PENNSYLVANIA STATE REVIEW

State Review of Oil and Natural Gas
Environmental Regulations, Inc.

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STRONGER
Pennsylvania Second Follow Up Review

Introduction

This Second Pennsylvania Follow-up and Supplemental Review is a report of the progress made by Pennsylvania since the initial March 1992 review and April 1997 follow-up and supplemental review of the oil and gas regulatory program of the Commonwealth of Pennsylvania. The reviews evaluate the effectiveness of the state regulatory management of wastes derived from the exploration and production (E&P) of crude oil and natural gas. The original assessment, known as the Pennsylvania State Review, was published in March 1992. The Pennsylvania State Review compared the state's programs to standards contained in the *EPA/IOGCC Study of State Regulations of Oil and Gas Exploration and Production Waste*, dated December 1990. The ultimate purpose of the review was to identify strengths and recommend improvements for Pennsylvania's E&P waste management regulatory program. Since the review team's report was issued, Pennsylvania has been working to address the recommendations contained in the report.

The team performing the 1992 initial review included Mr. Danny R. Rycroft, P.E., Phillips Petroleum Company/American Petroleum Institute; Ms. Wilma Subra, the Subra Company, representing the environmental community; Mr. Donald L. Mason, Esq., Ohio Department of Natural Resources, Division of Oil and Gas; and Mr. Carroll D. Wascom, Louisiana Department of Natural Resources, Office of Conservation. Observer members participating in the initial review were Ms. Nancy Johnson, Department of Energy, Office of Fossil Energy; Dr. Larry Kardos, Ph.D., consultant; and Ms. Paula Ford, representing the environmental community.

Changes within the Pennsylvania program from 1992 to 1997 were reviewed and documented in the 1997 Follow-up and Supplemental Review. The Review was published in April 1997. The goal of the follow-up review was to measure progress and improvements in the Pennsylvania program since the initial review, and to evaluate the program compared to revised, expanded guidelines for the State Review Process, the *IOGCC Environmental Guidelines for State Oil and Gas Regulatory Programs*, dated May 1994. The 1990 Study and the 1994 Guidelines are collectively referred to in this report as the "IOGCC Guidelines".

The 1997 follow-up and supplemental review team included three members of the initial review team: Mr. Mason, Ms. Subra, and Mr. Wascom. Observer team members for the follow-up review included Ms. Johnson, Dr. Kardos, and Mr. Steve Souders, U.S. Environmental Protection Agency, Office of Solid Waste. In 2000, State Review of Oil and Natural Gas Environmental Regulations, Inc. (STRONGER) published revised and expanded *Guidelines for the Review of State Oil and Natural Gas Environmental Regulatory Programs*, referred to in this report as the "2000 Guidelines". This Second Pennsylvania Follow-up and Supplemental review evaluates Pennsylvania's response to

the recommendations of the 1997 follow-up review (there was one recommendation) and compares the Pennsylvania program against the 2000 Guidelines.

The most recent review of the Pennsylvania Oil and Gas Regulatory Program was conducted in Harrisburg, Pennsylvania, at the offices of the Bureau of Oil and Gas Management (BOGM) from November 17th to 18th, 2003. A three-member team representing State regulatory agencies, the oil and gas industry, and the environmental community were appointed by the STRONGER board. Official observers were also appointed. The 2003 review team included Mr. Richard Simmers, Ohio Department of Natural Resources, Division of Mineral Resources Management; Ms. Wilma Subra, Subra Company, representing the environmental community; and Mr. Stephen Rhoads, Pennsylvania Oil and Gas Association; and official observer Mr. Steve Sounders, Office of Solid Waste, US EPA. This second follow-up review included:

- An overview of the state's regulatory program;
- The state's responses to recommendations of the 1997 Follow-up and Supplemental Review;
- Aspects of the state's program that are new since the 1997 review; and
- Inquiry into all aspects of the state's program addressed by the 2000 Guidelines to determine whether program, rule or legislative changes have occurred since the previous review.

Questions were phrased in terms of "What did you do with recommendations from the last review?", "What has changed since the last review?", and "How does your program stack up against the current Guidelines?"

Mr. James Erb, Director of BOGM, provided written responses to a questionnaire prior to the in-state portion of the review. This report includes the 2003 Review Team findings and recommendations, along with BOGM responses to prior review recommendations. It should be noted that the 2003 Review Team has included a brief overview of several BOGM developments which go "above and beyond" the Guidelines standards. Some of the developments are particularly noteworthy and merit further review for the benefit of other state oil and gas regulatory programs.

I. Executive Summary

At the invitation of the Pennsylvania Bureau of Oil and Gas Management of the Department of Environmental Protection (DEP), a comprehensive review of the Pennsylvania oil and gas environmental regulatory program has been completed by a multi-stakeholder Review Team. The program was reviewed against the *Guidelines for the Review of State Oil and Natural Gas Environmental Regulatory Programs*, published in August, 2000.

The oil and gas waste management program implemented by BOGM has been the subject of three independent, voluntary reviews. The first state review, in March 1992 contained 46 findings of fact. A majority of those findings indicated that BOGM met or exceeded standards of the earlier 1990 Guidelines. The report also contained 24 recommendations that suggested program changes or modifications to the BOGM program.

In 1996 Pennsylvania volunteered for a Follow-up Review. The Follow-up Review addressed the recommendations from the 1992 review, new and significant program changes since the last review, and new standards published in revised 1994 Guidelines. The Follow-up Review evaluated how effectively BOGM responded to recommendations made during the initial 1992 review, and evaluated programs for management of naturally occurring radioactive materials and abandoned sites. The Follow-up and Supplemental Report, published in 1997, concluded that BOGM had effectively addressed all 24 original recommendations. The 1997 report contained 16 new findings of fact and one recommendation. This third review focused on the recommendation of the 1997 Follow-up and Supplemental Report, the 2000 Guidelines standards, changes made to the BOGM programs since 1997, and new regulatory and data management techniques employed by BOGM to implement their programs.

Program Strengths

Over a 2 day period, the 2003 Review Team met with BOGM staff to discuss aspects of Pennsylvania's regulation of oil and gas exploration and production wastes. The review team and observers were granted full access to staff and all questions were answered in a responsive and open manner. During the review, the team identified several areas where BOGM has taken positive steps to implement effective programs as follows:

> Environmental laboratory accreditation program - The new environmental laboratory accreditation program that is codified in Act 25 of 2002 requires qualified, competent laboratories and laboratory personnel to oversee and conduct all monitoring and sampling activities to assure compliance with the environmental performance standards of the Pennsylvania program. The new law enhances the Pennsylvania program beyond the waste characterization recommendations set forth in the Guidelines.

Public access to records and information - BOGM has utilized the new electronic access features of the Department of Environmental Protection's web site to enhance the availability to the regulated community and the public of all of its laws, regulations, policies, forms, guidance and procedures. A variety of Internet-based services provided by the Department substantially expanded the transparency of BOGM regulatory activities by enabling the public to track all permitting activities related to individual well sites and to monitor well operator compliance.

Electronic data management and permitting - During the in-state portion of the review, team members were impressed with the level of energy as BOGM staff demonstrated the new (1999) electronic data management system (e-facts). The system is developed in ORACLE with data available through the Internet via the agency's web site. BOGM posts laws, rules, policies, procedures, directives and guidelines on the web. Forms, including application packages are available in an electronic format. Electronic permitting (DEP Greenport) allows a company to submit an application, including plat drawings, and complete a transfer of payment for associated fees. Production can also be reported electronically via the web through use of standardized eReport XML Schema.

Stormwater management – BOGM requires a written Erosion and Sedimentation Control Plan for oil and gas operations if the disturbed area exceeds 5000 square feet or if the site is located in a sensitive area. All sites must be authorized by a general NPDES permit for construction activity, except in Special Protection Watersheds, where an individual permit is required. BOGM provided the regulated industry a 60 page technical guide addressing stormwater best management practices. The technical guide is in the Operator's Manual, which is available in hard copy or on-line. In April 2000, an Erosion and Sediment Control Manual was also released.

Abandoned sites - We commend BOGM for having multiple sources of funding for the plugging of abandoned wells. The Growing Greener program is an outstanding program of providing resources for plugging wells and has resulted in the BOGM achieving a 400% increase in the number of wells plugged. The Growing Greener program was extended for an additional 7 years until 2012. This will insure adequate resources to continue the plugging program until that time.

Program Recommendations

The recommendations made by the Review Team are the following:

Evaluate need for additional staff resources - BOGM has an increased work load associated with the Growing Greener well plugging program. However, the staff resources have not been increased to address the increased work load. BOGM should evaluate the need for additional staff resources to adequately manage the

Growing Greener well plugging program and secure the needed resources to add staff if necessary.

Inspection frequency - BOGM targets for inspection frequency are not being met due to staffing levels and other priorities. BOGM should establish a mechanism to determine whether not meeting the inspection frequency targets is resulting in environmental problems.

Program performance evaluation - The BOGM should establish a formal process for the quarterly review of regional program performance to ensure that the program's regulations, policies, and guidance are properly and consistently implemented and enforced. This process should involve all the program's stakeholders.

Financial assurance for pre-1984 wells - BOGM is doing a Program Effectiveness Evaluation on its bonding program to determine the adequacy of the program. BOGM should expand its evaluation to consider the potential impacts of un-bonded pre-Act (1984) operating wells on future plugging liabilities and the inventory of abandoned sites. The evaluation should also consider alternative financial assurance options for pre-1984 wells.

Notification of Rule-authorized pit construction - The Review team recommends BOGM establish notification authority for rule-authorized pits that are not otherwise covered by a permit prior to their construction.

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II. Program Overview

Current Production

About 2,300,000 bbl oil and 157,000,000 mcf gas are produced annually in Pennsylvania. Production occurs in 33 of 67 counties. Peak oil production occurred in 1981, and peak gas production occurred in 1989. The majority of oil production is in the Northwest Region (Venango, Warren, McKean, Elk and Forest counties) while gas production is spread throughout western Pennsylvania. There has been a recent increase in coalbed methane activity and several exploratory wells have been drilled targeting the Trenton-Black River formations.

Pennsylvania uses almost five times more gas than it produces and consequently has converted depleted gas fields to storage. With 65 operating storage fields, Pennsylvania ranks second in the country, after Michigan, in gas storage.

From the beginning, oil and gas development in Pennsylvania occurred in an unregulated fashion with little thought given to anything but getting the product out of the ground. An unknown number of oil and gas wells have been drilled in the Commonwealth, with activity peaking and ebbing as new discoveries were made.

The Bureau of Oil and Gas Management has records on 183,162 wells which have been permitted, plugged or registered. Of these, 86,848 wells are considered to be operating wells. This includes 34,159 oil wells and 52,689 gas wells. There were 3,433 permits issued for new wells (mostly gas) during 2002. There were 2,265 new wells drilled during 2002.

The Commonwealth has records on 5,515 operators, many of whom have only one or a few wells. Records show that 18% of the operators (974) have about 90% of the wells (78,196), and that the remaining 82% of the operators (4,541) have only 10% of the wells (8,652). After the Oil and Gas Act was passed in 1984, operators bonded 31,067 operating wells covered by 569 bond instruments.

Environmental Regulation

From the environmental standpoint, the Pure Streams Act of 1937 (No. 394) provided the first pollution abatement controls. Pollution was broadly construed to mean the discharge or effects of noxious or deleterious substances “rendering unclean the waters of the Commonwealth to the extent of being harmful or inimical to the public health, or to animals or aquatic life, or to the use of such waters for domestic water supply, or industrial purposes, or for recreation.” Numerous additional amendments (1956, 1965, 1970, 1978, 1980) have resulted in the current Clean Streams Law.

Early regulation of the oil and gas industry dates back to the late 1880's when operators were required to plug wells to protect oil bearing zones and to protect fresh water. In the early 1900's, legislation specifying well plugging procedures was enacted.

The first comprehensive regulation of the oil and gas industry arose from the need to protect underground coal miners from the dangers associated with drilling gas wells through or near coal mines. The Gas Operations Well-Drilling Petroleum and Coal Mining Act (No. 225, 1955) required permits for gas wells in coal areas. This authority was expanded in the early 1960's to all oil and gas wells. Other requirements included the authority to require records of wells drilled. These permits were little more than registration of wells since there was no authority for denial of permits.

In 1984, after six years of debate, the Oil and Gas Act (No. 223) was adopted. This statute provided for a comprehensive regulatory program which tied together requirements for environmental protection with oil and gas well permitting, bonding, drilling, operation, inactive status, reporting and plugging. This Law and Chapter 78 of the Rules and Regulations (promulgated in 1987 under the authorities of the Oil and Gas Act, the Coal and Gas Resource Coordination Act, the Oil and Gas Conservation Law, the Clean Streams Law, the Solid Waste Management Act, and the Administrative Code), provide the primary framework for the Department's current oil and gas regulatory program. The Oil and Gas Act was amended in 1986 and 1997. Chapter 78 was amended in 1989, 1994 and 2001.

The Oil and Gas Act provided regulatory authority to the Department to enforce the Act and to develop regulations to carry out a comprehensive oil and gas program incorporating environmental requirements. The Department in turn created the Oil and Gas Management Program with the same organizational structure as other Department programs. There is the Bureau of Oil and Gas Management in the Department's Central Office that is responsible for overall program development, regulatory development, and program evaluation. Oil and Gas Management Program staff in Field Operation's Regional Offices carry out the day-to-day operations of the Program. This includes permitting, inspection, and compliance-related activities.

III. General Criteria

The Pennsylvania Exploration & Production regulatory program has changed in a number of ways since the 1997 Follow-up and Supplemental Review. The changes resulted primarily from new state legislation in two areas. Act 57 of 1997 altered the scope of the oil and gas program's financial assurance program. Act 25 0f 2002 established a new environmental laboratory accreditation program.

Before Act 57, all wells in Pennsylvania were required to be bonded. Act 57 exempted wells drilled before 1984 from the bonding requirement. BOGM revised its regulations at 25 Pa. Code, Chapter 78 to address the 1997 statutory changes, to respond to issues raised by commentators who participated in its "Customer Needs Project," and to address comments from the Oil and Gas Technical Advisory Board. Generally, the changes made to Pennsylvania's rules in Chapter 78 enhance the regulatory program by streamlining administrative requirements without undermining effective environmental protection. The bonding provisions of Act 57, however, raise financial assurance concerns that are addressed in the Administrative Criteria section.

The new environmental laboratory accreditation program that is codified in Act 25 of 2002 requires qualified, competent laboratories and laboratory personnel to oversee and conduct all monitoring and sampling activities to assure compliance with the environmental performance standards of the Pennsylvania program. The new laboratory accreditation program enhances the Pennsylvania program beyond the waste characterization recommendations set forth in the Guidelines. (2000 Guidelines section 5.2)

All of the changes outlined above are presented in detail in BOGM's responses to the *Questionnaire for Follow-Up and Supplemental Review of State Oil and Gas Environmental Regulatory Programs*, which is attached to this report as Appendix A.

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IV. Administrative Criteria

The two previous reviews of the Pennsylvania program found that it satisfies the administrative standards established by the Guidelines. (IOGCC Guidelines section 4) The program continues to satisfy all of the 2000 Guidelines section 4 with the exceptions relating to the new financial assurance requirements created by Act 57 of 1997. (See Findings IV.3, IV.4, and IV.5)

Since the 1997 Follow-up and Supplemental Review, the compliance assistance and public participation elements of the BOGM program have been improved and expanded substantially through the Department-wide development of World Wide Web-based Internet resources. Details of the variety of web-based services provided by the Department and deployed by BOGM are provided in Appendix B.

Finding IV.1

BOGM has utilized the new electronic access features of the Department's web site to enhance the availability to the regulated community and the public of all of its laws, regulations, policies, forms, guidance and procedures.

Finding IV.2

Various Internet-based services provided by the Department substantially expand the transparency of BOGM regulatory activities by enabling the public to track allDEP permitting activities related to individual well sites and to monitor well operator compliance.

Prior to the adoption of Act 57, Pennsylvania's financial assurance program was adequate to ensure that private resources were available to the state to facilitate the plugging of an abandoned well and the remediation of the well site should an operator fail to meet its obligations under the law. The Growing Greener program is currently providing resources for pre-1984 wells.

Finding IV.3.

The changes to BOGM's financial assurance program resulting from Act 57 of 1997 limit the Department's enforcement options for all oil and gas wells drilled before 1984.

Finding IV.4.

The Act 57 financial assurance exemptions expose the Commonwealth to significant potential liability for well plugging and well site remediation for thousands of wells that were drilled in Pennsylvania prior to 1984.

Finding IV.5.

Act 57 could diminish the effectiveness of Pennsylvania's abandoned well plugging programs by substantially increasing the inventory of abandoned wells that must be plugged and abandoned using public resources. Act 57 could require

BOGM to dedicate a share of the limited funds that are available through existing well permit fee surcharges and the Growing Greener program to plug un-bonded pre-1985 wells that are unlawfully abandoned by the owner or operator.

Recommendation IV.3

BOGM is doing a Program Effectiveness Evaluation on its bonding program to determine the adequacy of the program. BOGM should expand its evaluation to consider the potential impacts of un-bonded pre-Act (1984) operating wells on future plugging liabilities and the inventory of abandoned sites. The evaluation should also consider alternative financial assurance options for pre-1984 wells. (2000 Guidelines section 4.2.4)

V. Technical Criteria

The 1997 review report does not contain specific recommendations for technical development. Since the last review, certain statutory changes have modified the Pennsylvania program. Regulations in 25 Pa. Code, Chapter 78.56. were also changed to eliminate the requirement to obtain a permit for temporary pits used during re-completing, servicing, and plugging operations. Established design and performance standards do apply. These changes were made to ease some of the paperwork burden for the agency and regulated industry.

The 2000 Guidelines suggest technical criteria for various types of pits. Section 5.5.2.a. suggests a permit or review process for all pits. Section 4.4.2.c. allows authorization for a pit to be included in other permits. Sections 5.5.3.a-g. suggest certain construction and location criteria. BOGM meets these guidelines by establishing technical criteria for temporary pit construction and associating the temporary pit with a permitted location. Section 5.5.2.d. suggests notification prior to the construction of rule-authorized pits. This is to ensure pit construction; operation and closure meet technical standards.

Finding V.1

In some instances, well activities authorized by rule may require the use of a pit, but notification of construction and reclamation of the pit may not occur.

Recommendation V.1

The Review team recommends BOGM establish notification authority for rule-authorized pits that are not otherwise covered by a permit prior to their construction. (2000 Guidelines section 5.5.2.d)

The Pennsylvania legislature passed the Environmental Laboratory Accreditation Act (Act 25, April 2, 2002), which required all environmental laboratories to register and become accredited by DEP. Environmental laboratories are defined as any facility that performs testing and analysis of environmental samples required by a statute administered by DEP for the protection of public health, safety and welfare or to protect the environment. A Laboratory Accreditation Committee is developing regulations at the time of this writing. Section 5.2. of the 2000 Guidelines suggest sampling and analysis as well as quality control standards for all environmental samples. Section 5.2.3.a. and b. suggests the qualification of laboratories and test methods. With the promulgation of rules, BOGM will meet the Guideline standards.

BOGM has also developed Safety Standard Operating Procedures (SOP) for all staff members. The procedures address worker safety, sampling procedures and protocol and the proper use of Material Safety Data Sheets.

Section 2.3. of the 2000 Guidelines suggests standards for NPDES permitted discharges. Storm water management is also being addressed through the requirement for

a written Erosion and Sedimentation Control Plan if the oil and gas disturbed area exceeds 5000 square feet or if the site is located in a sensitive area. All sites must be authorized by a general NPDES permit for construction activity, except in Special Protection Watersheds, where an individual permit is required. BOGM provided the regulated industry a 60 page technical guide addressing storm water best management practices. The technical guide is in the Operator's Manual, which is available in hard copy or on-line. In April 2000, an Erosion and Sediment Control Manual was also released. The Pennsylvania Oil and Gas Association (POGAM) also provides erosion and sediment control training for industry members. DEP provides 102/105 Clean Water Act (CWA) training.

Section 5.3. suggests a waste management hierarchy, which includes source reduction. As discussed in the 1997 Follow-up and Supplemental Review, BOGM procedures exceed the suggested standards.

VI. Abandoned Sites

The Commonwealth of Pennsylvania currently has 8,030 abandoned wells. Orphan wells are a subset of the abandoned wells and were abandoned prior to April 18, 1985. The resources utilized to address the abandoned wells are derived from a number of different programs. An Orphan Well Plugging Program is funded by a $100 surcharge on new oil well permit fees and a $200 surcharge on new gas well permit fees. An Abandoned Well Plugging Fund is funded by a $50 surcharge on well permits.

Legislation in 1999 created the Growing Greener program, a portion of which has been used to plug orphan oil and gas wells. The Bureau of Oil and Gas Management has received to date a total of $8.52 million ($6.046 million spent) from the Growing Greener fund and between $350,000 and $500,000 per year from the Orphan and Abandoned Well Plugging funds. These three sources of funding are used to plug approximately 400 wells per year. Prior to the Growing Greener program between 20 and 30 wells were plugged per year. To date a total of 1,312 wells have been plugged. Of the plugged wells, 5 were emergency situations and 93 were high priority wells.

The Commonwealth is to be commended for having multiple sources of funding for the plugging of abandoned wells. The Growing Greener program is an outstanding program of providing resources for plugging wells and has resulted in BOGM achieving a 400% increase in the number of wells plugged. The Growing Greener program was extended for an additional 7 years until 2012. This will insure adequate resources to continue the plugging program during this period.

On an annual basis, BOGM adds approximately 150 new abandoned wells to its inventory. When compared to the 400 wells plugged per year, BOGM is reducing their abandoned well inventory. The total number of abandoned wells has decreased from approximately 9,000 to the current inventory total of 8,030 abandoned wells.

In 2000, BOGM developed a Plan for Addressing Problem Abandoned Wells and Orphaned Wells. The Plan was designed to establish the direction of the well plugging activities. The Goals set forth in the Plan focused on expenditures for plugging problem abandoned wells, developing partnerships, developing areal approaches and the encouragement of adoption of problem abandoned wells. Progress has been made in attaining all of the goals. Expenditures are targeted towards plugging wells that threaten health, safety or water quality. Partnerships have been developed with federal and state agencies, watershed associations and conservation districts in locating and plugging abandoned wells. Targeted watersheds are being reclaimed by aerial approaches to cluster well pluggings. Operators are encouraged to adopt abandoned wells and return them to production. In order to make resources available to plug more wells, BOGM has moved from cost plus contracting to firm bid pricing for well pluggings.

Finding VI.1.

BOGM has an increased work load associated with the Growing Greener well plugging program. However, the staff resources have not been increased to address the increased work load. Regional field staff have assisted in this effort.

Recommendation VI.1.

BOGM should evaluate the need for additional staff resources to adequately manage the Growing Greener well plugging program and secure the needed resources to add the required staff. (2000 Guidelines section 4.3.1)

VII. Naturally Occurring Radioactive Material (NORM)

The 1997 Follow-Up and Supplemental Review indicated that the NORM elements of the Guidelines generally were not applicable to the Pennsylvania Program. The Department placed a low priority on the development of NORM regulations for oilfield waste streams because of the low radiation levels routinely detected at well sites, waste management operations, pipe yards, and other relevant facilities since 1991 when it and other state agencies began studying the phenomenon.

The 1997 report noted that BOGM and the Bureau of Radiation Protection had developed a report to summarize the findings of their survey of NORM levels at oil and gas activities in Pennsylvania, and it found that the NORM Report was not widely circulated. The 1997 review report recommended that the Commonwealth should notify the public once the report or the results of the NORM study became available.

1997 Follow-up and Supplemental Review Finding V.1

The NORM Report was not widely circulated. Only members of industry and an interested law firm directly received the information.

Follow-up and Supplemental Review Recommendation V.1

The Bureau of Radiation Protection in the DEP or other state agency should notify the public once the NORM report or results are available (IOGCC Guidelines 3.1.e)

In its response to the Questionnaire prepared for this review, BOGM stated that the NORM Report was posted on the BOGM web site for public download as an Adobe Acrobat file. BOGM also outlined new regulatory requirements that were promulgated by the Environmental Quality Board for the Department's municipal and residual waste management programs since the 1996 review. The new waste management rules establish a comprehensive monitoring and assessment program for radiation contamination that may be present in all waste streams being disposed in the Commonwealth. The new waste management rules require all waste streams entering commercial and municipal disposal facilities to be monitored for possible radiation contamination.

Finding VII.1.

The placement of the NORM Report on the Department's web site for public access satisfies the recommendation made in the 1997 report.

Finding VII.2.

The new regulations governing the management of radioactive materials at commercial and municipal waste disposal facilities throughout the Commonwealth satisfy the Guidelines for the proper handling of oil and gas field NORM that is disposed at DEP-permitted waste disposal facilities. (2000 Guidelines 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.5, 7.3.7, 7.3.9 and 7.3.10)

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VIII. Performance Measures

BOGM has program performance measures as part of the annual budget. The budget program goals and objectives are used to establish performance objectives against which program activities and staff are evaluated. Data is tracked on the number of inspections, types of violations and responses. Examples of the performance objectives and levels of achievement are well sites targeted to be inspected once every five years. A frequency of inspection once every 20 years is possible with current staffing levels. Gas storage wells are being inspected at half the recommended level. The inspections are performed at the time of gas filling but are not being performed at the time of gas withdrawal.

Finding VIII.1.

BOGM targets for inspection frequency are not being met due to staffing levels and other priorities.

Recommendation VIII.1.

BOGM should establish a mechanism to determine whether not meeting the inspection frequency targets is resulting in environmental problems. (IOGCC Guidelines 8.1)

BOGM is responsible for the development of regulations, policies, technical guidance, goals and objectives and evaluation for the Oil and Gas Program. The Department's Field Operations – Oil and Gas Section is responsible for permit issuance, inspections, compliance monitoring, enforcement, complaint response, and compliance assistance. Other programs, which have a direct effect on the Oil and Gas Program, are administered by other Bureaus.

BOGM has established formal administrative agreements with other Bureaus to streamline and coordinate the management of related programs. The agreements are designed to provide for the single-source review and issuance of Department permits for oil and gas projects.

BOGM has a Memorandum of Understanding (MOU) with the Bureaus of Watershed Conservation and Water Quality Protection (DEP ID: 362-0600-002) that assigns to BOGM the responsibility for NPDES program monitoring, permitting and enforcement activities as they apply to oil and gas exploration and production activities. The MOU governs the development of policies, procedures and technical guidance to coordinate program implementation, and it contains provisions relating to conflict resolution for issues that may arise between the Bureaus over program development, implementation and permit processing.

BOGM has a similar MOU with the Bureau of Dams, Waterways and Wetlands (DEP ID: 363-02100-002) that provides limited delegation of authority to BOGM for the regulation of water obstructions and encroachments related to oil and gas wells and associated wastewater treatment facilities.

BOGM conducts periodic Program Effectiveness Evaluations for specific areas of the program. The evaluations contain findings and recommendations for program improvements, which are developed into program objectives and performance standards.

BOGM develops program goals and objectives jointly with Regional Office Program Managers. Regional Program Managers then incorporate the BOGM goals and objectives into specific objectives and performance standards for Section Chiefs and Field Staff. Quarterly Managers Meetings are held to discuss various program goals, objectives, activities, issues and trends, and progress in achieving BOGM goals and objectives. Program goals and objectives and Regional staff performance requirements may be adjusted to accommodate situations in a Regional Office that are unique to its geographic area. Regional Office management evaluates Program Manager, Section Chief and Field Staff performance in carrying out BOGM program goals and objectives.

The Oil and Gas Program holds quarterly meetings with industry personnel to discuss program initiatives or issues regarding program requirements or implementation. The program also meets semi-annually with the Oil and Gas Technical Advisory Board to discuss new program requirements and initiatives.

Disputes between oil and gas operators and Department staff occur when there is a difference of opinion regarding implementation of program goals and objectives or program regulations, policies or technical guidance. Some of the disputes arise over differences of opinion between Regional Office Program Managers, Section Chiefs, Field Staff and Regional Counsel and BOGM in the interpretation and implementation of program regulations, policies or technical guidance affecting oil and gas operations.

Finding VIII.2.

Unlike its relationship with program Bureaus in other Deputates, BOGM has no formal agreements to resolve disputes that arise between Regional Office staff, Regional Counsel and BOGM over the interpretation and implementation of regulations, policies and technical guidance governing oil and gas operations.

Finding VIII.3.

If a dispute over the interpretation or implementation of regulations, policies and technical guidance governing oil and gas operations cannot be resolved by the Regional Offices, Regional Counsel and the Bureau, the dispute must be addressed by the Department's Executive Management.

Recommendation VIII.3

BOGM should develop formal processes for resolving disputes over the interpretation and implementation of program requirements, goals and objectives. Options for dispute resolution that BOGM should consider are:

- *Memoranda of Understanding or other administrative agreements between the Office of Mineral Resource Management and the Office of Field Operations and the Office of Chief Counsel;*

- *formal dispute resolution policies and procedures that could be established pursuant to Section 501 (conferences) of the Oil and Gas Act; and*

- *enhancements to the Department's existing quarterly meetings with operators and with Regional staff that focus on dispute resolutio*n.

  The dispute resolution processes should be made readily available to the operators and other stakeholders. (2000 Guidelines 8.1)

Two programs have resulted in improved environmental quality. The first is a program to access the quality of water and determine streams that do not meet water quality standards. BOGM monitors the data for impacts associated with oil and gas exploration and development. The results identified no streams or lakes impaired by oil and gas exploration and development in the Commonwealth of Pennsylvania.

The second program was initiated as a result of data demonstrating that the most frequent environmental violations related to erosion and sedimentation were from storm water contact with disturbed surface areas. BOGM worked with industry associates to provide training events and to revise Best Management Practices, the Oil and Gas Operators Manual, and well permitting forms. BOGM increased compliance assistance efforts and inspection and enforcement activities. Together the efforts resulted in improvement in operator practices in the field and decreased frequency of violations. The actions of BOGM which focused programs based on performance objectives has had a positive impact on the environment in Pennsylvania.

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Other Program Features

One of the stated purposes of this second follow-up review is to document aspects of the State's program that are new since the last review.

During the in-state portion of the review, team members were impressed with the level of energy as BOGM staff demonstrated the new (1999) electronic data management system (eFACTS). eFACTS is a Department-wide Oracle relational database, portions of which are available through the Internet via the agency's Web site. It provides industry and the public access to information on application tracking, permit inventory, inspections, violations and compliance data. It not only provides information on the well, but also includes information on other environmental permits that operators may have. BOGM posts laws, rules, policies, procedures, directives and guidelines on the web. Forms, including application packages are available in an electronic format.

Annual production and waste reporting via a web application was implemented in 2003. The OGAPS system provides a modified on line data entry option, or allows production data to be uploaded by use of the standardized eReport XML schema.

Electronic Permitting is provided through DEPGreenport. It is a web portal that allows electronic submissions of well drilling permit applications to the Oil and Gas Program. The applicant submits an application electronically with a CAD drawing of the plat. The system calculates the application fee that is collected electronically through the Automated Clearing House (ACH) process. A credit card payment option is scheduled to be implemented soon. The company receives an electronic notice that the application was accepted. Applications also receive a multi-agency review for ecological information, classified flora and fauna, unique geological features, and exemplary natural communities. This procedure is captured in a Policy for Pennsylvania Natural Diversity Inventory (PNDI). The system allows time and task tracking of the application through the permitting process.

eMapPA is a GIS system that provides information on well locations in relation to a variety of layers such as political, cultural, natural waters, streams, or mining information. The system is available through the DEP web site.

An eNOTICE system is available to receive timely e-mail notices of current issues. It provides notice of a permit application in selected areas, and also provides notice of the application as it progresses through the application review process. Locations can be displayed on eMapPA. The user simply registers, then identifies the categories or specific information they are interested in tracking. When the referenced files are entered into the system, the end user receives an electronic notice to view detailed information through hyper links at the BOGM web site. Site specific or primary facility information may be viewed directly. The system displays counties, streams, streets and many other GIS layers that may be activated. The system may be buffered with facility information.

Maps and other program related images are available on-line through the PA*IRIS system. This is a subscription-based system.

Also displayed on the web site is the "Oil and Gas Operators Manual" which was updated in October 2001. Included in the Manual are statues, rules, forms and Best Management Practice guidelines.

APPENDIX A

GLOSSARY OF ACRONYMS

BBL	Stock tank barrels of oil, water or other fluids
BOGM	Bureau of Oil and Gas Management
CAD	Computer-assisted drawing
CWA	Clean Water Act
DEP	Department of Environmental Protection
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information System
IOGCC	Interstate Oil and Gas Compact Commission
MCF	Thousand cubic feet of natural gas or other gases
NORM	Naturally Occurring Radioactive Materials
NPDES	National Pollutant Discharge Elimination System
POGAM	Pennsylvania Oil and Gas Association
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedures

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APPENDIX B

COMPLETED PENNSYLVANIA QUESTIONNAIRE

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QUESTIONNAIRE FOR FOLLOW-UP AND SUPPLEMENTAL REVIEW OF STATE OIL AND GAS ENVIRONMENTAL REGULATORY PROGRAMS

State: **Pennsylvania**

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INSTRUCTIONS: The primary bases for this review are the Guidelines for State Review of Oil and Natural Gas Environmental Regulatory Programs (June 2000), referred to as the "Guidelines", and the recommendations of the follow-up report of the review your state's Oil and Gas regulatory program. The major objectives of this follow-up review are to evaluate your state's responses to the follow-up review recommendations, and to evaluate the regulatory program against changes made to the Guidelines since the follow-up review.

Please answer the questions as completely as reasonably possible, keeping the purposes of the follow-up review in mind. Avoid supplying extensive background information, data, regulations or statutes that do not address issues in the follow-up review recommendations or the Guidelines, or are not related to the state's oil and gas environmental programs. (For example, regulation of underground fuel storage tanks is not addressed in this review.) The purpose of this questionnaire is to elicit information that will provide a fair and balanced characterization of the state's regulatory program, rather than an exhaustive inventory of waste management facilities. Terms used in this questionnaire have meanings consistent with those contained in the Guidelines. Citations that appear in brackets (e.g., [5.3.]) following each question refer to the applicable section or sections of the Guidelines.

A computer disk containing the questionnaire in Word 2000 has been provided to facilitate your preparation of the document.

REQUESTED BACKGROUND INFORMATION

I . Please revise and update, as appropriate, the introductory material in the report of the follow-up review.

OIL AND GAS PRODUCTION AND WASTE MANAGEMENT IN THE COMMONWEALTH OF PENNSYLVANIA

OIL

The Seneca Indians used oil from springs near Oil City, Venango County for ceremonial purposes and early settlers used "Seneca Oil" as a medicine to cure all ailments. On August 27, 1859, "Colonel" Edwin Drake and a salt well driller, "Uncle Billy" Smith, drilled the first oil well in North America for commercial production. Oil was struck at 69 ½ feet and resulted in the world's first commercial interest in oil production. By the end of 1861, 2.5 million barrels of oil was produced. Development was so active that most of the oilfields in Venango County were discovered by 1870.

The Bradford field in McKean County, the largest field in the Commonwealth, was discovered in 1871 with a peak annual production of almost 23 million barrels in 1881.

Pennsylvania was the leading oil producer until 1895. From the 1890's to the late 1920's, oil production declined until secondary recovery water flooding in the 1930's resulted in a marked production increase. Since the middle 1950's, oil production in Pennsylvania has been on the decline.

NATURAL GAS

During the early days of the oil boom (1860's – 1880's) gas was used as a fuel to drive engines at oil wells and for heating. Rapid expansion of the gas industry began in 1884 when gas began to be used in the Pittsburgh steel industry. Until 1930, all gas was produced from the shallow Mississippian and Upper Devonian formations. In 1930 gas was discovered in the Lower Devonian Oriskany Sandstone in Tioga County and in the Upper Silurian Medina Sandstone in Erie County in 1947.

Pennsylvania uses almost five times more gas than it produces and consequently has converted depleted gas fields to storage. With 65 operating storage fields, Pennsylvania ranks second in the country, after Michigan, in gas storage.

CURRENT PRODUCTION

About 2,300,000 bbl oil and 157,000,000 mcf gas are produced annually. Production occurs in 33 of 67 counties. Peak oil production occurred in 1891, and peak gas production occurred in 1989. The majority of oil production is in the Northwest Region (Venango, Warren, McKean, Elk and Forest counties) while gas production is spread throughout western Pennsylvania. There has been a recent increase in coalbed methane

activity and several exploratory wells have been drilled targeting the Trenton-Black River formations.

ENVIRONMENTAL REGULATIONS

From the beginning, oil and gas development in Pennsylvania occurred in an unregulated fashion with little thought given to anything but getting the product out of the ground. An unknown number of oil and gas wells have been drilled in the Commonwealth, with activity peaking and ebbing as new discoveries were made.

From the environmental standpoint, the Pure Streams Act of 1937 (No. 394) provided the first pollution abatement controls. Pollution was broadly construed to mean the discharge or effects of noxious or deleterious substances "rendering unclean the waters of the Commonwealth to the extent of being harmful or inimical to the public health, or to animals or aquatic life, or to the use of such waters for domestic water supply, or industrial purposes, or for recreation." The Brunner Bill (Act No. 177, 1945) increased the penalties for pollution and broadened the authority of the Commonwealth to attack and solve pollution problems. Numerous additional amendments (19956, 1965, 1970, 1978, 1980) have resulted in the current Clean Streams Law.

Early regulation of the oil and gas industry dates back to the late 1880's when operators were required to plug wells to protect oil bearing zones and to protect fresh water. In the early 1900's, legislation specifying well plugging procedures was enacted.

The first comprehensive regulation of the oil and gas industry arose from the need to protect underground coal miners from the dangers associated with drilling gas wells through or near coal mines. The Gas Operations Well-Drilling Petroleum and Coal Mining Act (No. 225, 1955) required permits for gas wells in coal areas. This authority was expanded in the early 1960's to all oil and gas wells. Other requirements included the authority to require records of wells drilled. These permits were little more than registration of wells since there was no authority for denial of permits.

In 1984, after six years of debate, the Oil and Gas Act (No. 223) was adopted. This statute provided for a comprehensive regulatory program which tied together requirements for environmental protection with oil and gas well permitting, bonding, drilling, operation, inactive status, reporting and plugging. This Law and Chapter 78 of the Rules and Regulations (promulgated in 1987 under the authorities of the Oil and Gas Act, the Coal and Gas Resource Coordination Act, the Oil and Gas Conservation Law, the Clean Streams Law, the Solid Waste Management Act, and the Administrative Code), provide the primary framework for the Department's current oil and gas regulatory program. The Oil and Gas Act was amended in 1986 and 1997. Chapter 78 was amended in 1989, 1994 and 2001.

There are three oil and gas operator associations in Pennsylvania. The Pennsylvania Oil and Gas Association (POGAM) is the oldest, has several hundred members, and represents primarily larger oil operators and small gas operators. POGAM has monthly

meetings, a monthly news magazine, sponsors educational forums, sponsors research, and lobbies state government. The Independent Oil and Gas Association (IOGA), has less than a hundred members, and primarily represents larger gas operators. IOGA (formerly the Pennsylvania Natural Gas Association) has monthly meetings, a periodic newsletter, sponsors education forums, and actively lobbies. Both POGAM and IOGA have environmental committees. The third association, the Pennsylvania Independent Petroleum Producers (PIPP), represents an unknown number of small independent oil and gas producers.

Several environmental groups have worked on oil and gas issues in the Commonwealth. Some of these environmental groups include the Pennsylvania Chapter of the Sierra Club, the Pennsylvania Federation of Sportsman's Club, the Cornplanter Chapter of Trout Unlimited and the Audubon Council of Pennsylvania.

An unknown number of wells have been drilled in Pennsylvania. However, the following statistics, as of October 1, 2003, give a snapshot of the program according to Department records. The Bureau of Oil and Gas Management (BOGM) has records on 183,162 wells which have been permitted, plugged or registered. Of these, 86,848 wells are considered to be operating wells. This includes 34,159 oil wells and 52,689 are gas wells. There were 3,433 permits issued for new wells (mostly gas) during the past year. There were 2,265 new wells drilled during the past year. About two-thirds of the total activities regulated by the program take place in the Northwest Region. There are 31,067 post-Act operating wells bonded by 569 bond instruments. The Commonwealth has records on 5,515 operators, many of whom have only one or a few wells. Records show that 18% of the operators (974) have about 90% of the wells (78,196), and that the remaining 82% of the operators (4,541) have only 10% of the wells (8,652).

II. Please provide brief descriptions of the main developments in your state program since the last state review.

A number of program changes have occurred since the follow-up review in 1996. There were changes to the laws affecting financial assurance and laboratory accreditation for analyses submitted to the Department. There were regulations enacted that affect reportable quantities of spills, erosion and sedimentation control, and other program measures. There were numerous policy changes. These changes are summarized in the response to Section 3, below. There was a change to the financial assurance program that is also summarized in Section 3, and numerous significant changes to the data management system and public access to that data that are summarized in Section 4. And there were a number of changes to the orphan well plugging program that are summarized in Section 6.

Other program changes to environmental activities that go beyond the Guidelines will be presented to the review team during the in-state portion of the review.

III. Please provide a listing of the recommendations from the previous review, and your responses to each. The listing should include any implementation or action plans.

There was a single recommendation in the report of the follow-up review. It is addressed below.

Finding and Recommendation V.1

Finding V.1

The NORM Report was not widely circulated. Only members of industry and an interested law firm directly received the information (IOGCC Guidelines 3.1.e).

Recommendation V.1

The Bureau of Radiation Protection in the DEP or other state agency should notify the public once the NORM report or results on the study are available (IOGCC Guidelines 3.1.e).

BOGM Response:

Results of the NORM study were posted on the BOGM web site at:
http://www.dep.state.pa.us/dep/deputate/minres/oilgas/NORMsursum.pdf

IV. Please provide the following in the format or formats most readily available to you:

A. References to all statutes, rules, regulations, orders, and other documentation reflecting changes made in response to recommendations contained in the report of the follow-up state review.

There were no recommendations in the report of the follow-up review that indicated a need to change statutes, rules, regulations, or orders. See Section III, above.

B. An updated estimate of the volumes of produced water, drilling muds, cuttings, and any other associated wastes generated in the state.

See the attached for a graphical presentation of updated waste volumes.

Waste Volumes.ppt

SPECIFIC SUBJECT MATTER INFORMATION

SECTION 3 – GENERAL CRITERIA

3-1. Were there any changes to state law, regulations or programs that would impact the findings and recommendations from the initial review of your state program with respect to the general criteria of the Guidelines?

There were several changes to the regulatory authorities under which the program operates. Some of these impact the subject matter of the initial (1993) review. They are summarized below.

Act 57 of 1997

In 1997 the Legislature enacted legislation amending the Administrative Code. In that enactment, numerous administrative functions of various agencies were changed. Among those changes was a provision to eliminate the bonding requirement for any well drilled prior to the effective date of the Oil and Gas Act (April 15, 1985). As a result, bonds for pre-Act wells were returned to operators.

Act 25 of 2002

The Environmental Laboratory Accreditation Act was passed on April 2, 2002. This Act requires all environmental laboratories to register with and become accredited by DEP. Environmental laboratories include any facility that performs testing and analysis of environmental samples required by a statute administered by DEP related to the protection of the environment or public health safety and welfare. The Laboratory Accreditation Committee is currently developing regulations. Information on this statute can be found at:
http://www.dep.state.pa.us/dep/deputate/mts/bol/

Chapter 78 – Oil and Gas Wells

The Department made changes to its regulations in 25 Pa. Code, Chapter 78 pertaining to Oil and Gas Wells. They were necessitated by legislative changes and included recommendations received during the Oil and Gas Program's Customer Needs Project, comments from the Oil and Gas Technical Advisory Board, and Department staff. The changes also reflect comments received during the rulemaking.

A significant change resulted from Act 57 of 1997, which eliminated the bonding requirement for oil and gas wells drilled prior to April 18, 1985 (pre-act wells). The change eliminated any reference to phased deposit of collateral bonding, or fee-in-lieu bonding for operators with pre-act wells. The change also clarified that the exemption applies to wells drilled on or before that date.

A new provision, suggested by industry, provided a standard as to when an accidental release of brine must be reported to the Department. The industry was concerned about incurring potential penalty assessments for what could be very minor spills. This proposal identified the quantity and quality threshold for reporting brine spills.

Additionally, the change clarified that coal owners and gas storage operators are to be included in notices of permit renewals for proposed drilling operations that may impact their operation.

The change identified specific guidance to be used by oil and gas well operators to assist them in developing erosion and sediment control plans. It also identified the technical guidance the Department uses to evaluate the adequacy of coal pillars surrounding gas wells.

There were several changes to consolidate requirements for drilling in relation to gas storage fields. A new section was added to clarify drilling procedures. A new provision required the driller to provide the storage operator with a copy of the plan for well construction prior to submitting the drilling permit application to the Department. This allows the storage operator to resolve any potential safety deficiencies of the well construction plan with the well operator.

The change eliminated the requirement to obtain a permit for temporary pits used during recompleting, servicing, and plugging operations that occur at the well. These pits must meet the same performance standards as similar temporary pits used during other phases of well operations.

The proposed rulemaking was approved by the Environmental Quality Board (EQB) at its April 18, 2000, meeting, and was published in the June 17, 2000, issue of the Pennsylvania Bulletin. Pursuant to the 30-day public comment period, the Department received comments from six individuals or organizations. There were no public hearings or meetings held. The comments and the Department's proposed response and changes to the final regulation were discussed with the Oil and Gas Technical Advisory Board (TAB) during the September 26, 2000, TAB meeting. The TAB agreed with the final changes and recommended that the EQB consider the amendments for final rulemaking at the January 2001, EQB meeting. The changes were effective March 31, 2001.

The following sections were changed or added:

Section 78.1. Definitions
Section 78.17. Permit renewal
Section 78.53. Erosion and sediment control
Section 78.56. Pits and tanks for temporary containment
Section 78.59. Pits used during servicing and plugging
Section 78.60. Discharge requirements
Section 78.61. Disposal of drill cuttings
Sections 78.62. and 78.63. Disposal of residual waste--pits; and disposal of

residual waste--land application
Section 78.66. Reporting releases
Section 78.75. Alternative methods
Section 78.76. Drilling within a gas storage reservoir area
Section 78.78. Pillar permit applications
Sections 78.81. and 78.87. General provisions, and gas storage reservoir protective casing; and cementing procedures
Sections 78.91.--78.93. General provisions; wells in coal areas--surface or coal protective casing is cemented; and wells in coal areas--surface or coal protective casing anchored with a packer or cement
Section 78.302. Requirement to file a bond
Section 78.303. Form, terms and conditions of the bond
Section 78.309. Phased deposit of collateral
Section 78.310. Replacement of existing bond
Section 78.901. Definitions
Section 78.903. Frequency of inspections.

The laws and regulations are available on the BOGM web site at:
http://www.dep.state.pa.us/dep/deputate/minres/oilgas/Laws & Regulations.htm

SECTION 4 – ADMINISTRATIVE CRITERIA

4-1. Were there any changes to state law, regulations or programs that would impact the findings and recommendations from the follow-up review of your state program with respect to administrative criteria of the Guidelines?

There were changes to state law, as described in Section 3, above, affecting financial assurance requirements and laboratory accreditation. There were also numerous changes to the data management systems, including the kinds and types of data made available to the public on the web site, that are discussed below.

Compliance monitoring at oil and gas wells and related facilities is guided by the policy "Compliance Monitoring of Oil and Gas Wells and Related Facilities and Activities." The Department's policy in implementing the laws of the Commonwealth relating to oil and gas development is to assure that the public safety, resource conservation, and environmental objectives of laws and regulations are met, while at the same time promoting a healthy oil and gas industry in Pennsylvania. The policy contains guidance for complaints, inspections, types of facilities, documentation, notification to operator and self-monitoring.
http://www.dep.state.pa.us/eps/docs/cab200149b1126000/fldr200149e0051190/fldr200149e10561a8/doc20028tf5426006/550-3000-001.pdf

In October 2001 BOGM updated the "Oil and Gas Operators Manual" which is a guidance document to assist them to comply with all program requirements. This updated manual is posted on the web at:
http://www.dep.state.pa.us/eps/default.asp?P=fldr200149e0051190%5Cfldr200149e10561a8%5Cfldr20026f8082801d

Similarly, numerous other updated reports, policies, forms and fact sheets, along with the laws and regulations, are available at the BOGM web site at:
http://www.dep.state.pa.us/dep/deputate/minres/oilgas/oilgas.htm

4-8. Describe the data collected and compiled by the state program, the state's procedures for tracking and maintaining these data sets, how the state develops and maintains electronic data management systems, and any policies for data access, dissemination and cost allocation, and for the protection and back-up of captured data. [4.2.8.] [2000]

In 1997, DEP began converting it's mainframe database to a Y2K compliant data system. Conversion of the Burroughs LUMIS system to the Oracle/DEC-VAX eFACTS database was completed by September 1999. The Bureau of Oil and Gas Management, as a program within DEP, had its data system needs addressed as components of the Department wide data system. At the time of conversion, BOGM considered converting its data to the RBDMS system used by other states. However, the maintenance cost to link Oil and Gas data from an RBDMS database to the eFACTS database (which BOGM

is required to populate) was prohibitive. The eFACTS mainframe platform is currently scheduled for another upgrade and move.

The eFACTS system is a relational database in which all programs use common components such as client (operator), site, application tracking, inspection, violation, enforcement, bonding, self monitoring, reports, printing of permits, etc. Each program also has their program specific inventory. The Office of Information Technology (OIT) maintains the operating system. Operational costs are distributed to all programs. Enhancements to the system are prioritized by the Change Review Board, which is comprised of representatives of each using program. Enhancement funding from the DEP budget has been limited to $500,000/yr. Programs can fund additional program-specific enhancements. BOGM has accomplished many enhancement requests from the DEP budget. Although the standards required to share information across all programs has caused some difficulty, it also allows compiling and sharing of information that was previously not available. It also allows information to be provided to the public in a consistent manner.

DEP staff can use Discoverer, an Oracle database query tool that is part of the Business Intelligence Tools, to develop reports. Discoverer Viewer is available to all staff to run Discoverer reports saved in the Data Ware House (DWH). The DWH is refreshed from eFACTS weekly. The tools can be accessed form an internal IntraDEP connection at: http://intradep.pader.gov/IntraDEP_Main/Data_Access_Tools/default.htm

The Department has made portions of the eFACTS data available through the DEP web site at: http://www.dep.state.pa.us/efacts/default.asp Information can be obtained regarding specific clients or facilities, and the results of any inspections, violations, and enforcement actions. Users can also view the status of any application being tracked in the system. By signing up for the DEP eNotice, users will receive an Email notice of the completion of the various steps of the application review process. Users can also view the various facilities the Department regulates in a map format by using the GIS based eMap PA available on the web at: http://www.dep.state.pa.us/external_gis/gis_home.htm

BOGM has developed a Quality Assurance Plan to assure information entered into the system meets system requirements and standards. Data samples are extracted and reviewed on a quarterly basis to assure that information being entered meets the quality required. This plan can be viewed by clicking on the icon below.

QA Plan.doc

BOGM has the ability to receive and process electronic well permit applications. This web-based system became available in December 2000. Information entered by the applicant automatically populates the eFACTS system upon administrative acceptance of the application. The system calculates the permit fee and collects the fee via the Automated Clearing House. Plans are underway to enable the payment of application

fees by credit card. This option is expected to be available by the summer of 2004. Transactions are all completed through the Department's secure portal at: http://www.depgreenport.state.pa.us/

In the beginning of 2003 BOGM deployed a web based electronic production reporting option for operators to submit production information. The system is based on the eReport XML schema developed by the Ground Water Protection Council that is in use by other states. Although use was limited during the first year with just over 100 submissions, it reduced data input time by 4-5 months. The web based Oil and Gas Annual Production System (OGAPS) is available at https://www.ogaps.dcnr.state.pa.us/index.asp Data is shared with the Department of Conservation and Natural Resources (DCNR), Bureau of Topographic and Geologic Survey (BTGS), Oil and Gas Division. Data received through OGAPS is loaded at BTGS to the Well Information System (WIS) which is another system shared with BTGS. Information from eFACTS is loaded into WIS via the OGAPS system on a daily basis. This eliminates duplicate entry of data to WIS and insures WIS is in-sync with eFACTS. It also provides another Quality Assurance measure. Information entered into eFACTS that does not meet the quality criteria for WIS is identified and reloaded or corrected.

Use of the OGAPS system has improved our data as well as the databases of operators. Larger operators can download their well inventories from the OGAPS system to attach their production information. Discrepancies between our well inventory and their well inventory and well status can be easily identified in this electronic format. Many operators have commented that they appreciate this new tool to identify and resolve "misunderstandings" between DEP and the operator. OGAPS is scheduled to be upgraded to the .Net framework next year. New York has suggested that we allow New York operators to report New York production through our OGAPS system, which we could then provide to New York DEC. Although this is possible with XML, logistics and security issues would have to be resolved.

Although production information in Pennsylvania is required by law to be kept confidential for five years, summary information is provided through a link on DCNR's web site at: http://www.dcnr.state.pa.us/topogeo/WIS/ProductionStats.htm

DCNR provides maps and references that are useful to oil and gas operators on the web at: http://www.dcnr.state.pa.us/topogeo/maps&photos.htm

DCNR also provides the Pennsylvania Internet Record Imaging System (PA*IRIS). It is Pennsylvania's newest digital oil and gas well information service. Designed and operated by staff of BTGS, PA*IRIS started as a public/private subscription partnership in August, 1999. Currently, 33 oil and gas companies and 2 state agencies are subscribers. Additional subscriptions are available. Information on PA*IRIS, examples of data available in PA*IRIS, and subscription and fee information can be viewed at: <http://www.dcnr.state.pa.us/topogeo/pairis/index.htm>

Since November 1998, BOGM has been providing the Rig Activity Report (Spud report) on a weekly basis through our web site at:
http://www.dep.state.pa.us/dep/deputate/minres/oilgas/RIG03.htm

All forms for any oil and gas activity applications are available for downloading from the web site at: http://www.dep.state.pa.us/dep/deputate/minres/oilgas/Forms.htm

All BOGM policies are available on the web site at:
http://www.dep.state.pa.us/eps/default.asp?P=fldr200149e0051190%5Cfldr200149e10561a8 These policies include the Oil and Gas Operators Manual which is a complete explanation of regulatory requirements pertaining to oil and gas activities in Pennsylvania, along with all of the applicable laws, regulations, forms and guidance.

As noted in Section II, above, the laws and regulations applicable to oil and gas activities are also available on the web site at:
http://www.dep.state.pa.us/dep/deputate/minres/oilgas/Laws & Regulations.htm

Facts Sheets that BOGM has developed on various oil and gas topics are available at: http://www.dep.state.pa.us/dep/deputate/minres/oilgas/Fact Sheets.htm

Pennsylvania has developed the Pennsylvania Natural Diversity Inventory (PNDI) which contains information regarding the locations of plant and animal species of special concern, rare and exemplary natural communities, and outstanding geologic features. PNDI is accessible to internal users at: http://pndi.state.pa.us/ A system upgrade is planned to allow applicants to perform checks prior to submission of applications so that conflicts can be minimized. Public access will be through:
http://www.dcnr.state.pa.us/forestry/pndi/pndiweb.htm

DEP is moving all the production systems for all programs, including eFACTS, from the Rachel Carson State Office Building to the PA Data PowerHouse (DPH) this December. The December conversion will require the shutdown of all production systems for several weeks while conversion runs are executed to move the production beds from the DEC Alpha system to the UNIX platform at the DPH. eFACTS on the Web, emALERT, eMapPA, and CWOPA wilnl all be available. The UNIX conversion has been strategically planned for over the holidays when user accesses are low.

SECTION 5 – TECHNICAL CRITERIA

5-1. Were there any changes to state law, regulations or programs that would impact the findings and recommendations from the follow-up review of your state program?

As mentioned in Section III, above, there was a statutory change related to laboratory accreditation and a regulatory change relating to permit requirements for temporary pits.

5-5. Subsection 5.5, Technical Criteria for Pits, was amended to clarify pit construction standards for various types of pits.

Although there were regulatory changes relating to permit requirements for temporary pits, there were no changes to the technical requirements for pit construction, operation or closure.

Commercial and Centralized Disposal facilities [5.10.]

5-22. Do state regulations or permits require groundwater and air monitoring for centralized as well as commercial facilities where wastes are placed on the land? Do state regulations or permits require minimization plans for air emissions; public information plans; and environmental, health and safety plans for commercial disposal facilities? [5.10.2.2.d.] [2000]

Pennsylvania has not permitted any commercial or centralized disposal facilities where wastes are placed on the land. Any proposed facilities of this nature would have to meet all Solid Waste and Air Quality program requirements, and would be subject to groundwater and air monitoring as well as being subjected to public review during the permitting process.

5-24. For wastes not moved by pipeline, are there requirements for waste tracking? Is a commercial disposal facility operator required to certify that the facility is authorized to accept waste delivered by the waste hauler? [5.10.2.3.] [1994] [2000]

Waste tracking was reviewed during the follow-up review. According to the 1997 report of that review, the team determined that alternate methods of waste tracking (through the annual report) were satisfactory. Facilities are permitted to accept only certain types of waste. Facility operators certify their compliance on self-monitoring reports submitted to the Department.

SECTION 6 – ABANDONED SITES

6-1. Were there any changes to state law, regulations or programs that would impact the findings and recommendations from the follow-up review of your state program?

There have been a number of changes that improved the abandoned sites program in Pennsylvania. In 1999, legislation was enacted to create the Growing Greener program. The Growing Greener program was designed to invest nearly $650 million over five years to preserve farmland and protect open space, eliminate the maintenance backlog in State Parks, clean up abandoned mines and restore watersheds, plug orphan oil and gas wells, and provide new and upgraded water and sewer systems. DEP received $240 million for watershed restoration grants, abandoned mine clean-up and orphan well plugging. BOGM has received from $772,000 to $3,000,000 per year, for a total of $8,562,000 to date from Growing Greener, for orphan well plugging. In 2002, the Legislature extended Growing Greener through 2012, increasing DEP Growing Greener monies from $240 million to $547.7 million. It should be noted that Growing Greener funds for plugging orphan wells is in addition to the plugging funds established under the Oil and Gas Act that receive revenues ranging from $350,000 - $500,000 per year from permit fee surcharges.

In 2000, Pennsylvania's Plan for Addressing Problem Abandoned Wells and Orphan Wells was developed (Enclosed). The purpose of the Plan is to establish the direction of DEP well plugging activities. The Plan describes guiding principles, sets goals, and establishes plan elements. The goals and elements consist of focusing of expenditures, developing partnerships, using an areal approach to well plugging, and encouraging the adoption of orphan wells. Progress has been made in attaining all of the goals and elements of the Plan.

Orphan wells are prioritized, and expenditures are focused for plugging problem wells that threaten health and safety or pollution of the waters of the Commonwealth. Orphan wells are grouped together and plugged in "clusters" with each cluster centered around a priority well. Some cluster contracts have contained more than 100 wells. Since BOGM began plugging orphan wells in 1988, more than $10 million has been spent to plug over 1300 wells under 108 contracts. Per well plugging costs have ranged from $3,730 to $273,600. (Note: the $273,600 plugging contract involved unusual circumstance that is not anticipated to be encountered again.) When unusual situations are encountered such as locations that are difficult to access, obstructions in the well bore, cave-ins, or stuck casing or tubing, the average plugging cost has been around $22,000 per well. Where unusual situations are not encountered, the average plugging cost for shallow oil wells has been approximately $3,000 to 4,000 per well while deeper gas wells have cost an

average of approximately $20,000 per well. With the availability of Growing Greener funds, the number of well plugged per year has increased from 20 to 30 to more than 400.

Partnerships have been developed with the federal government, the Department of Conservation and Natural Resources, watershed associations, and conservation districts to locate and plug abandoned and orphan wells. BOGM is coordinating its well plugging activities with EPA to avoid duplication effort. BOGM is also coordinating with the Bureau of Land Management to plug wells on federal lands and coordinating with the Department of Conservation and Natural Resources to identify and plug orphan and abandoned well in Oil Creek State Park.

State watershed organizations and County Conservation Districts are using Growing Greener grant funds to plug orphan wells affecting specific watersheds. For example, the Warren County Conservation District plugged 10 orphan wells as part of a watershed cleanup effort.
Volunteer groups are being used to help locate and document orphan wells. The Environmental Alliance for Senior Involvement has been working with BOGM and DCNR to find orphan wells in Oil Creek State Park. So far they have identified, photographed and obtained global positioning satellite locations for more than 60 previously unidentified orphan wells.

An areal approach is being used to plan BOGM well plugging operations that have resulted in reclamation of targeted watersheds. For example, all know orphan wells in the Pine Creek watershed have been plugged.

Adoption of orphan wells occurs as eligible wells are located. Several orphan and abandoned wells have been adopted by operators and returned to production

SECTION 7 – NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM)

7-1. Were there any changes to state law, regulations or programs that would impact the findings and recommendations from the follow-up review of your state program?

There were no changes to state law or regulations regarding NORM in the recommendations of the follow-up review.

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SECTION 8 – PERFORMANCE MEASURES

8-1. Briefly describe how progress toward achievement of program goals and objectives is measured. [8.2] [2000]

Measurement of program goals and objectives is measured in a number of ways. First, as part of the Department budget, various program measures are developed that includes both narrative and numerical objectives. These measures are annually and additional narrative portions are added as program changes are implemented or trends are observed in the industry. The updated draft budget measures for FY 04/05 are as follows:

Budget Prog Measure.TIF

These program goals and objectives are translated into performance objectives against which staff and managers are evaluated.

The Department prepares and posts on the web an annual compliance report that provides statistical compliance information and highlights for each program. These reports are available at:
http://www.dep.state.pa.us/dep/subject/hotopics/2002annualreport/compliance.htm

One of the most easily measured objectives tied to environmental improvement relates to the orphan well plugging program. As described in Section 6, well plugging contracts are developed around priority problem wells, with other orphan wells in the area added to contracts for administrative efficiency. These problems posed by these wells are documented as part of the well plugging prioritization process. Plugging resolves the problems directly. These success stories are publicized as part of the Department public relations effort. A couple of noteworthy examples are given below.
http://www.dep.state.pa.us/dep/deputate/polycomm/update/04-17-98/041798u5.htm
http://www.dep.state.pa.us/dep/deputate/polycomm/update/10-22-99/10229910.htm

The Department has an ongoing program to assess the quality of waters in Pennsylvania and identify streams and other bodies of water that do not meet water quality standards as "impaired." Water quality standards are comprised of the uses that waters can support and goals established to protect those uses. Uses include, among other things, aquatic life, recreation, and drinking water, while the goals are numerical or narrative water quality criteria that express the in-stream levels of substances that must be achieved to support the uses. Periodic reports on the quality of waters in the Commonwealth are required under section 303(d) of the federal Clean Water Act. This report is monitored by BOGM for impacts associated with oil and gas exploration and development. Currently, there are no streams or lakes on the 303 (d) list attributed to oil and gas exploration and development.

The data systems referenced in Section 4, above, are used in monitoring activity progress. Numerous reports are available to provide managers with data, over various time frames, to determine progress on achievement of objectives and performance standards. For example, a monthly inspection and enforcement report is developed that gives both numerical information for the month and year-to-date and narrative status of all enforcement actions above the Notice of Violation level. A copy of a recent report is attached as an example.

Compliance
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In addition, each Division is responsible for performing Program Effectiveness Evaluations, which are in-depth evaluations of specific aspects of the program. These are usually performed annually. For example, this year evaluations are being done on adequacy of the financial assurance, the orphan well plugging program, and storm water BMPs. Reports of evaluations include findings and recommendations for program changes to improve that portion of the program.

Quarterly managers meetings are held with Division Chiefs, Regional Program Managers, Regional Section Chiefs, legal council, and other staff as needed. During these meetings various program goals, objectives, activities, issues, trends and other matters affecting the program are discussed. Minutes are taken and specific obligations are assigned to individuals. These quarterly meetings help all attendees stay aware of the status of program goals and objectives.

8-2 Briefly describe how information obtained from measurement of progress in achieving goals and objectives is used to alter or refine program activities. [8.3] [2000]

As indicated above, program measures related to the budget process are reviewed annually and portions are added or changed as trends are observed, legislative changes occur, or Administration objectives change. These changes are tied to the budget and set the course of routine activities.

In addition, various reports are monitored to determine trends or changes that might need to be corrected. For example, in recent years, the most frequent environmental violations related to erosion and sedimentation resulting from storm water contact with disturbed surface areas. In response, BOGM worked with staff and industry associations to provide a series of training events, revised Best Management Practices, revised the Oil and Gas Operators Manual, revised well permitting forms, and elevated inspection and enforcement activities. This has resulted in improvement in operator practices in the field as noted by a decrease in violation frequency.

As another example, in 1999-2000 we noticed that quite a few operators were not submitting annual production information as required by law. This led BOGM to take a series of actions that included compliance assistance and enforcement. A self-addressed "post card" reporting system was developed for operators with ten or fewer wells. With minimal effort (and no postage) the operator could complete the report by checking a box and/or inserting basic production information, and return the form for our input. A compliance strategy using progressive enforcement was developed to encourage submission of reports from larger operators. A plan was developed with input by regional staff - see APR Enforce. After the compliance efforts (see first spreadsheet), there was an immediate increase in the number of production reports. Examples of the enforcement documents that can be generated with a Mail-merge with the extracted databases are also attached.

Reported
duction Summary85

APR Enforce.doc

APR NOV Final
Draft.doc

APR Order Cover
Sample.doc

APR-Order Final
Sample.doc

As described above, reports from Program Effectiveness Evaluations performed by each Division contain findings and recommendations for program improvements. These are developed into program objectives, which translate into performance standards for the Division Chiefs. Progress in achieving performance standards is reviewed quarterly and evaluated in writing annually. An example of a Program Effectiveness Evaluation report for the orphan well plugging program is attached.

Orphan &
andoned Well Plugg

Quarterly program managers meeting minutes contain obligations. The obligations from the previous meeting are reviewed at the beginning of each meeting. This helps assure that program activities are adjusted or changed before obligations are considered fulfilled.