping Efforts	-----	82-87
U.S. Department of Labor	• Injuries and Illness Data	-----	88
	• Anthracite Miner Education	\$65-\$75,000	89-90
U.S. Environmental Protection Agency	• Demonstration and Evaluation of Reclamation, Stabilization, and Erosion Control of Strip-Mined Land for Agricultural Purposes Utilizing Municipal Sewage Sludge	\$300,000	91-92
Small Business Administration	• Loan for Anthracite Mining	\$210,000 loan	93
Smithsonian	• History of the Anthracite Industry	-----	94

AGENCY: Natural Resources, Environment, and
Energy Division
Appalachian Regional Commission (ARC)

PROJECT: Coal Development Analysis of the SEDA-
Council of Governments (COG) Region

OBJECTIVES: To provide investment strategies for the Appalachian Regional Commission and Economic Development Administration (EDA) funds used to strengthen the economic base of the SEDA-COG region. The analysis will help establish priorities, and will identify new projects and development opportunities for possible funding.

TECHNICAL
DESCRIPTION:

The SEDA-COG region, composed of ten counties in central Pennsylvania, includes two anthracite-producing and three bituminous-producing counties (the anthracite counties are Northumberland and Columbia). SEDA-COG is undertaking a regional coal development analysis that will look at a number of questions about the region's coal resources, including the following:

- What is the potential market demand for the region's coal resources to the year 1990?
- Once a demand for the region's coal is projected, what environmental, social, economic, and land use impacts might be associated with coal development? How can industry and government in the region work together to maximize the positive impacts and minimize the negative? What role does local government have in influencing the impacts of mining?

- What are the constraints to development of the region's coal resources? What constraints, including local ones, should and can be corrected?
- What development opportunities are available because of the region's coal resources?

The Pennsylvania Coal Model is being utilized to help project future demand for the region's coal. The model will incorporate costs for complying with new air pollutant emission-control regulations, to determine their impact on utility demand for anthracite and bituminous coal produced in Pennsylvania.

PARTICIPANT: The SEDA-Council of Governments is undertaking the study.

FUNDING: The budget for the study is \$47,800, of which \$35,850 is being provided by ARC, and \$11,950 is being provided by local sources.

SCHEDULE: The project started October 1, 1979, and will end in September 1980.

FEDERAL CONTACT: Mr. Michael E. Newton, Project Coordinator
Natural Resources, Environment, and Energy Division
Appalachian Regional Commission
1666 Connecticut Avenue
Washington, D.C. 20235
(202) 673-7984

CONTRACTOR CONTACT: Mr. Paul E. Shaw
Program Analyst, Energy/Land Use
SEDA-COG
Timberhaven, RD 1
Lewisburg, Pennsylvania 17837
(171) 524-4491

AGENCY: Natural Resources, Environment, and
Energy Division
Appalachian Regional Commission

PROJECT: Pennsylvania Coal Model, Phase III

OBJECTIVE: To improve the Pennsylvania Coal Model (PCM), a large-scale linear programming model used to develop scenarios of Pennsylvania's future coal economy. This phase is the only one to include anthracite coal.

TECHNICAL DESCRIPTION: The effort consists of six tasks:

1. Expand the PCM data bases to include information on anthracite coal reserves, characteristics, and costs, as they relate to large-scale open-pit mining
2. Update the bituminous coal supply and demand data bases
3. Analyze trends in bituminous and anthracite coal consumption
4. Conduct technology transfer sessions with state agencies, public utilities, and planning commissions to expand model applications
5. Continue ongoing work with the Pennsylvania Department of Environmental Resources on problems of resource management
6. Provide continuing information on model runs and data bases.

PARTICIPANTS: The Departments of Geography and Mineral Engineering of the Pennsylvania State University, University Park, Pennsylvania, are undertaking the work. Professors C. Greg Knight and Charles B. Manula are the co-principal investigators.

FUNDING: The total value of the contract is \$38,000, of which about one-third is for work related to anthracite coal.

SCHEDULE: The work started in June 1979 and should be completed in June 1980.

FEDERAL CONTACT: Mr. Michael E. Newton, Project Coordinator
Natural Resources, Environment, and Energy Division
Appalachian Regional Commission
1666 Connecticut Avenue
Washington, D.C. 20235
(202) 673-7984

CONTRACTOR CONTACT: Professor Charles B. Manula
Department of Mineral Engineering
The Pennsylvania State University
University Park, Pennsylvania 16802
(814) 863-1642

AGENCY: Natural Resources, Environment, and
Energy Division
Appalachian Regional Commission (ARC)

PROJECT: Study the Feasibility of Developing
Economical Uses for Anthracite Culm
and Ash from the Combustion of Culm

OBJECTIVES: To test the feasibility of developing
anthracite culm (mining refuse) as a
source of mineral and energy resources.

TECHNICAL DESCRIPTION: In support of this goal, the Shamokin
Area Industrial Corporation (SAIC) is
undertaking a study with three parts:

1. Alumina Extraction from Appalachian
Coal Wastes (Aqueous Alkaline Process).
Bench-scale experiments will be conducted
to determine whether the aqueous
alkaline process can extract alumina
from ash produced in the combustion of
culm in a fluidized-bed combustor. After
the research is complete, participants
will produce a block flow diagram that
describes the process conditions for
alumina extraction and will provide
information on product purity.

The use of the aqueous alkaline process
will be compared to the Bayer plant
process for extracting alumina. A
risk analysis of the fluidized-bed
combustion process will be performed,
and the probability of success using
the ash will be estimated. The
estimated capital costs of a plant to
extract alumina from ash will be
compared to those of a Bayer process
plant, and qualitative estimates
will be made of operating costs; raw
material, energy, and manpower require-
ments; and residual byproducts of the
process.

2. Alumina Extraction and Production
of Aluminum Compounds from Fluidized-
Bed-Combustor Ash (Nitric Acid Pro-
cesses). As part of this test program,
the physical and chemical properties

of ash produced under various operating conditions in the fluidized-bed combustor unit will be profiled. Various nitric acid leaching systems for the extraction of alumina will be tested and their performance will be evaluated under various operating conditions in the culm-burning and alumina-extraction system. Procedures for recovering and recycling nitric acid will also be tested and developed. The chemical and physical properties of the products produced by the extraction process will be assessed and the potential for the production of marketable aluminum compounds will be evaluated.

3. Design and Evaluation of the Rotary-Kiln Culm Combustor. The test program will determine the effects on combustion efficiency and emission levels of variations in: source, size, consistency, and fuel rates for culm-limestone feedstock; rate and temperature of air flow; and internal operating geometry of the kiln. It will also provide information on:

- The chemical and physical properties of the culm, limestone, and solid residue used in the kiln
- The heat and mass balances (i.e., culm, limestone, air, temperature, feed and flow rates)
- Environmental emissions, including chemical composition, particulate loading, and particle size distribution in the flue gas
- The temperature profile within the kiln, and geometric configuration and operating parameters of the kiln unit.

PARTICIPANTS:

SAIC is the prime recipient of the grant from ARC. SAIC's subcontractors for the three projects are, respectively:

1. Alumina Extraction from Appalachian Coal Wastes (Aqueous Alkaline Process): Aluminum Company of America (ALCOA).

2. Alumina Extraction and Production of Aluminum Compounds from Fluidized-Bed-Combustor Ash (Nitric Acid Processes): Lorcon Laboratories.

3. Design and Evaluation of the Rotary-Kiln Combustor: Mr. Francis S. Puhr.

FUNDING:

The total cost of the project is \$451,988. ARC's share is \$370,220, and SAIC's share is \$81,768.

SCHEDULE:

The contract was effective on October 1, 1979, and work is expected to start in early January 1980. No completion date is available.

**FEDERAL
CONTACT:**

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**CONTRACTOR
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(717) 648-1541

Mr. H. J. Hittner, Section Head
Alumina & Chemical Division
ALCOA Technical Center
Alcoa Center, Pennsylvania 15069
(412) 339-6651

Mr. Lorne F. Cook, President
Lorcon Corporation
P. O. Box 597
Hockessin, Delaware 19707
(215) 268-2513

Mr. Francis A. Puhr
2625 Cranberry Circle
Harrisburg, Pennsylvania 17110
(717) 652-2673

AGENCY: Farmers Home Administration (FmHA)
U.S. Department of Agriculture

PROJECT: Pending Application for Loan
Guarantee to Increase Production
of Anthracite Coal

OBJECTIVE: To provide financial assistance for
development of new mining capacity.

DESCRIPTION: FmHA is currently reviewing an
application from Frederic A. Potts
and Co., Inc., for a loan guarantee
to finance increased anthracite
production at its mines in Schuylkill
County, Pennsylvania and to refinance
existing debts. FmHA is requested
to guarantee 90 percent of a \$20-
million, 12-year loan at the prime
interest rate, plus 2 percent. The
loan, of which \$10 million would
finance new equipment and \$10 million
existing debts, would make possible
an increase in anthracite production
of 700,000 to 800,000 raw tons per
year.

FEDERAL
CONTACT: Mr. William Glass
Loan Specialist
Business and Industry Division
Farmers Home Administration
Federal Building
P.O. Box 905
Harrisburg, Pennsylvania
(717) 782-3899 or 3869

POTTS
AND COMPANY
CONTACT:

Mr. Karl F. Goos
President
Frederic A. Potts & Co., Inc.
1935 West Market Street
P.O. Box 594
Pottsville, Pennsylvania 17901
(717) 622-5224 or 1871

Mr. Ronald G. Cobleigh
Vice President, Finance
Frederick A. Potts Company, Inc.
825 Third Avenue, 24th Floor
New York, New York 10022
(212) 687-4412

AGENCY: Forest Service
U.S. Department of Agriculture

PROJECT: Evaluation of Various Revegetation
Species for Anthracite Refuse Banks

OBJECTIVE: To evaluate different means of
revegetating anthracite refuse
banks.

TECHNICAL
DESCRIPTION: Three projects are being undertaken:

1. A study to determine the effect
of fertilizer on trees planted
on refuse banks
2. A study to determine which
hybrid poplar cones have
potential for revegetating a
wide range of refuse banks
3. Monitoring the growth and
development of plant materials
that have been planted for
reclamation purposes.

SITES: The corresponding sites are:

1. Pottsville, in Schuylkill
County, and Hazleton, in Luzerne
County, Pennsylvania
2. Luzerne and Lackawanna Counties,
Pennsylvania
3. Throughout Pennsylvania (four
areas in the anthracite region;
two in Northumberland County
and two in Sullivan County).

PARTICIPANT: The Northeastern Forest Experiment Station Research Unit is conducting the studies.

FUNDING: \$80,000-100,000 a year, combined, for all three projects and several bituminous projects.

SCHEDULE: The schedules for each of the three projects, respectively, are:

1. Ongoing until 1985. A preliminary report will be published in 1980.
2. Ongoing until 1980.
3. Ongoing until 1981. A preliminary report will be published in 1980.

CONTACT: Mr. Walter Davidson, Research Forester
Forestry Science Lab
Northeastern Forest Experiment Station
Research Unit
Forest Service
U.S. Department of Agriculture
Kingston, Pennsylvania
(304) 425-8106

AGENCY: Forest Service
U.S. Department of Agriculture

PROGRAM: Reclamation and Revegetation of Mined
Land Using Urban Sludge

OBJECTIVES: Evaluate the effect of sludge applications on vegetation establishment and growth six years after sludge application.

TECHNICAL DESCRIPTION: The study will determine:

- The effectiveness of the sludge treatments over time (i.e., on the rates of sludge mineralization and release of nutrients for plant growth)
- The effect of sludge applications on the quality of spoil percolate water
- The effects of different sludge application rates on the chemical properties of the spoil material
- The effects of different sludge application rates on vegetation establishment and persistence on an anthracite refuse bank.

SITE: Lackawanna County, Pennsylvania

PARTICIPANT: Institute for Research on Land and Water Resources, The Pennsylvania State University

FUNDING: The Forest Service's grant to the Institute is for \$23,874.

SCHEDULE: The study began in April 1979 and will be completed in April 1980. It is the last phase of a study initially funded 6 years ago by the Bureau of Mines, U.S. Department of the Interior.

**FEDERAL
CONTACT:**

Dr. Lee P. Harrington
Urban Forestry Coordinator
College of Environmental Science and Forestry
Syracuse University
Syracuse, New York 13210
(315) 473-9664

for the: Northeastern Forest Experiment
Station
Broomall, Pennsylvania
(215) 596-1615

**CONTRACTOR
CONTACT:**

Dr. William E. Sopper
Professor of Forest Hydrology
Institute for Research on Land and
Water Resources
The Pennsylvania State University
University Park, Pennsylvania 16802
(814) 863-0291

AGENCY: Forest Service
U.S. Department of Agriculture

PROGRAM: Utilization of Municipal Sludge for the
Revegetation of Anthracite Refuse Banks

OBJECTIVE: To determine the feasibility of using
municipal sludge to revegetate anthracite
refuse banks.

TECHNICAL
DESCRIPTION: During the course of the study, the
effects of selected sludge application
rates on vegetation establishment and
growth and the quality of runoff water
from the piles will be evaluated. The
effect of sludge applications on
refuse piles also will be determined.

SITES: Scranton, Pennsylvania

PARTICIPANT: Institute for Research on Land and Water
Resources, The Pennsylvania State
University

FUNDING: The Forest Service's grant is for \$20,000.

SCHEDULE: The project began in November 1976, and
will be completed in December 1979.

FEDERAL
CONTACT: Dr. Willie Curtis, Project Leader
Northeastern Forest Experiment Station
U.S. Forest Service
204 Center Street
Berea, Kentucky 40403
(606) 986-8431

CONTRACTOR
CONTACT: Dr. William E. Sopper
Professor of Forest Hydrology
Institute for Research on Land and Water
Resources
The Pennsylvania State University
University Park, Pennsylvania 16802
(814) 863-0291

AGENCY: Soil Conservation Service (SCS)
U.S. Department of Agriculture

PROJECT: Rural Abandoned Mine Program

OBJECTIVE: To reclaim rural abandoned mines (anthracite, deep, and surface), removing potential health and safety hazards, such as subsidence and mine fires, and to promote the development of the soil and water resources of unreclaimed coal lands.

SITES: The program will cover all 10 anthracite counties in Pennsylvania, and other areas, but only mines in Carbon, Columbia, Lackawanna, Luzerne, Northumberland, Schuylkill, Susquehanna, and Wayne Counties, Pennsylvania are currently covered.

PARTICIPANTS: SCS, with contractors, mine owners, and owners of surface and water rights.

CONTRACT AMOUNT AND SHARES: SCS has been allotted 20 percent of the Abandoned Mine Reclamation Fund, or \$2.5 million, for 1979, to reclaim the anthracite and bituminous mines in Pennsylvania that present the worst health and safety hazards. SCS will pay contractors approximately \$1.6 million to reclaim the mines. It will use the remaining \$900,000 to develop reclamation plans and to provide technical assistance to contractors. Landowners will pay up to 25 percent of the reclamation bill plus ensuing maintenance costs.

SCHEDULE:

Reclamation has not yet begun. Reclamation plans have been completed for one mine in Taylor Borough, Lackawanna County. SCS is studying the other candidate mines prior to developing reclamation plans. SCS will sign a 4- to 5-year contract with the contractor and the landowner of the Taylor Borough Mine, providing for necessary reclamation and maintenance.

CONTACT:

Mr. Robert Heidecker
State Resource Conservationist
Soil Conservation Service
U.S. Department of Agriculture
Box 985
Federal Square Station
Harrisburg, Pennsylvania 17108
(717) 782-4404

AGENCY: Bureau of the Census
U.S. Department of Commerce

PUBLICATIONS: 1972 Census of Mineral Industries:
Anthracite Mining and 1977 Census
of Mineral Industries: Anthracite

DESCRIPTION: This census, taken every 5 years for years ending in 2 and 7 (e.g., 1977, 1972, and 1967), reports a wide variety of data on anthracite mines, including:

- The number of mining establishments
- Number and payroll of employees
- Manhours and wages for exploration, development, and production
- Expenditures and assets
- Values added in mining
- Production by type of mining
- Mineral rights.

These statistics are broken down further to provide more detailed information on primary products and services (e.g., value and quantity of raw and cleaned anthracite shipped). Supplies, minerals, and fuels used for preparation and machinery installed are indicated by geographic area and for mines with and without preparation plants.

SOURCE:

Information provided by anthracite mining companies, supplemented by Social Security Administration and Internal Revenue Service data.

CONTACT:

Mr. John McNamee, Chief, Minerals Branch
Industry Division
Bureau of the Census
U.S. Department of Commerce
Federal Center
Suitland, Maryland 20233
(301) 763-5938

AGENCY: Economic Development Administration (EDA),
U.S. Department of Commerce; Fossil
Energy, U.S. Department of Energy (DOE);
and Appalachian Regional Commission (ARC)

PROJECT: CAN DO, Inc., Anthracite Coal Gasification
Project

OBJECTIVES: To design and construct a facility to
gasify anthracite coal and to demonstrate
the feasibility of cooling, cleaning, and
compressing the gas and distributing it to
a variety of users. To demonstrate the
economic and environmental attractiveness
of substituting anthracite-derived gas for
natural gas or fuel oil in many applications.

**TECHNICAL
DESCRIPTION:** The facility will consist of two Wellman-
Galusha single-stage fixed-bed gasifiers,
together with applicable cleaning, cooling,
drying, and compression equipment. The
system will be capable of gasifying 2 tons of
anthracite per hour, for a total throughput
per day of approximately 50 tons of pea-size
anthracite coal.

The initial installation will be designed
to produce enough gas having a heat content
of 135-150 Btu per cubic foot to provide 1
billion Btu daily. The gas will be used by
firms in the Humboldt Industrial Park.

SITE: Humboldt Industrial Park, west of Hazleton,
Luzerne County, Pennsylvania.

PARTICIPANTS: The developer of the industrial park, the
Greater Hazleton Community-Area New Develop-
ment Organization, Inc. (CAN DO), is the
prime contractor for the project; EDA, ARC,
and DOE are sharing the cost of the project
with CAN DO, Inc., as noted below, along with
the Pennsylvania Department of Commerce (Penn
DOC), and the Luzerne County Community
Development Office (LCCDO). EBECO Associates,
Hazleton, is designing the facility, and
Sardoni Construction Company, Inc., Forty
Fort, Pennsylvania, is the contractor for the
construction. The gasifiers are being
supplied by McDowell-Wellman Engineering Co.

**CONTRACT AMOUNT
AND SHARES:**

The total capital cost of the project is \$4.7 million, with participants assuming the following shares:

EDA	\$2.35 million
ARC	1.41 million
Penn DOC	0.45 million
CAN DO, Inc.	0.39 million
LCCDO	0.10 million
<hr/>	
TOTAL	\$4.70 million

DOE's total budgeted contribution to cover the difference between revenues and start-up and operating costs is about \$0.8 million for fiscal years 1979, 1980, and 1981. CAN-DO, Inc., will reimburse DOE for the energy produced at a rate equivalent to the local price of natural gas.

SCHEDULE:

Planning for the project started in January 1977. The target date for completion of construction of the facility is late 1980; start-up, operation, and evaluation will occur between 1981 and 1983.

**CONTRACTOR
CONTACT:**

Mr. Joseph Yenchko, Industrial Director,
or Mr. Kevin O'Donnell
CAN DO, Inc.
Mezzanine-Northeastern Building
Hazleton, Pennsylvania 18201
(717) 455-1508

**FEDERAL AND
OTHER CONTACTS:**

Mr. Michael A. Potterf
Director, Enterprise Development
Appalachian Regional Commission
1666 Connecticut Avenue, N.W.
Washington, D.C. 20235
(202) 673-7896

Mr. Ted Atwood
Program Manager for Gasifiers
in Industry
Office of the Assistant Secretary
for Fossil Energy
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-4492

Mr. Brooks F. Robinson
Executive Deputy Secretary
Pennsylvania Department of Commerce
420 South Office Building
Harrisburg, Pennsylvania 17105
(717) 787-2048

Mr. Anthony Pecone
Representative
Economic Development Administration
U.S. Department of Commerce
Federal Reserve Bank Building, Rm. 600
105 North 7th Street
Philadelphia, Pennsylvania 19106
(215) 597-7739

Mr. Gary Lamont
Director of Community Development
Luzerne County Community Development
Office
Courthouse Annex
Wilkes-Barre, Pennsylvania 18701
(717) 829-0935

AGENCY: Defense Fuel Supply Center (DFSC)
Defense Supply Agency
U.S. Department of Defense

PROJECT: Purchase and Shipment of Anthracite
to U.S. Army Bases in Europe

OBJECTIVE: To provide anthracite coal to U.S.
bases in Europe.

DESCRIPTION: Under an agreement with the
Department of Defense, anthracite
mines in Pennsylvania (see Attach-
ment 1) supply anthracite coal to
U.S. Army bases in West Germany for
use in space heating. The DFSC
purchases Pennsylvania anthracite
from U.S. mines through U.S. coal
brokers (see Attachment 2). The
coal is shipped from U.S. ports to
Netherland ports by colliers
chartered by the Military Sealift
Command. European importers then
buy the coal from the U.S. exporters
and ship it to the bases. The U.S.
Department of Energy's Coal Analysis
Laboratory in Pittsburgh, Pennsyl-
vania inspects the coal prior to
shipment abroad.

**CONTRACT
AMOUNT:** The total values of contracts
awarded to brokers and colliers and
amounts of anthracite purchased or
expected to be purchased in FY 1978
and 1979 are given in Attachment 3.

CONTACT: Mr. Donald J. Peters
Public Affairs Officer
Defense Fuel Supply Center
Defense Supply Agency
U.S. Department of Defense
Alexandria, Virginia 22314
(202) 274-6489

ATTACHMENT 1

PENNSYLVANIA ANTHRACITE MINE OPERATORS SUPPLYING COAL TO DFSC

K&P Coal Co., Minersville
Blaschak Coal Co., Inc., Mahanoy City
Pine Creek Coal Co., Spring Glen
Superior Prep. Co., Inc., Hegins
Direnzo Coal Co., Pottsville
Strohecker Coal Breaker, Elizabeth
Hegins Mining Co., Hegins
Schneck Coal Co., Pine Grove
Swatara Coal Co., Newtown
Jeddo-Highland Coal Co., Pittston
Beltrami Enterprises, Inc., Hazelton
Bethlehem Mines Corp., Tamaqua
CLS Coal Co., Branchdale
Split Vein Coal Co., Inc., Paxinos
Tuscarora Coal Corp., New Philadelphia
Kerris & Helfrick, Inc., Mt. Carmel
Gowen, Coal Co., Fern Glen
Kocher Coal W., Valley View
Reading Anthracite Co., Pottsville
Rosini Coal Co., Shamokin

ATTACHMENT 2

COAL BROKERAGE COMPANIES INVOLVED IN DFSC PURCHASES:

U.S. Anthracite Exporters

Foreston Coal Sales Company
353 Fifth Avenue
New York, New York 10016

F.A. Potts and Company
P.O. Box 594
Pottsville, Pennsylvania 17901

European Importers

Anker Kolan
P.O. Box 1334
Rotterdam 33001, H
Netherlands

Hasak Essen
P.O. Box 220011
Eginharddhoehe 43
43 Essen 1
West Germany

Stromeyer GmbH
Postfach 011727
Reinchespraesidenten
Str. 21-25, D-4330
Muelheim, Germany

Scheepvaart en Steenkolen
Maatschappie B.V.
Parklaan 22, P.O. Box 1006
Rotterdam, Netherlands

Handelsgellschaft
Braunkohla GmbH
Kolner Str. 38-44
D-5047 Wesseling
West Germany

ATTACHMENT 3

Total values of contracts awarded to brokers
and colliers and amounts of anthracite purchased
or expected to be purchased in FY 1978 and 1979

<u>Year</u>	<u>Contract</u>	<u>Quantity (Metric Tons)</u>	<u>Coal Cost (F.O.B. Port)</u>	<u>Military Sealift Command Cost</u>	<u>Total Delivered Cost</u>
FY 78	DLA600-78-C-1652	308,565	\$21,870,890.72	\$7,115,508.90	\$28,936,399.62
FY 79	DLA600-79-C-1658	208,865	17,248,398.86	4,214,895.70	21,463,294.56
FY 79	DLA600-79-C-1660	<u>122,000</u>	<u>9,716,611.30</u>	<u>2,461,960.00</u>	<u>12,178,571.30</u>
	TOTAL FY 1979	330,865	26,965,010.16	6,676,855.70	33,641,865.86

AGENCY: Energy Information Administration (EIA)
U.S. Department of Energy

DATA BASE &
PUBLICATION: End Use Energy Consumption Data
Base: Series 1 Tables, June 1978

DESCRIPTION: The data base provides information on energy consumption in the mining, manufacturing, transportation, and residential sectors. The mining sector data base contains specific fuel and total energy use data for 1974 (in Btu) for anthracite mining by region and state. The data base is currently being updated by Oak Ridge National Laboratory with more recent data, and will be available for public access. The publication will not be updated.

SOURCE: Bureau of Mines and Bureau of the Census data

CONTACT: Mr. Bruce D. Egan
Economist
Office of the Consumption Data System
Energy Information Administration
U.S. Department of Energy
Washington, D.C. 20461
(202) 634-5481

AGENCY: Energy Information Administration
U.S. Department of Energy

PUBLICATION: Energy Data Reports: Coal - Pennsylvania Anthracite Annual

DESCRIPTION: Provides statistics on all phases of the Pennsylvania anthracite industry, (i.e., production, distribution, and consumption). Tables on anthracite production detail the following: type of mining (e.g., from culm banks, strip pits, etc.), county and coal field where production occurs, number of employees and operators, coal sizes, and impurities. Production trends since 1890 and tons of anthracite produced worldwide by country are given. Charts depict equipment used to recover coal from culm banks and to strip mine by type of power and loading equipment. Ongoing federal and state research projects on subsidence, mine drainage, and reclamation are listed. The publication also lists methods of transport, and quantities shipped to states and counties. Other statistics include: the average dollar amounts of sales by miners, by coal size and wholesale prices; short tons of anthracite consumed, by category of consumer and quantities of U.S. anthracite exports.

SOURCE: Sources include data collected by the U.S. Bureau of Mines, U.S. Bureau of the Census, Association of American Railroads, Black Diamond Magazine, and the Pennsylvania Department of Environmental Resources.

CONTACT: Mr. Wayne M. Watson
Statistical Assistant
Office of Coal and Electric Power Statistics
Energy Information Administration
U.S. Department of Energy
Washington, D.C. 20585
(202) 252-6876

AGENCY: Energy Information Administration (EIA)
U.S. Department of Energy

PUBLICATION: Energy Data Reports: Coke and Coal
Chemicals -- Annual

DESCRIPTION: This annual report includes data on the following: total quantity and value of anthracite carbonized to produce coke, quantities of anthracite carbonized at oven-coke plants in the United States, by month; and month-end stocks of anthracite coal at oven-coke plants.

SOURCE: Bureau of Mines and EIA: information obtained from coke producers.

CONTACT: Ms. Marsha Murphy, Analyst
Coal Statistics Division
Office of Coal and Electric Power
Statistics
Energy Information Administration
U.S. Department of Energy
Washington, D.C. 20585
(202) 252-6876

AGENCY: Energy Information Administration (EIA)
U.S. Department of Energy

PUBLICATION: Energy Data Reports: Coke and Coal
Chemicals -- Monthly

DESCRIPTION: This monthly report provides statistics on short tons of anthracite carbonized to produce coke and stocks of anthracite at coke plants for the current month, the previous month, and the corresponding month of the previous year. It also provides cumulative figures for the year to date for the current and previous years.

SOURCE: EIA; information obtained from U.S. coke plants.

CONTACT: Mr. Robert Harris, Acting Director
Coal Statistics Division
Office of Coal and Electric Power
Statistics
Energy Information Administration
U.S. Department of Energy
Washington, D.C. 20585
(202) 252-6868

AGENCY: Energy Information Administration (EIA)
U.S. Department of Energy

PUBLICATION: Energy Data Reports: Distribution of
Pennsylvania Anthracite

DESCRIPTION: This annual report describes in detail quantities of Pennsylvania anthracite shipped, size of coals (i.e., broken and egg to buckwheat No. 3), and mode of transportation (rail or truck) by destination (state, major city, and foreign country).

SOURCE: EIA gathers the data from anthracite producers and brokers.

CONTACT: Mr. Wayne M. Watson
Statistical Assistant
Office of Coal and Electric Power
Statistics
Energy Information Administration
U.S. Department of Energy
Washington, D.C. 20585
(202) 252-6876

AGENCY: Energy Information Administration (EIA)
U.S. Department of Energy

PUBLICATION: Energy Data Reports: Pennsylvania
Anthracite Weekly Production

DESCRIPTION: Documents production of anthracite in short tons for each week, the previous week, and the corresponding week a year ago. Includes cumulative production from January 1 to the corresponding week and the same period of the previous year. Includes a graph of anthracite production for the current and previous year. Also includes railcar loadings. A monthly supplement summarizes the weekly reports and lists anthracite exports by country of destination.

SOURCE: Production data are estimated by EIA; data on loadings of railcars are obtained from initial carriers and the Association of American Railroads.

CONTACT: Ms. Mary S. Lanier, Statistical Assistant
Coal Statistics Division
Office of Coal and Electric Power Statistics
Energy Information Administration
U.S. Department of Energy
Washington, D.C. 20585
(202) 252-6864

AGENCY: Energy Information Administration (EIA)
U.S. Department of Energy

PUBLICATION: Monthly Energy Review

DESCRIPTION: This monthly report contains data on short tons of anthracite consumed to produce electricity and anthracite stocks at electric utilities for recent months and previous years.

SOURCE: EIA; information obtained from electric utilities.

CONTACT: Mr. Fred D. Galloway, Computer
Systems Analyst
Office of Interfuel, International,
and Emerging Energies Statistics
U.S. Department of Energy
Energy Information Administration
Washington, D.C. 20461
(202) 633-9240

AGENCY: Assistant Secretary for Environment
U.S. Department of Energy (DOE)

PROJECT: Los Alamos Coal and Electric Utilities
Model

DESCRIPTION: Model uses forecasts of U.S. energy demand and then determines the costs of coal that will supply that demand. Includes location of coal reserves and the costs of mining, transportation, and power generation and transmission, for each type of coal, including anthracite. Los Alamos Scientific Laboratory prepared the model and uses it in coal and electric utility modeling, which is still being funded by DOE's Office of Technology Impacts.

SOURCE: Data from DOE's "National Coal Model" data base.

FEDERAL
CONTACT: Dr. Richard Ball
Office of Technology Impacts
Assistant Secretary for
Environment
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-5801

CONTRACTOR
CONTACT: Mr. Verne W. Loose
Economist
Los Alamos Scientific Laboratory
MS-605
P. O. Box 1663
Los Alamos, New Mexico 87545
(505) 667-2113

AGENCY: Assistant Secretary for Fossil Energy
U.S. Department of Energy

PROJECT: Anthracite Culm Combustion

OBJECTIVES: To design a process for using anthracite culm (materials left over from mining and preparation of anthracite coal) in atmospheric fluidized-bed (AFB) combustors. To design, construct, and test three prototype AFBs fired with anthracite culm, demonstrating that they work properly and reliably, are economical, and emit low levels of pollutants.

PARTICIPANTS: Participants are:

1. Shamokin Area Industrial Corporation (SAIC) with Curtiss-Wright Co., Dorr-Oliver Co., E. Keeler Boiler Co., and Stone and Webster Engineering Co.
2. City of Wilkes-Barre (W-B) with Pope, Evans, and Robbins Co., and Foster-Wheeler Boiler Corporation
3. Fluidyne Corporation (FD) (there is no subcontract yet for other participants or host site).

**TECHNICAL
DESCRIPTION:**

The SAIC facility will produce 20,000 lb/hr of 150-psig steam using a culm having a higher heating value of 4,000 Btu/lb, fed at a rate of 4 tons per hour. The W-B facility will produce 100,000 pounds of steam per hour, using a culm having a higher heating value of 5,050 Btu/lb, fed at a rate of 14.5 tons per hour. The FD facility is expected to have a steam output of between 20,000 and 30,000 pounds per hour.

SITES:

The facilities are located at the following sites:

1. Shamokin Area Industrial Park, Shamokin, Pennsylvania
2. Wilkes-Barre, Pennsylvania (former Stegmaier Brewery Company property)
3. Not yet determined.

CONTRACT AMOUNTS AND SHARES:

For each facility, the contract amount and share are:

1.	DOE	\$ 3.86 million
	SAIC	1.36 million
	Total	<u>\$ 5.22 million</u>
2.	DOE	\$ 6.86 million
	W-B	4.77 million
	Total	<u>\$11.63 million</u>
3.	DOE	\$ 2.51 million
	FD	2.51 million
	Total	<u>\$ 5.02 million</u>

SCHEDULE:

All three projects started in the last quarter of 1978 and will undergo design, construction, operation and testing, and evaluation phases. Their schedules are:

1. SAIC - construction should start in the first quarter of 1980, and operation of the AFB should begin in 1981 and last through 1982.

after the first quarter of 1980;
operation and testing should
start at the end of 1981 and
continue through early 1983.

3. FD - construction should start
at the beginning of 1981;
operation is planned for
mid-1982 to mid-1984.

CONTACT:

Mr. John Geffken, Program Manager
Office of Coal Utilization
Assistant Secretary for Fossil Energy
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-2800

AGENCY: Assistant Secretary for Fossil Energy
U.S. Department of Energy

PROJECT: Extraction/Preparation R&D Needs for
Anthracite

OBJECTIVE: To formulate a comprehensive research and development (R&D) plan that will promote enhanced recovery and expanded utilization of the extensive anthracite reserve base in the United States.

TECHNICAL
DESCRIPTION:

This contract has five major tasks:

Task 1 - Literature Review. All available information regarding reserve areas throughout the country will be reviewed. Using published literature, local contacts, and the extensive data already collected by Skelly and Loy during past studies, a comprehensive overview of anthracite extraction and preparation research activities and needs in the United States will be obtained.

Task 2 - Identify Research Needs and Establish Target Price. From information obtained during the literature review, the major research areas that would offer maximum potential benefits will be identified. The research may relate to a number of different areas, including resource characterization, extraction technologies, transportation, reclamation and environmental considerations, social/economic concerns, coal preparation, and the anthracite market. Because the anthracite industry is currently depressed, a thorough investigation of the market constraints imposed on anthracite will be particularly important. Based on this investigation,

research areas or studies to evaluate new market possibilities will be recommended. Once the major research needs of the anthracite industry have been determined, a target cost for the comprehensive R&D plan will be established.

Task 3 - Establish Research Priorities and Format for Research and Development. Research priorities will be set during this task based on anticipated needs of the industry. These priorities will then be used in establishing the overall format for the research and development plan. The format will comprise details regarding the direction of program efforts, including a description of the optimal progression of studies and interrelationships between studies.

Task 4 - Develop Details of the R&D Plan. During this task, the R&D plan will be expanded, emphasizing particular research areas that offer the highest potential benefits. At this point, several options will be available, depending upon the Task 1 findings and on DOE's ultimate goals for the R&D plan.

Task 5 - Prepare Reports. The comprehensive R&D plan developed during this study will be summarized in a draft final report. The report will include a rationale for the plan, detailed summaries of each of the recommended studies, and the plan's projected cost breakdown. Following review by DOE, necessary corrections will be made and a final report will be submitted.

PARTICIPANT: Skelly and Loy, of Harrisburg, Pennsylvania, is the contractor for this study.

FUNDING: The total value of the contract is \$98,050.

SCHEDULE: The contract extends for the period November 1, 1979 - June 1, 1980. The draft final report is due April 15, 1980; the final report is due on May 31, 1980.

FEDERAL CONTACT: Mr. Douglas Uthus
Office of Mining
Deputy Assistant Secretary for Coal Technology
Assistant Secretary for Fossil Energy
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-2737

CONTRACTOR CONTACT: Mr. Leroy D. Loy, Jr.
Skelly and Loy
2601 North Front Street
Harrisburg, Pennsylvania 17110
(717) 232-0593

AGENCY: Assistant Secretary for Fossil Energy
U.S. Department of Energy (DOE)

PROJECT: Monitoring a Wellman-Galusha Gasifier
at the Glen-Gery Brick Company

OBJECTIVES: To obtain information on the selection and operation of instruments for measuring gasifier performance; to collect operating data on costs and material and energy balances.

TECHNICAL DESCRIPTION: Acurex, Inc., instrumented and monitored the performance and operating characteristics of an existing Wellman-Galusha gasifier at Glen-Gery Brick Company's plant. One-week tests were run with different sets of operating parameters. The efficiency and cost of gas produced were calculated using weekly data.

The gasifier produces low-Btu gas from anthracite coal, and the gas is then used to fire a brick kiln. The gasifier processes 1 ton of anthracite coal per hour, and produces 24 million Btu of hot, raw gas per hour.

SITE: Glen-Gery Brick Company's York, Pennsylvania plant.

FUNDING: The total cost of the instrumenting and monitoring effort was \$1.554 million. DOE provided 48 percent of the funds, and Acurex and Glen-Gery provided the balance.

SCHEDULE: The project started in 1977, and ended in mid-1979 with a final report.

FEDERAL CONTACT: Mr. Ted Atwood
Program Manager for Gasifiers in Industry
Assistant Secretary for Fossil Energy
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-4492

**CONTRACTOR
CONTACTS:**

Mr. Rolf E. Maurer
General Manager
Gas Generation Associates*
510 Park Road North
Wyomissing, Pennsylvania 19610
(215) 373-4168

Mr. Randall C. Fowler
Manager
Energy & Technology
Energy & Environmental Division
Acurex, Inc.
485 Clyde Avenue
Mountain View, California 94042
(415) 964-3200

*Gas Generation Associates is a joint venture of Acurex and Glen Gery.

AGENCY: Assistant Secretary for Fossil Energy
U.S. Department of Energy (DOE)

PROJECT: Site Selection and Financial Analysis
of Deep Surface Mining of Anthracite

OBJECTIVE: To investigate the potential for deep
surface mines on two prospective sites
in the Southern and Western Middle
anthracite fields in Pennsylvania.

TECHNICAL
DESCRIPTION: For each of the two sites, the design
of a large-scale open pit mine was
used to determine the economic feasibility
of producing the anthracite at the
site. A computer model was used to
estimate reserves, stripping ratios,
and average mining locations, based on
data provided by the U.S. Geological
Survey. This information, together
with equipment performance characteristics,
was applied to a simulation
model to determine the necessary size
of the truck fleet for shovel and
front-end loaders. A selling price was
calculated based on capital, operating,
and maintenance costs using a discounted
cash flow model. Also, descriptions
of the social and economic background
of the area, land use regulations, and
problems of drainage, pit slope
stability, and overburden characteristics
were prepared.

PARTICIPANT: Department of Mineral Engineering, the
Pennsylvania State University.

FUNDING: The total cost of the project was \$91,117,
of which \$86,561 was provided by DOE
and the rest by the contractor.

SCHEDULE:

The study began in October 1976 and was completed at the end of 1979. A final report was prepared.

**FEDERAL
CONTACT:**

Mr. William B. Schmidt
Acting Director, Office of Mining
Deputy Assistant Secretary for
Coal Technology
Assistant Secretary for
Fossil Energy
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-2737

**CONTRACTOR
CONTACT:**

Professor Charles B. Manula
Department of Mineral Engineering
104 Mineral Sciences Building
The Pennsylvania State University
University Park, Pennsylvania 16802
(814) 863-1642

AGENCY: Morgantown Energy Technology Center
U.S. Department of Energy

DATA BASE: Software System to Simulate Coal-Plant
Sulfur and Particulate Controls

OBJECTIVE: To determine the performance and cost
of different particulate and sulfur
control technologies for coal-fired
power plants that use different types
of coal.

TECHNICAL
DESCRIPTION: The software system has simulated
various power plants fitted with
electrostatic precipitators (hot and
cold), baghouses, and scrubbers, and
fired by a variety of coals, including
anthracite. For each plant the cost,
performance, and ability of the plant
to meet the New Source Performance
Standards is assessed. Documentation
of the model is available in the
publication Effects of the Proposed
New Source Performance Standards: A
Comparative Assessment of the Energy
and Economic Impacts by Paul S.
Farber and C. David Livengood (June
1978).

PARTICIPANT: Argonne National Laboratory developed
the model.

SCHEDULE: The project began in 1977. The model
is currently being refined.

CONTRACT
AMOUNT: No information is available on specific
costs of maintaining and using the data
base.

FEDERAL
CONTACT: Dr. Larry C. Headley
Chief, Process Technology and Engineering
Branch
Technology Development and Engineering Division
Morgantown Energy Technology Center
U.S. Department of Energy
P. O. Box 880
Morgantown, West Virginia 26505
(304) 599-7314

CONTRACTOR

CONTACT:

Mr. Paul S. Farber

Program Manager

Energy and Environmental Systems Division

Argonne National Laboratory

9700 South Cass Avenue

Argonne, Illinois 60439

(312) 972-5634

AGENCY: Assistant Secretary for Resource Applications
U.S. Department of Energy (DOE)

PROJECT: An Assessment of the Effects on Anthracite
Development of Flexible New Source
Performance Standards (NSPS) for Industrial
Boilers

OBJECTIVE: To study the implications of NSPS on
anthracite use in industry.

TECHNICAL DESCRIPTION: The study will have the following three
parts:

1. Estimate the use of new anthracite-fired boilers, growth rates of nonutility anthracite consumption, and the current economics of firing anthracite in new industrial boilers.
2. Determine the level at which air pollution emission controls will cause the cost of using anthracite in new boilers to become too high for anthracite to compete with oil, gas, or other coals.
3. Analyze and evaluate the regulations for INSPS, expected to be proposed by the U.S. Environmental Protection Agency in November 1980, specifically with regard to implications for anthracite usage. Determine which NSPS pollution control level would allow anthracite to be economically viable as an alternative to bituminous coal.

PARTICIPANT: Environmental Research & Technology,
Inc. (ER&T), will conduct the study.

FUNDING: DOE's contract with ER&T is for
\$49,371.

SCHEDULE: The study started March 26, 1980, and
will extend for 1 year.

**FEDERAL
CONTACT:**

Dr. Jerry Pell
Director, Division of Anthracite
Office of Coal Resource Management
Resource Applications, Mail Room 3344
U.S. Department of Energy
Washington, D.C. 20461
(202) 633-9058

**CONTRACTOR
CONTACT:**

Dr. Brian L. Murphy, Manager
Policy, Planning, and Earth Resource
Center
Environmental Research & Technology,
Inc.
969 Virginia Road
Concord, Massachusetts 01742
(617) 369-8910

AGENCY: Assistant Secretary for Resource Applications
U.S. Department of Energy (DOE)

PROJECT: Evaluation of Anthracite Deposits in the
Narragansett Basin

OBJECTIVES: The program has two phases, with different objectives.

Phase I: Prepare an extended summary of the status of Narragansett Basin anthracite production, exploration activities, and analyses to date.

Phase II: Determine the presence of economically viable anthracite reserves in the basin.

TECHNICAL
DESCRIPTION:

In Phase I, the contractor will synthesize available information on previously drilled core samples and document the analytical techniques and methodologies employed in making the coal and drill core samples. The contractor will also prepare generalized maps of preferred, moderately preferred, and least preferred areas for potential mining and power plant sites, based on legal, environmental, and socioeconomic considerations.

In Phase II, the contractor will conduct a field core-drilling exploration and a core-sample analysis to characterize and quantify the anthracite resource. The contractor will drill 15 drillholes, comprising approximately 17,000 feet of continuous core, with size NX diamond drill bits. The cores will be analyzed for heating value, moisture, sulfur, ash, volatile matter, and fixed carbon content; if warranted, reflectivity measurements will be taken.

SITES: Drilling will take place in the following nine regions:

- Portsmouth Region (3 drillholes)
- Cranston Region (2 drillholes)
- Plainville Region (2 drillholes)
- Mansfield Region (3 drillholes)
- Valley Falls Region (1 drillhole)
- Bristol Region (1 drillhole)
- Somerset Region (1 drillhole)
- Middleboro Region (1 drillhole)
- Pantucket Region (1 drillhole).

PARTICIPANT: The Weston Observatory of Boston College will undertake this program.

FUNDING: All of the funding is being provided by DOE. Of the total contract amount of \$400,000, \$60,230 is allocated to Phase I and \$339,770 to Phase II.

SCHEDULE: Phase I started April 3, 1979, and was completed December 31, 1979; Phase II started September 29, 1979, and will extend for 1 year.

FEDERAL CONTACT: Dr. Jerry Pell
Director, Division of Anthracite
Office of Coal Resource Management
Resource Applications, Mail Room 3344
U.S. Department of Energy
Washington, D.C. 20461
(202) 633-9058

CONTRACTOR CONTACT: Fr. James W. Skehan, S.J.
Director, Weston Observatory
Boston College
381 Concord Road
Weston, Massachusetts 02193
(617) 899-0950

AGENCY: Assistant Secretary for Resource Applications
U.S. Department of Energy

PROJECT: Nanticoke Gasification Project

OBJECTIVE: To construct a coal gasification facility that would produce a marketable synthetic fuel (either as a gas or methanol) derived from anthracite coal or culm (anthracite mine and preparation plant refuse).

TECHNICAL DESCRIPTION: The project is now in the first of three phases, which include:

Phase I - Conduct a feasibility study, including: an assessment of the market for technology to gasify anthracite culm or coal and for the product itself, a preliminary technical design of a plant that will process 3,600 tons of anthracite coal or culm per day, and a cost assessment of the project.

Phase II - Develop the cost-sharing agreements needed to finance the plant, and initiate detailed design and engineering of the gasification plant.

Phase III - Procure equipment and construct the facility.

SITE: Nanticoke Industrial Park,
Nanticoke, Pennsylvania.

PARTICIPANTS:

The Energy Development & Resource Corporation (EDRC), of Nanticoke, Pennsylvania is directing the program, at a site provided by the Nanticoke Industrial Development Corporation. Ebasco Services Incorporated, New York, New York will serve as principal subcontractor to EDRC. Other participants include: Pennsylvania Gas, Water, and Electric, Wilkes-Barre, Pennsylvania; U.G.I. Corporation, Reading, Pennsylvania; A.E. Peters Associates, Scranton, Pennsylvania; and the Economic Development Council of Northeastern Pennsylvania, Avoca, Pennsylvania.

**CONTRACT
AMOUNT:**

\$299,375 has been allocated by DOE to the feasibility study. Construction of the facility will be funded if it proves feasible.

SCHEDULE:

The project, which started in mid-October 1979, is expected to be completed by September 1984: Phase I is expected to take 9 months; Phase II is scheduled to be completed in April 1982; Phase III is scheduled to be completed by September 1984.

**FEDERAL
CONTACT:**

Mr. Arvid Strom, Program Manager
Low/Medium Btu Coal Gasification
Office of Coal Resource Management
Assistant Secretary for Resource
Applications
U.S. Department of Energy
Washington, D.C. 20461
(202) 633-9195

**CONTRACTOR
CONTACT:**

Mr. Eugene Walsh
Executive Director
Energy Development and Resource
Corporation
85 West Union Street
Wilkes-Barre, Pennsylvania 18702
(717) 735-0124

AGENCY: Assistant Secretary for Resource Applications
U.S. Department of Energy (DOE)

PROJECT: Narragansett Basin Core Drilling Program Plan

OBJECTIVE: To develop and prepare a comprehensive core-drilling and sample-analysis program plan for characterizing and quantifying the anthracite resources of the Narragansett Basin.

TECHNICAL DESCRIPTION: The project is divided into two phases.

Phase 1: Prepare plans for the core-drilling program and a comprehensive program for laboratory analyses of the drill cores. The plans will portray three different approaches to a drilling program, reflecting different funding levels and program lengths.

Phase 2:

- Possibly conduct extended and concluding analysis to be added to the Phase 1 effort.
- Study the best means to use the data that would be developed by a core-drilling program. Study mineral rights in those portions of the Narragansett Basin identified in the program plan for core drilling and the appropriate role of the federal government in the execution or support of a core-drilling program.
- Outline the legal, environmental, economic, and social issues that may be expected to arise from commercial mining of anthracite coal in the basin.
- Evaluate the coal exploration and mining technologies and practices that may be developed and used in South Wales, Great Britain, for their potential applicability to the Narragansett Basin.

- Conduct a two-day symposium on "Narragansett Basin Anthracite Programs."

PARTICIPANT: The Center for Energy Studies, University of Rhode Island, will undertake the work.

FUNDING: All of the funding is being provided by DOE. The Phase 1 effort is currently funded at \$45,000. Phase 2 is being funded at \$55,000 for fiscal year 1980.

SCHEDULE: Phase 1 started on September 29, 1979 and is scheduled to take 1 year. Phase 2 starts in April 1980.

FEDERAL CONTACT: Dr. Jerry Pell
Director, Division of Anthracite
Office of Coal Resource Management
Resource Applications, Mail Room 3344
U.S. Department of Energy
Washington, D.C. 20461
(202) 633-9058

CONTRACTOR CONTACT: Dr. Mason P. Wilson, Jr.
Director, Center for Energy Studies
University Energy Center
101 Wales Hall
University of Rhode Island
Kensington, Rhode Island 02881
(401) 792-2330

AGENCY: Assistant Secretary for Resource Applications
U.S. Department of Energy

PROJECT: Support Services for the Division of
Anthracite

OBJECTIVE: To provide program support services to
the Division of Anthracite.

**TECHNICAL
DESCRIPTION:** Four tasks have been assigned under this
contract:

- An assessment of the feasibility of implementing the final recommendations of the Anthracite Task Force
- An analysis of the exemption of new anthracite-fueled power plants from EPA scrubbing requirements and its long-term implications for utility use of anthracite
- An inventory of existing and planned anthracite-related projects and programs participated in or funded by the federal government (i.e., this report)
- An analysis of the proposed exemption of new anthracite-fired boilers from EPA's New Source Performance Standards and its implications for long-term industrial use of anthracite.

PARTICIPANTS:

Berger Associates of Camp Hill, Pennsylvania, is the prime contractor for this contract; Resource Planning Associates, Inc., Washington, D.C., and Stratton C. Schaeffer, Camp Hill, Pennsylvania are subcontractors to Berger Associates.

FUNDING:

Funding for fiscal year 1979 is \$99,852, for base-year "A" tasks. An additional \$100,000 (for Phase B) is being awarded for fiscal year 1980.

SCHEDULE:

The contract was signed on May 30, 1979 and extends one year. Phase B starts June 1, 1980, and extends one year.

**FEDERAL
CONTACT:**

Dr. Jerry Pell
Director, Division of Anthracite
Office of Coal Resource Management
Resource Applications, Mail Room 3344
U.S. Department of Energy
Washington, D.C. 20461
(202) 633-9058

**CONTRACTOR
CONTACT:**

Mr. Richard M. Miller
Program Manager
Berger Associates
101 Erford Road
Camp Hill, Pennsylvania 17011
(717) 763-7391

AGENCY: Bureau of Mines (BoM)
U.S. Department of the Interior

PROJECT: Anthracite Refuse Preparation
Demonstration Plant

OBJECTIVE: To demonstrate the economic feasibility of a plant designed to recover anthracite coal from mining refuse banks.

TECHNICAL DESCRIPTION: A heavy-media separation plant will be constructed, using a dual Wemco drum, 2 Wemco cyclones, and 2 Dyna Whirl heavy-media preparation units. The plant is expected to recover 10-15 percent of the 350 tons per hour of coal refuse it will process. The recovered coal will be usable as space heating and power plant fuel.

SITE: The plant will be located in the Port Griffith section of Jenkins Township, Luzerne County, Pennsylvania, and will process on-site coal from banks estimated to contain 14 million tons of mine refuse.

PARTICIPANT: Anjomar, Inc., of Pittston, Pennsylvania is the contractor for the plant and eventually will be the owner.

**CONTRACT AMOUNT
AND SHARES:**

BoM is providing \$3 million in funds; the contractor also will contribute about \$3 million. The contractor will begin to repay the government 1 year after the plant starts operation; the funds will be repaid completely in 5 years.

SCHEDULE:

The construction and operation contract was awarded on September 30, 1977. Eighty percent of the equipment needed is now on-site, most of the steel fabrication has been completed, and steel erection should begin in November 1979. The plant should be in operation by the fall of 1980.

FEDERAL CONTACT:

Mr. Ivor Williams, Technical Project Officer, or
Mr. Frank Andreaczi
U.S. Bureau of Mines
20 North Pennsylvania Avenue,
Room 3323
Wilkes-Barre, Pennsylvania 18701
(717) 826-6333

CONTRACTOR:

Mr. Anthony Giarratano
Anjomar, Inc.
P.O. Box 702
Pittston, Pennsylvania 18640
(717) 655-2286

AGENCY: Bureau of Mines
U.S. Department of the Interior

PROJECT: Development of Anthracite Probe Drill

OBJECTIVE: To design and demonstrate a light-weight, air-powered drill to probe for impounded water in abandoned mines near active mine workings. The drill will enable miners working within mines to comply with Pennsylvania's requirement that they drill probe holes before advancing into areas near old uncharted workings.

SITES: Hamilton Engineering Associate's research facilities in Seattle, Washington and the Kocher Coal Company's Porter Tunnel Mine, Tower City, Pennsylvania.

PARTICIPANTS: Hamilton Engineering Associates is the prime contractor. Additional participants are the Kocher Coal Company, the Pennsylvania Department of Environmental Resources, the Ingersoll-Rand Company, and the Independent Miners Association.

CONTRACT
AMOUNT: \$80,000

SCHEDULE: The contract started in December 1978 and will be completed in December 1979. To date, several drills have been developed and tested, and further research needs have been identified.

A follow-on contract will be awarded to finance the design of a rod-handling system to complete the probe drill.

**FEDERAL
CONTACT:**

Mr. Robert L. Schmidt
Research Supervisor
Underground Mining
Bureau of Mines
Twin Cities Research Center
U.S. Department of the Interior
P. O. Box 1660
Twin Cities, Minnesota 55111
(612) 725-3455

**CONTRACTOR
CONTACT:**

Mr. William Hamilton, President
Hamilton Engineering Associates
16765 32nd Avenue, S.W.
Seattle, Washington 98166
(202) 244-3456

AGENCY: Bureau of Mines
U.S. Department of the Interior

PROJECT: Environmental Factors Affecting
Surface Mining of Steeply Pitching
Coal Seams

OBJECTIVE: To analyze the environmental, operational, and reclamation problems associated with surface mining of steeply pitching coal seams (i.e., seams with a pitch of 25 degrees or more) and to develop and compare improved surface mining concepts.

TECHNICAL DESCRIPTION: The contractor will perform two tasks:

1. Literature Review. Review literature and regulations on environmental and engineering aspects of mining steeply pitching seams. Also review geological literature to identify:

- Name and location of seams, and area dimensions of deposits
- Estimated reserves
- Seam thicknesses, pitch, and mineral quality
- Overburden types and thicknesses.

Determine which areas will require special environmental controls to ensure an environmentally compatible mining operation. Assess the adverse environmental effects from mining in areas with natural slopes over 25 degrees and recommend ways to reduce those effects.

2. Field Survey. The contractor will conduct field studies at five operations extracting coal from steeply pitching seams. At each site, the contractor will: identify problems of compatibility between equipment and sound environmental engineering concepts; describe the mine layout; and estimate the cost amount of work involved in mining and environmental protection procedures. The contractor will also describe the stratigraphy at each site and determine the nature and extent to which geologic factors affect mining and environmental controls.

Finally, the contractor will develop and evaluate improved surface mining concepts. After comparing the concepts, the contractor will recommend concepts deserving further development.

PARTICIPANTS: Ketron, Inc., will undertake the study assisted by a subcontractor, Wapora, Inc. The name of the anthracite mine site, one of the five coal mines being studied, is being held confidential.

SITE: The anthracite mine is located in the Southern anthracite field in Pennsylvania.

FUNDING: The value of the contract is \$85,269.

SCHEDULE: The project started in May 1979; a final report will be completed in April 1980.

FEDERAL CONTACT: Ms. Lani Boldt
Technical Project Officer
Spokane Research Center
U.S. Bureau of Mines
East 315 Montgomery Avenue
Spokane, Washington 99207
(509) 484-1610

**CONTRACTOR
CONTACT:**

Mr. Edward W. Schroeder
Mining Engineer
Ketron, Inc.-Philadelphia Operations
Valley Forge Executive Mall
East 530 Swedesford Road
Wayne, Pennsylvania 19087
(215) 687-6300

AGENCY: Bureau of Mines
U.S. Department of the Interior

PROJECT: Mined Land Demonstration and Reclamation
Projects

OBJECTIVE: The following projects are designed to
reduce the environmental damage to
land caused by anthracite mining.

FEDERAL CONTACT: Mr. Thomas P. Flynn, Jr., Chief
Branch of Applied Technology
and Demonstrations
Bureau of Mines
U.S. Department of the Interior
2401 E Street, N.W.
Washington, D.C. 20241
(202) 634-1249

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

I. SUBSIDENCE CONTROL -- Demonstration Projects

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Jermyn, Jermyn Borough, Lackawanna Co., Pa.	\$1.3 million; 99% completed as of 11/79.	BoM - 100%.	Stearns Service Co., Wilkes-Barre, Pa.	The project is designed to eliminate pothole subsidence by applying the pumped-slurry backfilling system to abandoned mine voids that are within 130 feet of the surface. Approximately 200,000 tons of crushed 3/4-inch mine refuse will be injected into mined-out coalbeds in the abandoned Jermyn Mine underlying 69 acres of the Borough of Jermyn. Estimated acreage to be backfilled: 69.
Minooka, Scranton, Lackawanna Co., Pa.	\$3.3 million; 85% completed as of 11/79.	BoM - 100%.	Stearns Service Co., Wilkes-Barre, Pa.	The project will provide support to mines where subsidence has caused extensive damage. About 700,000 tons of crushed refuse will be flushed into the underlying mine voids. Estimated acreage to be backfilled: 157.
North Main Avenue, Scranton, Lacka- wanna Co., Pa.	\$3.3 million; 76% completed as of 12/79.	BoM - 100%.	Empire Contracting Co., Taylor, Pa.	The demonstration project is designed to fill mine voids for subsidence control and eliminate the oxygen-deficient mine gases presently escaping to the surface. This outflow poses a serious health hazard and interferes with open-flame heating systems in private residences and other inhabited structures. Estimated acreage to be backfilled: 212.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

Old Forge &
Taylor
Boroughs, Lacka-
wanna Co., Pa.

\$2.1 million;
7% completed
as of 7/79.

BoM - 100%.

No. 1 Contracting
Corp., West
Pittston, Pa.

The demonstration project involves the loading of refuse material into an injection plant located at the refuse bank site. The material is then carried by slurry pipelines to injection boreholes and injected into the mine voids. The work will include the drilling of boreholes for injecting material and monitoring the progress of the backfilling operation. Approximately 325,000 tons of crushed refuse material will be flushed into the underlying mine voids of the entire project area consisting of approximately 99 acres.

Pear Street,
Scranton,
Lackawanna
Co., Pa.

\$1.9 million;
completed.

BoM - 100%.

Stearns Service
Co., Wilkes-Barre,
Pa.

Approximately 500,000 tons of crushed anthracite refuse will be injected into mined-out coalbeds underlying 118 acres of Scranton. The refuse material will be obtained from the Old Forge mine refuse bank. Water used in the slurry injection process would be supplied by deep-well pumps bored to the national mine-water pool which inundates the mine voids approximately 100 feet below the surface. This demonstration project tests the versatility of the backfilling system by applying it to an area with both minimum pillar support and marginal rock cover. Estimated acreage to be backfilled:

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

Pittston Avenue
& Hickory St.,
Scranton, Lacka-
wanna Co., Pa.

\$2.9 million;
82% completed
as of 11/79.

BoM - 100%.

No. 1 Contracting
Co., West
Pittston, Pa.

The demonstration project is designed to establish optimum backfilling conditions by manipulating several components of the slurry system. Additionally, mine voids in an area where perched mine-water conditions exist will be backfilled. Approximately 650,000 tons of crushed anthracite refuse will be injected into mined-out coalbeds underlying Scranton. Estimated acreage to be backfilled: 80.

Sixth Avenue
Taylor Borough
& Scranton,
Lackawanna
Co., Pa.

\$0.3 million;
11% completed
as of 11/79.

BoM - 100%.

Stearns Service
Co., Inc.,
Wilkes-Barre, Pa.

The demonstration project is designed to accomplish filling of abandoned and inaccessible mine voids to stabilize the surface in an area that is especially prone to the danger of damage from mine subsidence. The pumped-slurry injection process is employed using minus 1/2-inch crushed mine-breaker refuse material. Approximately 560,000 tons of crushed anthracite refuse will be injected into mined-out coalbeds underlying 85 acres of Taylor Borough.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

Throop Street,
Dunmore Borough,
Lackawanna Co.,
Pa.

\$1.0 million;
79% completed
as of 11/79.

BoM - 100%.

Empire Contracting
Co., Taylor,
Pa.

The demonstration project tests the feasibility of backfilling mine voids with nonmarketable silt material mixed with minus 1/2-inch screened mine refuse material. Due to the shallowness of the coal bed, the pumped-slurry injection process and the gravitation flow principle of backfilling will be employed. Estimated acreage to be backfilled: 86.

Tripp Park,
Scranton,
Lackawanna Co.,
Pa.

\$2.8 million;
63% completed
as of 11/79.

BoM - 100%.

C & S Excavating
Co., Aunmore, Pa.

The project will stabilize 74 surface acres in the Tripp Park neighborhood. The mine refuse material will be obtained from the Anthrapower, Inc., refuse bank, which is immediately adjacent to the project area. Once the refuse material is mixed with mine water, the minus 1/2-inch slurry material will be pumped through a network of distribution pipelines to the various boreholes and pressure-injected into the mine voids that underlie the project area.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

Tripp Park Section Two, Scranton, Lackawanna Co., Pa.	\$2.5 million; 16% completed as of 11/79.	BoM - 100%.	Fletcher & Sons, Inc., Philadel- phia, Pa.	The project will hydraulically backfill the underground mine voids with 200,000 tons of crushed mining wastes. Back- filling will give extra support to the old mine pillars, roofs, walls, and overlying strata that have deteriorated and are threatening the ground above with a pattern of irregular shifting, settling, and sinking typical of mine subsidence. Estimated acreage to be backfilled: 30.
Wilkes-Barre/ Scranton Airport, Luzerne/Lackawanna Co., Pa.	\$3.7 million; 4% completed as of 12/79.	BoM - 100%.	Stearns Service Co., Wilkes-Barre, Co., Pa.	The backfilling project is being conducted to stabilize the mineworkings under the runways and taxiways of the airport. Estimated acreage to be backfilled: 175.

II. SUBSIDENCE CONTROL -- Appalachian Reclamation Projects

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Hill Section II, Scranton, Lacka- wanna Co., Pa.	\$7.0 million; 67% completed as of 9/79.	BoM - 75% State of Pa. - 25%.	Commonwealth of Pa.	The project will provide support to remaining coal pillars and overlying rock strata, thereby relieving the threat of subsi- dence to over 4,000 surface structures in an area of 460 acres.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

Oregon - Welch Hill Phase II, City of Pittston, Luzerne Co., Pa.	\$3.2 million.	BoM - 31% State of Pa. - 69%.	Commonwealth of Pa.
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The project will alleviate subsidence problems in the area by backfilling the mined beds using the pumped-slurry injection process. Approximately one million cubic yards of crushed coal mine refuse will be injected into the mine voids through 113 injection boreholes drilled from 30 to 180 feet deep.

Miners Mill Section, Wilkes-Barre, Luzerne Co., Pa.	\$0.6 million.	BoM - 75% State of Pa. - 25%.	Commonwealth of Pa.
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Material from an abandoned-mine refuse pile will be hydraulically flushed and crushed into the underground mine workings through boreholes. Filling the mine voids in this manner furnishes needed additional support where surface support afforded by existing pillars is inadequate.

III. SUBSIDENCE CONTROL -- Anthracite Mine Drainage Act

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Blakely, Blakely Borough, Lacka- wanna Co., Pa.	\$3.7 million; 23% completed as of 12/79.	BoM - 50% State of Pa. - 50%.	Empire Contracting Co. Taylor, Pa.	The project will provide subsidence control for approximately 182 surface acres of the Peckville section of Blakely, Pa. Since the injection phase started in July 1979, a total of 137,613 tons of material has been backfilled.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

IV. MINE FIRE CONTROL -- Appalachian Reclamation Projects

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Glen Burn Phase II, Shamokin City & Coal Township, North- umberland Co., Pa.	\$0.8 million	BoM - 75% State of Pa. - 25%.	Commonwealth of Pa.	This project is designed to control an underground mine fire by hydraulically injecting a slurry of water and sandy clay into mine voids to form an incombustible barrier in the Luke Fidler and Cameron mines. Estimated acreage affected: 70.
Centralia Phase II, Centralia Borough, Columbia Co., Pa.	\$137,400	U.S. Office of Surface Mining (OSM) - 100%.	(OSM)	The purpose of this project is to control and/or extinguish the underground mine fire in the Buck Mountain bed through flushing methods. The initial work will involve installing additional carbon monoxide monitors for residents, drilling 25 exploratory holes to determine the extent and rate of advance of the fire, and contracting for an overflight of the area to obtain infrared imagery of the entire fire area. Data will be posted and interpreted bimonthly for evaluation. Estimated acreage affected: 70.
Glen Lyon, Glen Lyon Borough, Luzerne Co., Pa.	\$0.3 million	BoM - 25% State of Pa. - 75%.	Commonwealth of Pa.	The proposed project would control a mine fire in the Baltimore coal beds, about one-half mile south and east of the borough of Glen Lyon, Luzerne County, Pennsylvania.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

V. SURFACE MINE RECLAMATION -- Demonstration Projects

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Keyser Valley Park, Keyser Park, Lacka- wanna Co., Pa.	\$1.6 million; 92% completed as of 11/79.	BoM - 100%.	No. 1 Contracting Corp., West Pittston, Pa.	Reclamation work will result in the filling of strip mine pits with material from adjoining spoil banks, grading of the park area to stable rolling contours, revegetation of graded areas, establishment of subgrades for roads and trails, and stabilization of the channel of Lucky Run Creek that flows across the park property. Estimated acreage affected: 125.

VI. SURFACE MINE RECLAMATION -- Appalachian Reclamation Projects

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Zayre Bank Phase II, Wilkes-Barre, Luzerne Co., Pa.	\$2.4 million.	BoM - 67% State of Pa. - 33%.	Commonwealth of Pa.	The project is designed to reclaim 300 acres of strip mines and refuse bank material. The project will: abate surface water runoff into deep mines; improve aesthetic values; and render the now useless land suitable for public housing and transportation access, and make it more compatible with the surrounding developed area.

MINED LAND DEMONSTRATION AND
RECLAMATION PROJECTS

VII. MINE POLLUTION CONTROL -- Appalachian Reclamation Projects

<u>Project Name and Location</u>	<u>Cost</u>	<u>Funding Source</u>	<u>Contractor</u>	<u>Description</u>
Spring Run, Wilkes-Barre, Luzerne Co., Pa.	\$2.0 million	BoM - 25% State of Pa. - 75%.	Commonwealth of Pa.	This channelization project will prevent infiltration of stream water into caved underlying mine voids. It will consist of the construction of 1,900 feet of concrete-lined trapezoidal channel and 1,600 feet of rectangular concrete channel, extending 3,500 feet above the Gilligan Street Bridge in Wilkes-Barre.

AGENCY: Geological Survey
U.S. Department of the Interior

PROJECT: Classification of Government Coal
Lands in the Paonia-Somerset and
Crested Butte Coal Fields,
Gunnison County, Colorado

OBJECTIVE: To classify federal coal lands as
prospective leasing areas for coal
mining and determine if the coal
beds meet federal leasing criteria.

**TECHNICAL
DESCRIPTION:** The Geological Survey is mapping the
recoverable coal and its geologic
characteristics (e.g. stratigraphy,
sulfur content, etc.) and studying
environmental problems associated with
mining in these coal beds, including
those that contain anthracite coal.

PARTICIPANT: The Geological Survey's Conservation
Division office in Denver, Colorado
is performing the work.

FUNDING: Funding is \$40,000 for fiscal years
1978 and 1979.

SCHEDULE: The study began in June 1978 and will
be completed in fiscal year 1980.
The maps and reports will be pub-
lished later.

CONTACT: Mr. David L. Gaskill, Project Chief
Conservation Division
Geological Survey
U.S. Department of the Interior
Denver, Colorado 80225
(303) 234-2846

AGENCY: Geological Survey
U.S. Department of the Interior

PROJECT: Flow and Constituent Transport Model of
the Middle Schuylkill River

OBJECTIVE: To develop a flow and constituent transport model of the middle Schuylkill River in order to predict the effects of variations in the quantity and quality of mine area discharges on the water quality characteristics of the middle Schuylkill River. This project will be specifically aimed at predicting the potential effects of new mining activities in the basin on the water quality of the river.

TECHNICAL DESCRIPTION: An unsteady-flow model that is available for computing flow and sediment transport will be modified to account for both dissolved and suspended chemical constituents. This model would be calibrated for the Schuylkill River and verified by synoptic surveys of the water surface elevation, water discharge, suspended sediment concentration, and concentrations of selected constituents at three sites on the main stem and at three major tributaries between Berne and Pottstown. The effects of about eight storms will be sampled to collect the calibration and verification data. This will enable the model to be tested for a range of flow conditions on both the main stem and tributaries.

After the model is developed, it will be used to evaluate the effects of various in-flow conditions to the middle Schuylkill River. In-flow conditions used in the model will be based on historical water-quality data and projections of future mining activities in the basin.

PARTICIPANT: The Harrisburg, Pennsylvania, office of the Geological Survey will conduct the study.

FUNDING:

No information is available. This project has been proposed but has not yet been authorized.

SCHEDULE:

Data collection and model development will be conducted concurrently during fiscal years 1980-81. Data analyses and the final report will be prepared in 1982. The following milestones are planned:

March 1981	Collect calibration data
June 1981	Complete model development
September 1981	Collect verification data
December 1981	Complete model tests
March 1982	Complete simulation studies
June 1982	Final report.

CONTACT:

Mr. T. H. Yorke, Project Chief or
Mr. David Click, District Chief
Water Resources Division
Geological Survey
U.S. Department of the Interior
P. O. Box 1107
Harrisburg, Pennsylvania 17108
(717) 782-4514

AGENCY: Geological Survey
Department of the Interior

PROJECT: Geological Map of the Eastern Middle
Anthracite Field in Pennsylvania

OBJECTIVE: To map and report the location,
structure, and stratigraphy of
anthracite coal in Luzerne and
Carbon counties, Pennsylvania.

PARTICIPANT: The Geological Survey is undertaking
the effort.

SOURCE: The Geological Survey is preparing
the map based on field work and
old mine maps.

SCHEDULE: The project began 7 years ago and
is expected to be completed in
1981. The mapping and study of
the Western Middle and the
Southern anthracite fields have
recently been completed.

CONTACT: Mr. Gordon H. Wood, Geologist
Coal Resource Branch
Geological Survey MS 956, National Center
U.S. Department of the Interior
12201 Sunrise Valley Dr.
Reston, Virginia 22092
(703) 860-7734

AGENCY: Geological Survey
U.S. Department of the Interior

PROJECT: Geological Maps of the Northern
Anthracite Coal Reserves

OBJECTIVE: To study and map the distribution and stratigraphy of anthracite coal in northern Pennsylvania. The maps designate which portions of the coal are recoverable or already mined and indicate environmental problems associated with the mining of those reserves (e.g., water pollution from mining, waste dumped in abandoned mines).

PARTICIPANT: The Geological Survey has prepared and maintains a record of the maps.

SCHEDULE: The project is currently in abeyance. Although several geologic maps have been published, the program is being kept active only for inquiries.

CONTACT: Mr. Marion J. Bergin
Coordinator of Energy Resources
Assessment Programs
Office of International Geology
MS 917, National Center
Geological Survey
12201 Sunrise Valley Drive
U.S. Department of the Interior
Reston, Virginia 22092
(703) 860-6551

AGENCY: Geological Survey (USGS)
U.S. Department of the Interior

PROJECT: Proposed Survey of Groundwater Resources
of Anthracite Areas In and Near Schuylkill
County, Pennsylvania

OBJECTIVES: To continue the cooperative program between the Pennsylvania Topographic and Geologic Survey and the USGS of groundwater resource evaluation in critical areas, consistent with current USGS study priorities in energy, coal hydrology, and resource evaluation.

TECHNICAL DESCRIPTION: The project would consist of two phases:

- Phase 1: Determine the need for groundwater studies in and around the anthracite coal fields and prepare plans and propose specific projects to attack groundwater problems that fall within the practical limits of manpower and funds.

- Phase 2: Study the problems selected during the initial phase.

In Phase 1, a large collection of published reports, maps, and unpublished data on the complex geology, coal reserves, mine works, drainage networks, and the quantity and quality of acid-mine water discharges would be compiled and reviewed. Data for 1,500 wells on file with the Pennsylvania Topographic and Geologic Survey and data on 500 wells in USGS files would be compiled on maps, selectively stored in a data base, and analyzed. Additional information would be obtained from drillers, planning commissions, local officials, public suppliers of water, and other sources of opportunity. Data on groundwater quality would be compiled from reports and unpublished sources and analyzed.

Once the data had been compiled and reviewed, specific problems and their priorities would be defined. Selections of problems to be studied during Phase II would be discussed with USGS staff and other interested persons.

PARTICIPANTS: The Harrisburg, Pennsylvania office of the USGS would conduct the study. The Pennsylvania Topographic and Geologic Survey would provide a hydrologist part-time to work on Phase I.

FUNDING: No information is available. The project has been proposed, but has not yet been funded.

SCHEDULE: Phase I would begin on February 1, 1980 and end approximately June 30, 1980. The schedule for Phase II is not yet established.

CONTACT: Mr. Al Becher, Project Leader, or
Mr. David Click, District Chief
Water Resources Division
Geological Survey
U.S. Department of the Interior
P. O. Box 1107
Harrisburg, Pennsylvania 17108
(717) 782-4514

AGENCY: Bureau of Labor Statistics
U.S. Department of Labor

PUBLICATION: Occupational Injuries and Illness in
the United States by Industry

DESCRIPTION: This annual publication includes the following statistics on the anthracite mining industry: average annual employment; incidence rates of injuries and illnesses; mean and median incidence rates by employment size class; and numbers of injuries and illnesses.

SOURCE: Bureau of Labor Statistics;
information obtained from employers.

CONTACT: Ms. Janet Macon, Statistician
Office of Occupational Safety and
Health Statistics
Bureau of Labor Statistics
U.S. Department of Labor
441 G Street, N.W.
Washington, D.C. 20212
(202) 523-9275

AGENCY: Mine Safety and Health Administration
Department of Labor

PROJECT: Anthracite Miner Education

OBJECTIVE: The program includes two projects with the following objectives:
Project 1: To provide mine safety and health training and retraining to miners in deep and surface mines.

Project 2: To maintain an anthracite mine rescue team of 16 miners and establish a training center for mine rescue teams.

SITES: Project 1: Vo-Technical Training School in Pottsville, Schuylkill County, Pennsylvania

Project 2: Office of Deep Mine Safety mine rescue station in Lansford, Carbon County.

PARTICIPANTS: Project 1: Pottsville Vo-Technical Training School, with administration guidance from the Office of Deep Mine Safety, Pennsylvania Department of Environmental Resources

Project 2: Office of Deep Mine Safety, Pennsylvania Department of Environmental Resources.

CONTRACT
AMOUNT:

Project 1: Surface Mining	\$15,000
Deep Mining	<u>30,000</u>
Total	\$45,000

Project 2: \$20,000 to \$30,000.

SCHEDULE:

Both projects started in early July 1979 and will be completed in late June 1980. The contract is renewable.

**FEDERAL
CONTACT:**

Mr. Adam W. Hare
Chief, Branch of Contracts and Grants
Mine Safety and Health Administration
U.S. Department of Labor
4015 Wilson Boulevard
Arlington, Virginia 22203
(703) 235-8454

CONTRACTOR:

Mr. William Darkes
Administrative Officer
Pennsylvania Department of
Environmental Resources
Executive House Apartments,
Room 104
Harrisburg, Pennsylvania 17120
(717) 783-6783

AGENCY: Office of Research and Development
Environmental Protection Agency (EPA),
and the Appalachian Regional Commission

PROGRAM: Demonstration and Evaluation of
Reclamation, Stabilization, and
Erosion Control of Strip-Mined Land
for Agricultural Purposes Utilizing
Municipal Sewage Sludge

OBJECTIVE: To determine the feasibility of using
municipal sewage sludge to reclaim and
vegetate land disturbed by mining
activities.

TECHNICAL
DESCRIPTION: The project will consist of six major
activities:

- 1) Evaluate methods for processing,
transporting, spreading and incor-
porating sludge into the land
- 2) Demonstrate application rates that
will maximize benefits to soils,
improve water quality, and make lands
agriculturally productive
- 3) Evaluate the effect of varied sludge
applications on vegetation establishment
and growth (grass, legume, and tree
species), including foliar analysis to
determine nutrient uptake and potential
heavy metal toxicity
- 4) Evaluate the effect of the sludge
application on the chemical quality of
percolating recharge water
- 5) Determine the degree of site
amelioration resulting from the sludge
application by monitoring physical and
chemical changes of the surface spoil
or refuse material
- 6) Monitor and evaluate the effect of
the sludge application on the quality
of the groundwater and/or the quality
of the nearest receiving stream and/or
surface water run-off.

The project will be conducted in three phases. In Phase I, methods of processing of sewage sludge at the sewage treatment plant and transporting it to strip mine sites will be evaluated. In Phase II, methods of revegetating land by sludge will be assessed; in Phase III, the project itself will be evaluated.

SITES: Scranton and Barkeyville, Pennsylvania.

PARTICIPANT: Institute for Research on Land and Water Resources, with the College of Agriculture, The Pennsylvania State University.

FUNDING: EPA's funding for the project is \$300,000; ARC's contribution is not yet determined.

SCHEDULE: The project started in November 1976, and will extend until May 1980.

FEDERAL CONTACT: Mr. Kenneth Dotson, Soil Scientist
Municipal Environmental Research Laboratory
Environmental Research Center
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

CONTRACTOR CONTACT: Dr. William E. Sopper
Professor of Forest Hydrology
Institute for Research on Land and Water Resources
The Pennsylvania State University
University Park, Pennsylvania 16802
(814) 863-0291

AGENCY: Small Business Administration (SBA)

PROJECT: Loan for Anthracite Mining

OBJECTIVE: To assist in financing anthracite mining equipment.

DESCRIPTION: SBA provided a \$210,000 loan to the North Mountain Coal Company, Inc., Shamokin, Pennsylvania, in FY 1978 to finance anthracite mining equipment. The loan was authorized by Public Law 95-318 (see Federal Register, Vol. 172, September 5, 1978).

CONTACT: Mr. Richard P. Lewis, Director
Division of Reports Management
Office of Management Services
Small Business Administration
1441 L Street, N.W.
Washington, D.C. 20416
(202) 653-6682

AGENCY: Museum of History and Technology
Smithsonian Institution

PROJECT: History of the Anthracite Industry
in Schuylkill County and the
Lehigh Valley

OBJECTIVE: To document the development of the anthracite industry in Schuylkill County and the Lehigh Valley, recording the development of towns, companies, transportation, marketing, and technology associated with the growth of the anthracite industry in the 19th century. The research will be published with a previously written history of the Lehigh Valley from 1820 to 1846 and a study of the development of the Girard Estate, Pennsylvania.

PARTICIPANT: Department of Industries, Smithsonian Institution, is doing the work.

SCHEDULE: The Schuylkill County portion is expected to be completed by July 1980, and the Lehigh Valley portion by December 1980.

CONTACT: Dr. John N. Hoffman, Associate Curator
Division of Extractive Industries
National Museum of History and Technology
Smithsonian Institution
Constitution between 12th and 14th Streets, N.
Washington, D.C. 20560
(202) 381-5482

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