

**An Analysis of Pennsylvania's Accelerated Response Program –
Pennsylvania's Alternative to the Federal Office of Surface Mining's (OSM) Emergency
Program**

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ABSTRACT

In October of 2010, the federal Office of Surface Mining (OSM) ceased implementing the Federal Emergency Program to address suddenly occurring, high-priority, abandoned mine land (AML) problems in Pennsylvania. In response to the cessation of the Emergency Program by OSM, Pennsylvania chose to not accept delegation of the Emergency Program from OSM but rather to set up an Accelerated Response Program to address the AML problems traditionally dealt with by OSM. The program takes advantage of some accelerated contracting procedures provided within Pennsylvania's Procurement Code. Unlike traditional OSM Emergency Projects, accelerated response projects require submission of a formal written request from Pennsylvania to OSM for an Authorization to Proceed (ATP). This includes all required consultations with both federal and state resource agencies and complete compliance with the National Environmental Policy Act (NEPA). Once an ATP is issued by OSM, Pennsylvania addresses these AML problems with both in-house staff and through outside contractors. Pennsylvania's AML Program maintains two field offices; one in eastern Pennsylvania (Anthracite Region) in Wilkes-Barre and one in western Pennsylvania (Bituminous Region) in Ebensburg. Both field offices maintain in-house construction crews with significant equipment available to respond and address many small AML hazards such as pothole subsidences and mine drainage breakouts. For larger problems such as subsidence events causing structural damage to homes, businesses, and roads; mine fires; coal refuse fires; landslides; or other large-scale or complex AML problems, projects are completed by outside contractors. The contractors are hired through solicitation of bids or proposals with very short timeframes between bid issue and bid opening. This paper will analyze the first two years of the Accelerated Response Program (October 1, 2010 through September 30, 2012) and the last six years of the OSM Emergency Program in Pennsylvania (FY2005 – FY2010). A summary of the numbers and types of projects; the location of projects; in-house vs. out-of-house completion of projects; project costs; project timeframes; program implementation issues; and a comparison of the Accelerated Response Program versus the OSM Emergency Program will be presented.

Background

Since the inception of the federally funded AML Program in Pennsylvania (PA) around 1980, OSM has administered the OSM Emergency Program from the Appalachian Regional Office in Pittsburgh (Bituminous Region) and its satellite field office in Wilkes-Barre (Anthracite Region). The PA AML Program evaluated take-over of the AML Emergency Program from OSM on three occasions between 1980 and 2011. An evaluation was completed at the end of the 1991 federal fiscal year which indicated the following statistics regarding the OSM Emergency Program. Between 1980 and 1991, OSM averaged 98 emergency projects yearly with an average annual construction cost of \$3.83 million. OSM had 23 full-time positions committed to the Emergency Program and an additional 25 staff which were used on an as-needed basis to support Emergency Program efforts. A second evaluation in 1998 evaluated the federal fiscal years of 1994-1997 and the first 6 months of federal fiscal year 1998. During this period, OSM averaged 153 emergency projects yearly with an average annual construction cost of \$3.13 million. Approximately 73% of the emergencies dealt with mine subsidence problems and approximately 88% of the projects had a construction cost of less than \$25,000. A final analysis of the OSM Emergency Program was completed in 2011 for federal fiscal years 2005 – 2010. During this period, OSM averaged 128 emergency projects yearly with an average annual construction cost of \$4.21 million. During this time period, nearly 80% of the emergency projects dealt with mine subsidence problems. On May 28, 2010, OSM notified the Commonwealth of Pennsylvania in writing that it would no longer implement the OSM Emergency Program after the end of federal fiscal year 2010 (September 30, 2010).

PA's Accelerated Response Program – The First Two Years (2011-2012)

Development of the Program

On May 28, 2010, following months of informal communications between the OSM and Pennsylvania's Department of Environmental Protection, Bureau of Abandoned Mine Reclamation (PA-BAMR), OSM provided official notice that effective October 1, 2010 OSM would cease to fund an AML Emergency Program in Pennsylvania. At that time PA-BAMR considered itself to be in a position that it could not implement a state administered AML emergency program that would meet the requirements of the Surface Mining Control and Reclamation Act (SMCRA), the federal regulations and the Federal Assistance Manual. Most notable among the hurdles PA-BAMR faced were the need to develop an amendment to PA's Reclamation Plan to allow for a state administered emergency program; to have the amendment approved by OSM followed by submission of a grant amendment to establish and reallocate funds to an "Emergency Program Costs Category"; to determine within PA's government how, or even if, PA would implement an emergency program; and finally, to investigate and overcome obstacles within Pennsylvania's Emergency Management and Procurement Codes relative to declaration of emergencies, authority to act, and emergency contracting;.

On October 18, 2010 after months of internal discussions and planning, Pennsylvania responded to OSM that it did not agree with OSM's unilateral action to cease funding and implementation of OSM's emergency program in PA. However, the letter also committed that PA-BAMR would "...respond to correct AML problems in a timeframe and with a priority that

is appropriate for the circumstances.” Finally, the letter notified OSM that PA-BAMR would “...rely primarily on commonwealth procedures that are appropriate for expedited responses, but expect that OSM will accelerate its processing of administrative documentation commensurate with the timeframe needed.” This officially established PA’s Accelerated Response Program (ARP).

A key element to PA’s Accelerated Response Program is the recognition that the scope of the event dictates the complexity of the environmental clearances, the amount of engineering and design needed, and the time necessary to mobilize an appropriate reclamation crew or contractor. By applying sufficient resources and through the cooperation and support of OSM staff, the goal of the ARP is to condense the timeframe to request and receive Authorization to Proceed (ATP) to the same timeframe necessary to complete design of the necessary reclamation project and mobilize an appropriate reclamation crew or contractor. For small projects, most typically vertical openings due to subsidence in residential areas, a reclamation crew can usually be dispatched within a few days of the report. At the same time, these projects usually qualify for a NEPA categorical exclusion (CE) and environmental clearances are easily resolved based on the residential setting. The ATP request can be prepared quickly and, with excellent cooperation by OSM, the ATP issued with prompt turnaround. For larger projects, such as subsidence impacting multiple structures, the timeframes to mobilize the contractor and obtain the ATP are inherently expanded by additional days due to the additional complexity.

To clarify roles and expectations for both OSM and the State, on February 28, 2013, OSM’s Pittsburgh Field Division (PFD) issued Standard Operation Procedures – Abandoned Mine Land Response Protocol for PFD Staff and States (SOP). The SOP outlines the PFD response protocol when AML Program officials request an ATP and/or Emergency Declaration. It also describes procedures for processing these and other AML project documents such as approval of regular ATPs, Findings of No Significant Impact (FONSI), and Categorical Exclusions (CE). The SOP established two goals: to establish a protocol for responding to Accelerated ATP and/or Emergency Declaration Requests received from PFD States; and to provide guidance to the PFD staff receiving the initial request, PFD reviewers responding to the request, and to the States when contacting OSM.

In addition to OSM’s quick turnaround of ATP requests, a key factor of the ARP is that the PA-BAMR for many years has had in-house construction crews and equipment. Traditionally the in-house crews were used to address non-emergency AML problems where the scope of the problem matched up with the size of the crew and the capacity of the equipment. The majority of the time the scope of ARP sites is within the capability of the in-house crews and crews can be dispatched to the ARP site as quickly as their scheduled work can be adjusted and the ATP obtained. The in-house crews are located in each of the Anthracite and Bituminous District Offices which makes them well positioned to respond quickly, see Figure 1.

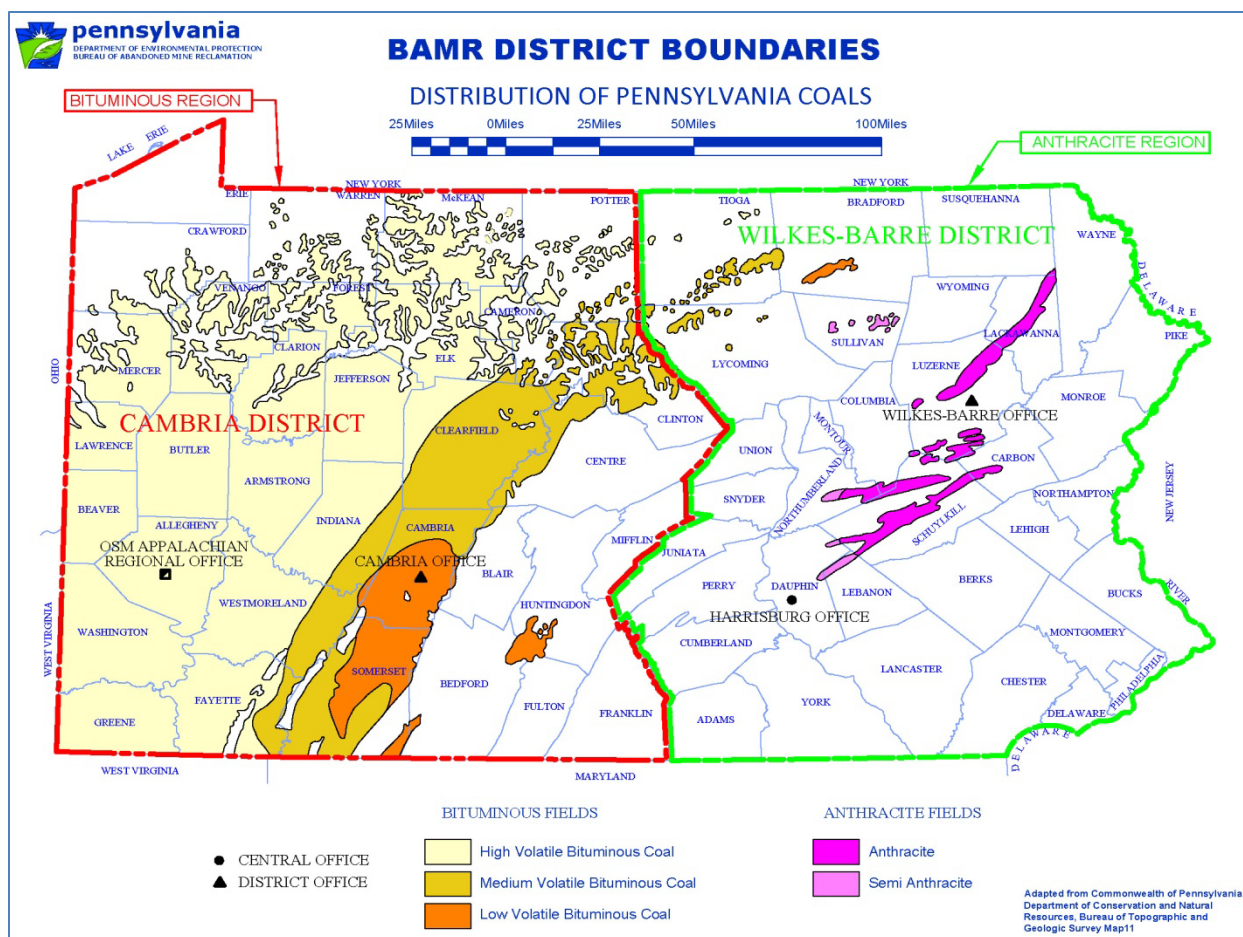


Figure 1 – Distribution of Pennsylvania’s Anthracite and Bituminous coal fields and coverage regions of the PA-BAMR Anthracite District and Bituminous District Offices.

Numbers of ARP Projects

In the federal fiscal years October 1, 2010 to September 30, 2011 (FY 2011) and October 1, 2011 to September 30, 2012 (FY 2012) PA-BAMR responded to 1,318 requests for assistance with potential AML problems, 719 and 599 respectively, in each year. These requests, or inquiries, are investigated and when urgent conditions warrant, they are elevated to ARP project status. As shown in Table 1, in 2011, 13.6% (98) of the inquiry requests were elevated to ARP project status upon investigation. In 2012 the rate was 8.3% (50) of the inquiry requests.

Table 1 – Comparison of the Total Number of Inquiry Investigations versus the number that become an Accelerated Response Project.

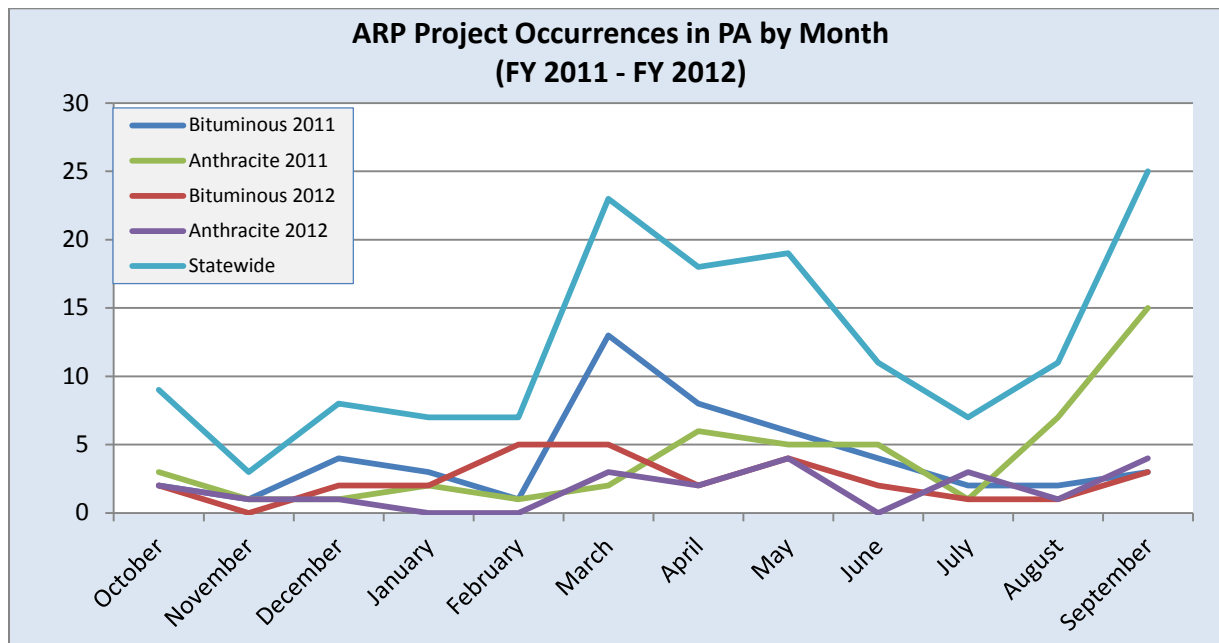
	Federal Fiscal Year					
	2011			2012		
	Inquiries	ARP	Rate	Inquiries	ARP	Rate
Anthracite Region	332	49	14.8%	205	21	10.2%
Bituminous Region	387	49	12.7%	394	29	7.4%
Totals:	719	98	13.6%	599	50	8.3%

ARP Occurrences by Month

The monthly rate of occurrence experienced by each Region (Table 2 and Figure 2) has typically been in the range of 5 or fewer ARPs per month. There are 2 notable exceptions when the number of occurrences spiked. Both spikes coincide with significant severe weather events that impacted PA. A major flooding event impacted PA, more significantly western PA, during the period of March 10–13, 2011 and Hurricane Irene hit PA on August 27, 2011 with significant rainfall and flooding that lingered for several days in eastern PA. These severe rainfall events led to prolonged ground saturation that often leads to mine subsidence and other types of land movement problems.

Table 2 – Number of ARP Projects in Pennsylvania by Month (FY2011 – FY2012)

Month	Bituminous 2011	Anthracite 2011	Bituminous 2012	Anthracite 2012	Statewide
October	2	3	2	2	9
November	1	1	0	1	3
December	4	1	2	1	8
January	3	2	2	0	7
February	1	1	5	0	7
March	13	2	5	3	23
April	8	6	2	2	18
May	6	5	4	4	19
June	4	5	2	0	11
July	2	1	1	3	7
August	2	7	1	1	11
September	3	15	3	4	25
Totals	49	49	29	21	148



**Figure 2 – Total ARP Projects by Month in Pennsylvania
(Federal Fiscal Years FY2011 – FY2012)**

Geographic Distribution of ARP sites in PA

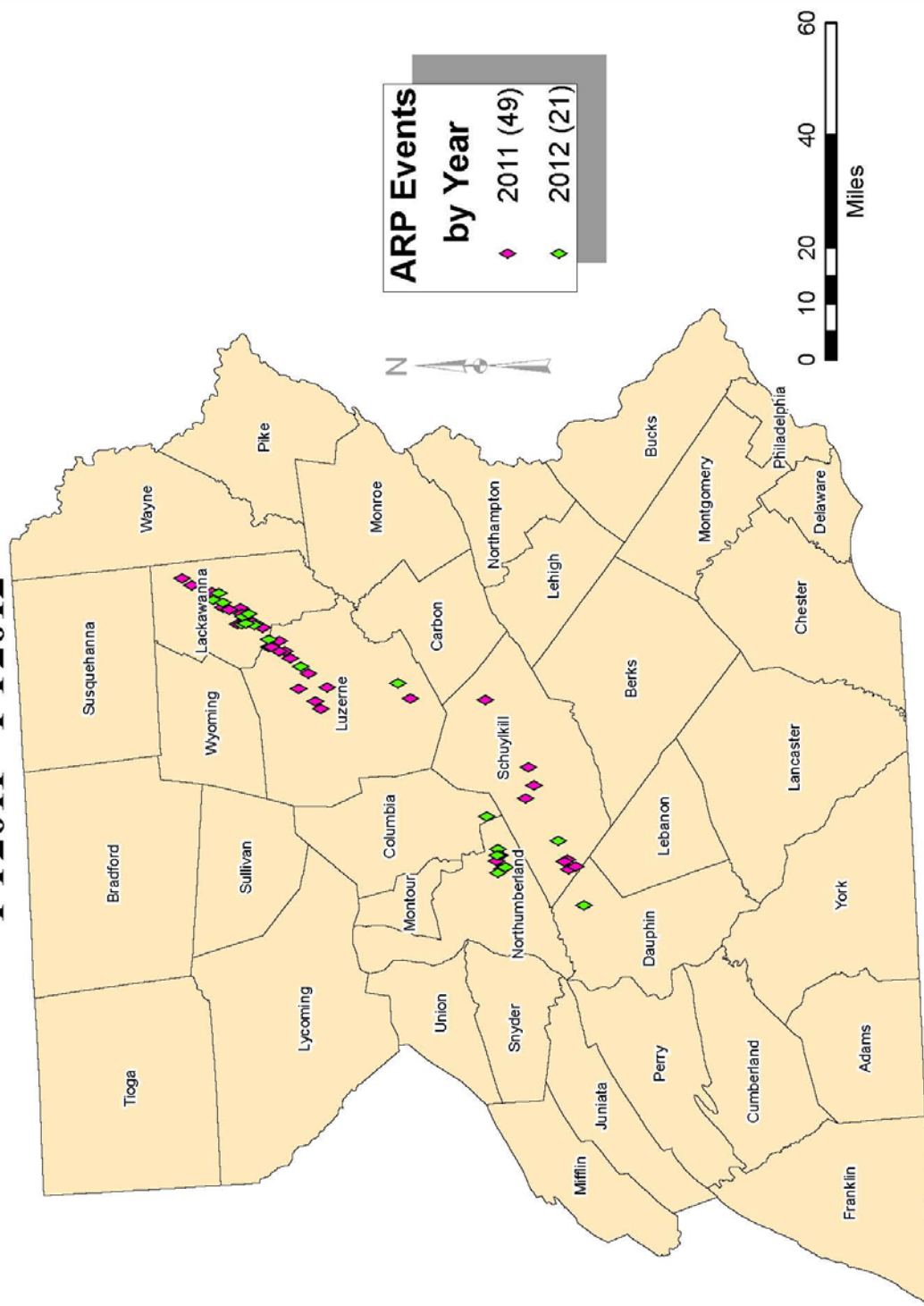
Abandoned mine problem areas have been identified in 43 of Pennsylvania's 67 counties. To date ARP sites have occurred in just 17 counties as shown in Table 3. However 55% of the ARP sites are located in 4 counties and 90% of all the ARP sites are located in only 9 counties. Figures 3 and 4 show the geographic distribution of ARP sites across the Anthracite and Bituminous regions of Pennsylvania.

Table 3 – Number of ARP Projects in Pennsylvania by County (FY2011 – FY2012)

ARP Projects in Pennsylvania by County (FY2011 – FY2012)					
County	2011	2012	Total	% of Total	Cumulative %
Lackawanna (A)	16	11	27	18.2%	18.2%
Allegheny (B)	13	8	21	14.2%	32.4%
Luzerne (A)	18	2	20	13.5%	45.9%
Westmoreland (B)	8	6	14	9.5%	55.4%
Cambria (B)	10	1	11	7.4%	62.8%
Clearfield (B)	5	6	11	7.4%	70.3%
Schuylkill (A)	10	1	11	7.4%	77.7%
Fayette (B)	5	4	9	6.1%	83.8%
Northumberland (A)	4	5	9	6.1%	89.9%
Washington (B)	3	1	4	2.7%	92.6%
Lawrence (B)	1	1	2	1.4%	93.9%
Mercer (B)	1	1	2	1.4%	95.3%
Somerset (B)	2	-	2	1.4%	96.6%
Columbia (A)	1	1	2	1.4%	98.0%
Armstrong (B)	-	1	1	0.7%	98.6%
Centre (B)	1	-	1	0.7%	99.3%
Dauphin (A)	-	1	1	0.7%	100.0%
Totals:	98	50	148		

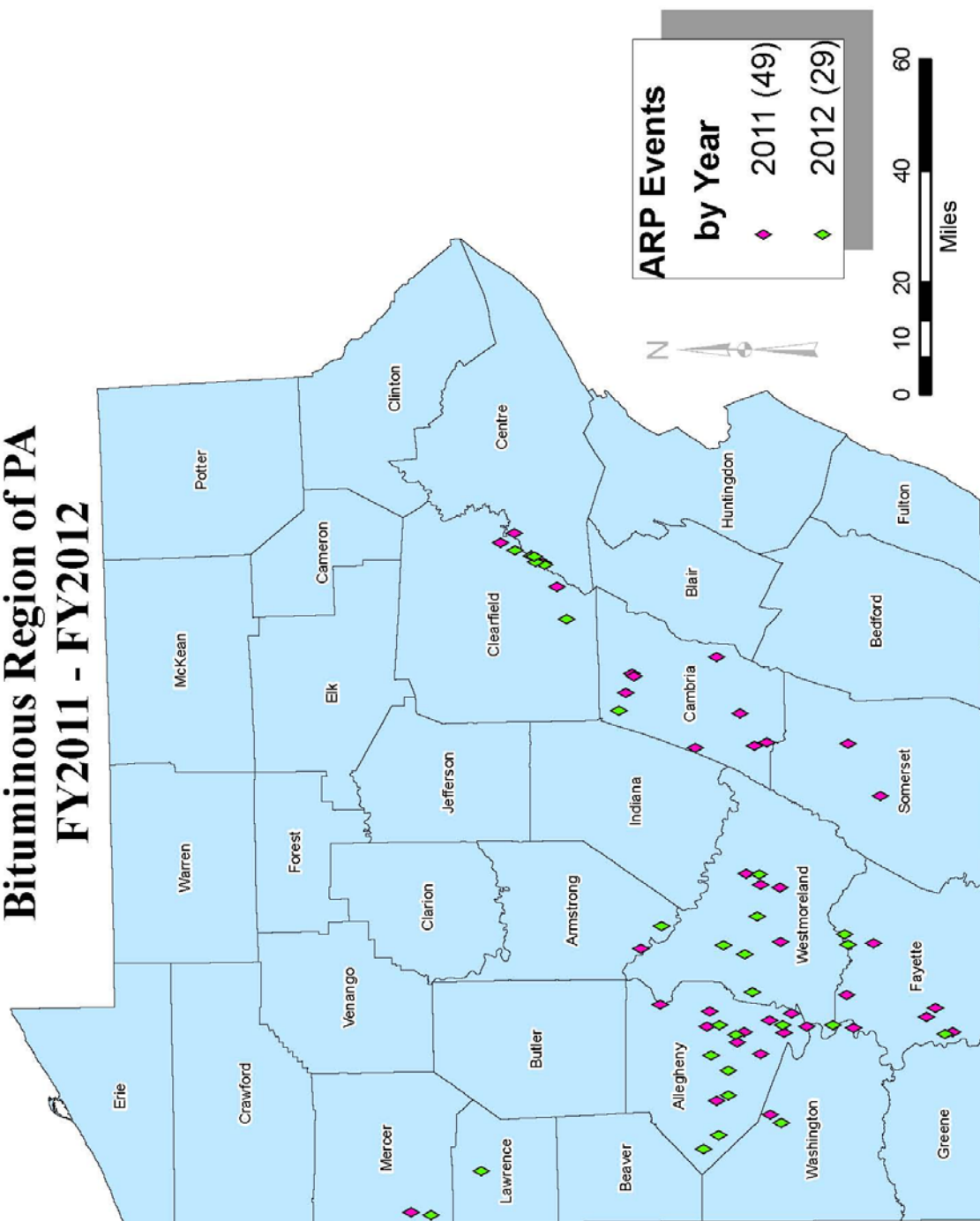
(A)-Anthracite Region; (B)-Bituminous Region

Location of PA-DEP Accelerated Response Projects Anthracite Region of PA FY2011 - FY2012



**Figure 3 – Location of ARP Projects within the Anthracite Region of Pennsylvania
(Federal Fiscal Years FY2011 – FY2012)**

Location of PA-DEP Accelerated Response Projects Bituminous Region of PA FY2011 - FY2012



**Figure 4 – Location of ARP Projects within the Bituminous Region of Pennsylvania
(Federal Fiscal Years FY2011 – FY2012)**

AMLIS and NEPA Compliance

Unlike an approved AML Emergency program, all ARP projects are developed with NEPA compliance and receive ATP from OSM before reclamation is started. As shown by the values in tables 4 and 5, the median time from the initial report of the problem until PA-BAMR submitted the NEPA compliance documents and ATP request is 6 days, and OSM's median time to review the project and issue the ATP is 1 day. It should be noted that these values are based on a count of the total elapsed days, including weekends; they have not been reduced to count business days only. As with most datasets, this data also includes outliers. Despite the seriousness of the problem and the best efforts of PA-BAMR and OSM, there are several cases where the combined time for PA-BAMR to prepare the ATP request and OSM to review and issue the ATP exceeded 100 days. The worst-case to date required a combined total of 367 days from the notification of a serious AML hazard until the ATP was obtained. The delay was due to the project (a vertical opening) containing sensitive bat hibernacula where, due to instability of the opening, there were no reclamation options other than backfilling. Protracted negotiation with the resource agency and development of a mitigation plan were required for NEPA compliance before OSM could issue the ATP.

Table 4 – Time in Days from Notification to Request of ATP for ARP Projects

Time in Days from Notification to Request of ATP PA-BAMR ARP Projects (FY2011 - FY2012)			
Time	No. of Projects	Percent	Cumulative Percent
Same Day	14	9.5%	9.5%
1 - 3 Days	35	23.6%	33.1%
4 - 7 Days	28	18.9%	52.0%
8 -14 Days	25	16.9%	68.9%
15 - 21 Days	13	8.8%	77.7%
22 - 30 Days	9	6.1%	83.8%
31 - 60 Days	6	4.1%	87.8%
61 - 200 Days	3	2.0%	89.9%
No Data/Not Required	15	10.1%	100.0%
Totals	148		
Typical ATP Request Times			
Average Request Time	12.2 Days		
Median Request Time	6 Days		

Table 5 – Time in Days for OSM to Review and Issue ATP for ARP Projects

Time in Days OSM to Review and Issue ATP PA-BAMR ARP Projects (FY2011 - FY2012)			
Time	No. of Projects	Percent	Cumulative Percent
Same Day	59	39.9%	39.9%
1 - 3 Days	51	34.5%	74.3%
4 - 7 Days	19	12.8%	87.2%
8 -14 Days	3	2.0%	89.2%
15 - 21 Days	0	0.0%	89.2%
22 - 30 Days	0	0.0%	89.2%
31 - 60 Days	0	0.0%	89.2%
61 - 200 Days	1	0.7%	89.9%
No Data/Not Required	15	10.1%	100.0%
Totals	148		
Typical ATP Times			
Average Request Time	3 Days		
Median Request Time	1 Days		

Types of AML Problems Addressed

Mine subsidence problems were the most common AML problem type experienced during the period (Table 6) representing 85% of all the ARP projects addressed. The 81 subsidence problems encountered in 2011 are nearly double the 45 experienced in FY 2012. This correlates to spikes in the monthly occurrence rates experienced in March and September of 2011 when the ground was saturated from significant weather events.

Table 6 – Number, Total Cost and Types of ARP Projects

Federal Fiscal Year	BAMR ARP Sites	Total Construction Cost	Subsidence	Mine Drainage	Mine Gas	Fires	Land Slide	Mine Opening
2011	98	\$1,608,001	81	2	1	2	6	6
2012	50	\$1,190,698	45	1	1	1	0	2
Totals	148	\$2,798,699	126	3	2	3	6	8
Percent			85%	2%	1%	2%	4%	5%

In-house versus Contracted Projects

As previously discussed, the PA-BAMR has in-house construction crews with experienced staff located in each district office. The in-house crews performed the reclamation

work in 70.3% of the ARPs addressed (Table 7). The remainder of the cases where PA-BAMR implemented an ARP, the reclamation work was accomplished through contracts. Under PA's Procurement Code, PA-BAMR can obtain an exception to the typical competitive bidding process by requesting approval for a construction emergency. When a sudden occurrence results in a serious health or safety hazard, the construction emergency approval allows PA-BAMR staff to select qualified potential bidders and invite them to a pre-bid meeting that is usually held on-site. The technical specifications, drawings, and contract documents are provided to the potential contractors during the site meeting and bids are usually due in 3 days or less depending on site conditions. The contract and notice to proceed are typically issued immediately following the bid opening and the selected contractor must begin work, usually within 72 hours (due to PA One Call Requirements) or less as specified in the contract.

Table 7 – Reclamation Method used to complete ARP Projects

Reclamation Method	Anthracite Region	Bituminous Region	Statewide	Percent
In-house Crews	43	61	104	70.3%
Contracted	24	17	41	27.7%
By Others	3	-	3	2.0%
Totals:	70	78	148	

Since contracted reclamation is used to address ARP projects only when the scope and complexity exceeds the capacity of the PA-BAMR in-house crews, the contracted work is also inherently more costly. ARP projects that have been contracted have typically required larger or specialized equipment that is not practical for the in-house crews to own or rent. The average cost of the 41 projects completed through outside contracts was \$63,396 while the average cost of the 104 projects completed by the in-house crews was \$1,918.

Evaluation of the ARP project construction costs (Table 8) shows that the 104 projects addressed by the in-house construction crews represent 70.3% of the total ARP project count but account for only 7.1% of the total construction cost. The 41 reclamation projects that were completed under contracts (27.7% of the total count) accounted for 92.9% of the total construction cost.

Table 8 – Costs to Complete ARP Projects by Region

	Anthracite Region	Bituminous Region	Statewide Cost	Percent
In-house Crews*	\$76,609	\$122,884	\$199,493	7.1%
Contracted	\$1,229,478	\$1,369,728	\$2,599,206	92.9%
Totals:	\$1,306,087	\$1,492,612	\$2,798,699	

* Staff salary and fringe benefit costs are not included here; they are reported with the Manpower costs.

The majority of the ARP projects have been low cost (Table 9) with 102 of the 145 projects costing less than \$5,000. Not obvious in the cost ranges and average values in the table below is that 50 projects in the lowest range, nearly 34% of the total, cost less than \$1,000. The highest cost in the group was \$358,693.

Table 9 – ARP Construction Cost Range and Typical Project Costs

ARP Project Costs (FY2011 – FY2012)	
Cost Range	No. of Projects
> \$100,000	7
\$50,000 - \$100,000	11
\$25,000 - \$50,000	6
\$10,000 - \$25,000	9
\$5,000 - \$10,000	10
Contracts < \$5,000	102
Total	145
Typical Project Values	
Average Project Cost*	\$19,295
Median Project Cost*	\$1,583
*- Excluding projects completed by others	

The final consideration in the total cost of the ARP is that of staff time including benefits. PA's payroll system does not account for staff time on a project by project basis. Instead, staff working on any aspect of an ARP project account for that time under a specific work code established for the ARP. The aggregate data for all staff involvement (Table 10) from the initial notification through investigation, development, realty, design, and construction, including administrative support, reveals that the average annual staff effort involved in the program is 5.7 full time equivalents (FTE). The staff and benefit costs for the first 2 years of the program totaled \$843,000 for an annual average cost of \$421,500.

Table 10 – Manpower Resources required implementing the Program (FTEs)

Fiscal Year	Total ARP Hours	Full Time Equivalents (FTE)	Salary and Fringe Benefit Costs
2011	10,292	5.72	\$ 445,224
2012	10,176	5.65	\$ 397,740
Totals:	20,468	5.69	\$ 842,964

Figure 5 depicts the bi-weekly staff effort during the 2-year evaluation period. There are two peaks that occur (with a slight time lag after the weather related ARP occurrence spikes) in March and September 2011.

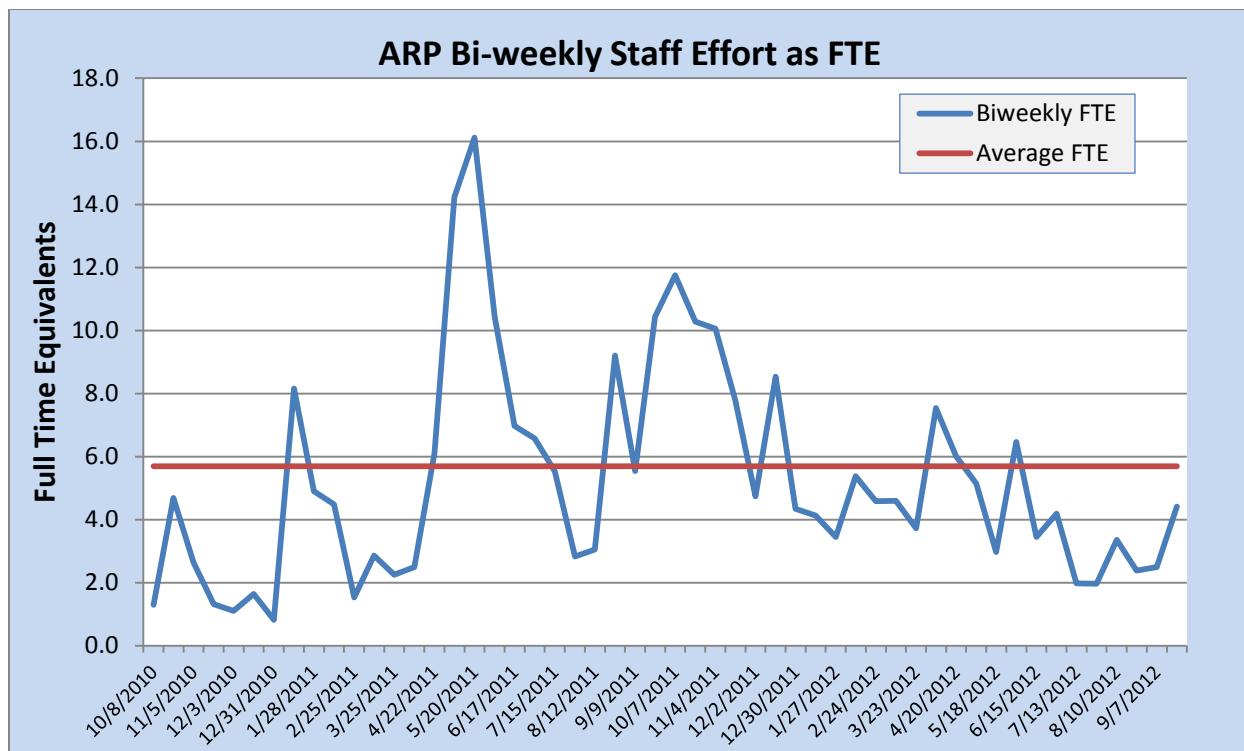


Figure 5 – Staff Effort shown as Bi-weekly Full Time Equivalents.
(Federal Fiscal Years FY2011 – FY2012)

Accelerated Response Program Total Costs

Over the initial 2-year period the total ARP cost, including the cost of salaries, benefits and construction was \$3,641,663 (Table 11). The construction cost of projects reclaimed through a contract is the largest cost category representing 71.4% of the total cost of the program. Based on the 148 accelerated responses the average cost per response is \$24,606.

Table 11 – Total, 2-year, manpower and construction costs to implement the Program

	Cost	Percent
In-house Construction Cost	\$199,493	5.5%
Contract Cost	\$2,599,206	71.4%
Salary and Benefit cost	\$842,964	23.1%
Total Cost:	\$3,641,663	
Average cost based on 148 ARP Projects:		\$24,606

Response Time from Notification to Initiation of Construction

In most cases, one of the first questions we are asked is: “When can you fix this?” Table 12 summarizes how quickly, and in a few cases how slowly, the start of construction followed the initial call reporting the AML problem. In about half of the cases, construction began in 3 weeks or less. The highest frequency of projects initiated construction in the 31 to 60 day range and within 60-days, 123 of the 148 projects (83.1%) had started construction. There were 2 projects that required more than 365 days to initiate construction. One was delayed due to

USFWS coordination related to bats because construction had to be scheduled to avoid bat hibernation; and, for the other, a decision was made during the design phase to use regular competitive bid procedures rather than accelerated (ARP) procedures.

The time from the initial call reporting the AML problem to the completion of construction shows similar timeframes as highlighted in Table 13. The highest frequency of completions occurred in the 31 to 60 days range. Half of the projects were completed in 32 days or less and within 60 days, 73.6% of the projects were completed. There were 3 projects where the time required to complete construction exceeded 365 days. Two of those projects are the same two that exceeded 365 days to initiate construction. The third project had multiple complications that resulted in a 128-day period to request the ATP and a construction phase that lasted 266 days.

Table 12 –ARP response time in days from initial report of AML problem to start of the construction project to address the problem (FY2011 – FY2012)

Time in Days from Notification to <u>Initiation</u> of Construction PA-BAMR ARP Projects (FY2011 - FY2012)			
Time	No. of Projects	Percent	Cumulative Percent
0 - 3 Days	12	8.1%	8.1%
4 - 7 Days	7	4.7%	12.8%
8 -14 Days	29	19.6%	32.4%
15 - 21 Days	23	15.5%	48.0%
22 - 30 Days	19	12.8%	60.8%
31 - 60 Days	33	22.3%	83.1%
61 - 90 Days	7	4.7%	87.8%
91 - 120 Days	4	2.7%	90.5%
121 - 180 Days	6	4.1%	94.6%
> 181 Days*	5	3.4%	98.0%
No Data (by others)	3	2.0%	100.0%
Totals:	148	100.0%	
Typical Response Times			
Average Response Time*	41 Days		
Median Response Time	22 Days		
* - Includes 2 Projects > 365 Days			

Table 13 –ARP response time in days from initial report of AML problem to completion of the construction project to address the problem (FY2011 – FY2012)

Time in Days from Notification to <u>Completion</u> of Construction PA-BAMR ARP Projects (FY2011 - FY2012)			
Time	No. of Projects	Percent	Cumulative Percent
0 - 7 Days	12	8.1%	8.1%
8 -14 Days	24	16.2%	24.3%
15 - 21 Days	14	9.5%	33.8%
22 - 30 Days	20	13.5%	47.3%
31 - 60 Days	39	26.4%	73.6%
61 - 90 Days	11	7.4%	81.1%
91 - 120 Days	7	4.7%	85.8%
121 - 180 Days	10	6.8%	92.6%
181 - 365 Days	5	3.4%	95.9%
> 365 Days	3	2.0%	98.0%
No Data (by others)	3	2.0%	100.0%
Totals	148	100.0%	
Typical Completion Times			
Average Completion Time	57.9 Days		
Median Completion Time	32 Days		

**OSM's Emergency Program
The Last Six Years in Pennsylvania (2005-2010)**

OSM Emergency Program Offices and Staffing

The OSM Emergency Program was implemented in Pennsylvania through the Federal Reclamation Program (FRP) Division within the OSM Appalachian Region. OSM maintained FRP staff in the Appalachian Regional Office located in Greentree, PA (just outside of Pittsburgh) to cover the Bituminous Region and in Wilkes-Barre, PA to cover the Anthracite Region. Near the end of FY2010, (the last year that OSM implemented the Emergency Program in PA) the FRP Division had a total of 28 staff, 20 in Pittsburgh and 8 in Wilkes-Barre. In addition to implementing the OSM Emergency Program in Pennsylvania, the Pittsburgh staff provided support to OSM personnel implementing the OSM Emergency Program in both Kentucky and Michigan. The staff included managers, supervisors, realty specialists, contract specialists, physical scientists, engineers and administrative staff.

Numbers of Emergency Projects

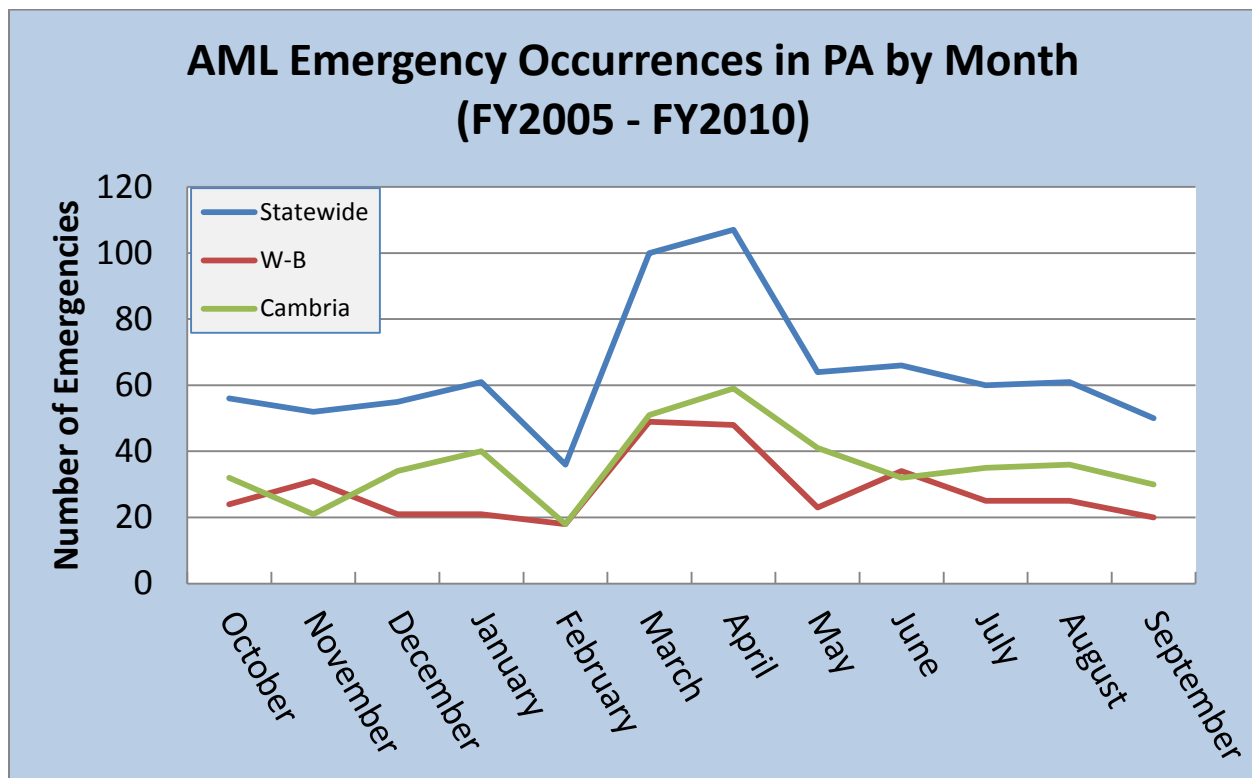
During the last six federal fiscal years (FY2005 – FY2010) that OSM implemented the Federal Emergency Program in Pennsylvania, OSM declared 768 AML emergencies. This equates to an average of 128 AML emergencies per year. The actual number of emergencies addressed by OSM ranged from a low of 115 in FY2008 to a high of 166 in FY2005. Of the 768 emergencies declared, 19 resulted in no project work by OSM as these problems were addressed by others (property owners, municipality, or other entity). An additional 23 involved some type of exploratory work (drilling or excavation) or sampling work (water or gases) that eventually determined that the problem being evaluated was not mining related. Table 14 shows the geographic distribution between Pennsylvania's Anthracite and Bituminous Coal Regions for each federal fiscal year. These data represent the 768 emergencies declared during the aforementioned timeframe.

Table 14 – OSM Emergencies in PA by Federal Fiscal Year

Total OSM Emergency Projects in PA (FY2005 – FY2010)			
Fiscal Year	Bituminous	Anthracite	Total
2005	99	67	166
2006	39	77	116
2007	73	66	139
2008	67	48	115
2009	81	36	117
2010	69	46	115
Totals	428	340	768

AML Emergency Occurrences by Month

While the occurrence of AML emergencies varies from year to year (both in terms of numbers and time of year they occur), over the entire evaluation period some general trends were observed. There is typically an increase in AML emergencies in the spring of the year following the spring thaw and seasonally higher amounts of rainfall. This increase of emergencies follows the annual low period for emergencies which occurs typically in February. This may be due to the fact that this time of year falls in the dead of winter when temperatures are usually the coldest and the ground is often frozen. Figure 6 shows the total numbers of OSM Emergency Projects by month in Pennsylvania (Statewide, Anthracite Region, and Bituminous Region) for federal fiscal years FY2005 through FY2010.



**Figure 6 – Total OSM Emergency Projects by Month in Pennsylvania
(Federal Fiscal Years FY2005 – FY2010)**

Geographic Distribution of AML Emergencies in PA

During the last six federal fiscal years that OSM implemented the Federal Emergency Program in Pennsylvania, AML Emergency Projects were undertaken in 24 of Pennsylvania's 67 counties. However, nearly three-fourths occurred in just 6 counties, 3 in Pennsylvania's Anthracite Region and 3 in the Bituminous Region. Table 15 provides a breakdown of the number of emergencies in each of the 24 counties for each fiscal year. Figure 7 shows the location of each emergency within the Anthracite Region of Pennsylvania and Figure 8 shows the location of each emergency within the Bituminous Region. The cluster of emergencies in northeast Pennsylvania in Luzerne and Lackawanna Counties is situated near the cities of

Wilkes-Barre and Scranton. The large cluster of emergencies in southwest Pennsylvania in Allegheny, Washington, and Westmoreland Counties is situated near the City of Pittsburgh and the suburbs to the south along the Monongahela River.

Table 15 – Number of OSM Emergency Project in Pennsylvania by County (FY2005 - FY2010)

OSM Emergencies in Pennsylvania by County (FY2005 - FY2010)									
County	2005	2006	2007	2008	2009	2010	Total	% of Total	Cumulative %
Allegheny (B)	41	16	25	29	40	21	172	22.4%	22.4%
Luzerne (A)	24	27	33	23	13	16	136	17.7%	40.1%
Lackawanna (A)	25	21	18	14	11	18	107	13.9%	54.0%
Washington (B)	9	6	15	7	5	13	55	7.2%	61.2%
Westmoreland (B)	11	3	11	5	12	10	52	6.8%	68.0%
Schuylkill (A)	7	17	7	2	6	7	46	6.0%	74.0%
Fayette (B)	14	2	8	10	7	6	47	6.1%	80.1%
Northumberland (A)	10	10	4	7	6	4	41	5.3%	85.4%
Clearfield (B)	3	5	5	4	5	10	32	4.2%	89.6%
Cambria (B)	4	1	5	2	2	2	16	2.1%	91.7%
Lawrence (B)	4	1	2	5	3	0	15	2.0%	93.6%
Indiana (B)	1	1	1	2	4	0	9	1.2%	94.8%
Armstrong (B)	1	4	0	1	1	0	7	0.9%	95.7%
Somerset (B)	5	0	0	0	1	1	7	0.9%	96.6%
Mercer (B)	2	0	0	2	0	2	6	0.8%	97.4%
Carbon (A)	0	0	3	1	0	1	5	0.7%	98.0%
Columbia (A)	1	2	0	0	0	0	3	0.4%	98.4%
Jefferson (B)	1	0	1	0	0	1	3	0.4%	98.8%
Beaver (B)	2	0	0	0	0	0	2	0.3%	99.1%
Butler (B)	1	0	0	0	0	1	2	0.3%	99.3%
Greene (B)	0	0	0	1	1	0	2	0.3%	99.6%
Centre (B)	0	0	0	0	0	1	1	0.1%	99.7%
Venango (B)	0	0	0	0	0	1	1	0.1%	99.9%
Tioga (A)	0	0	1	0	0	0	1	0.1%	100.0%
Totals:	166	116	139	115	117	115	768	100%	
(A)-Anthracite Region; (B)-Bituminous Region									

Location of OSM Emergency Projects Anthracite Region of PA FY2005 - FY2010

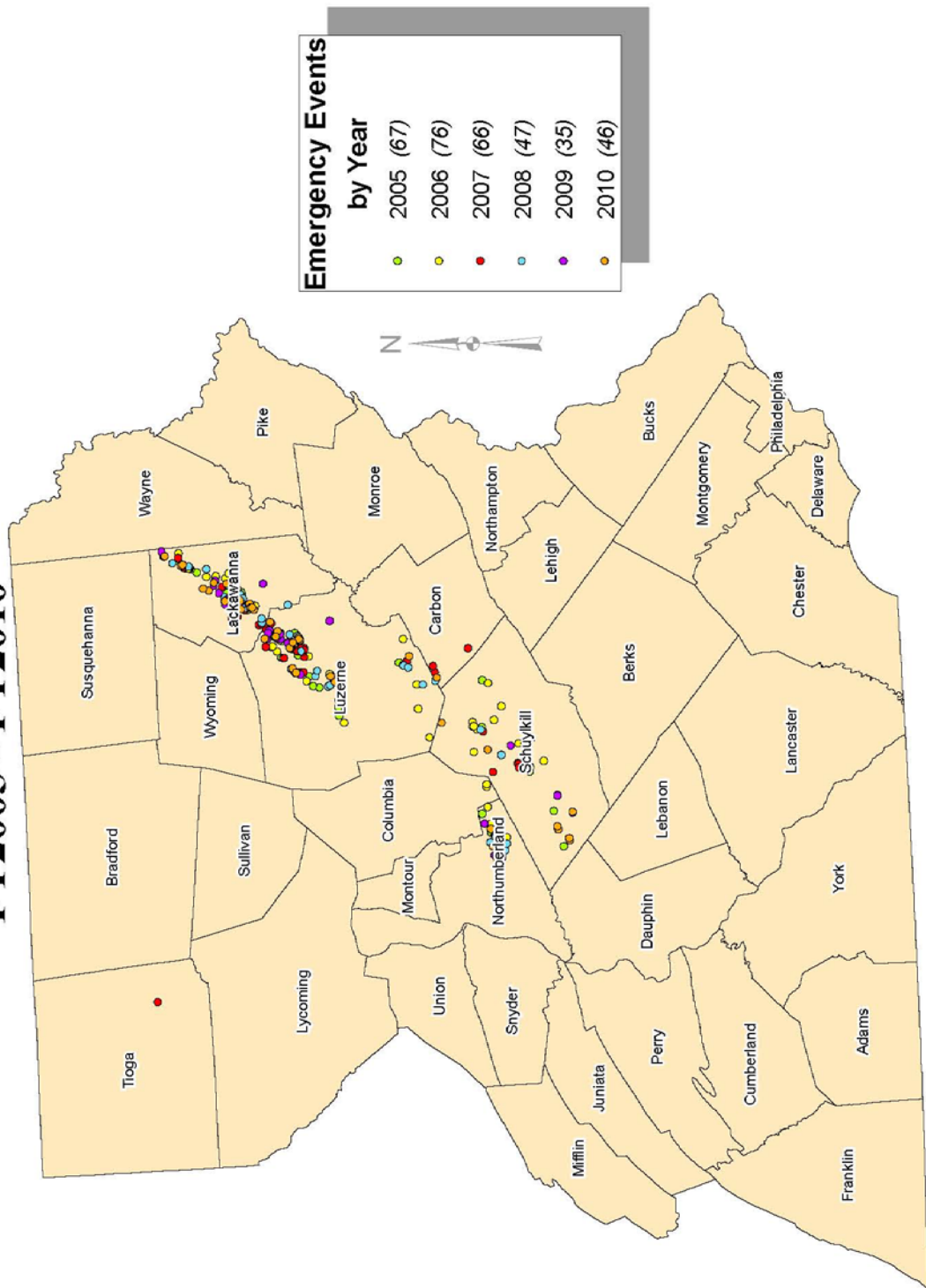


Figure 7 – Location of OSM Emergency Projects with the Anthracite Region of Pennsylvania (Federal Fiscal Years FY2005 – FY2010)

Location of OSM Emergency Projects Bituminous Region of PA FY2005 - FY2010

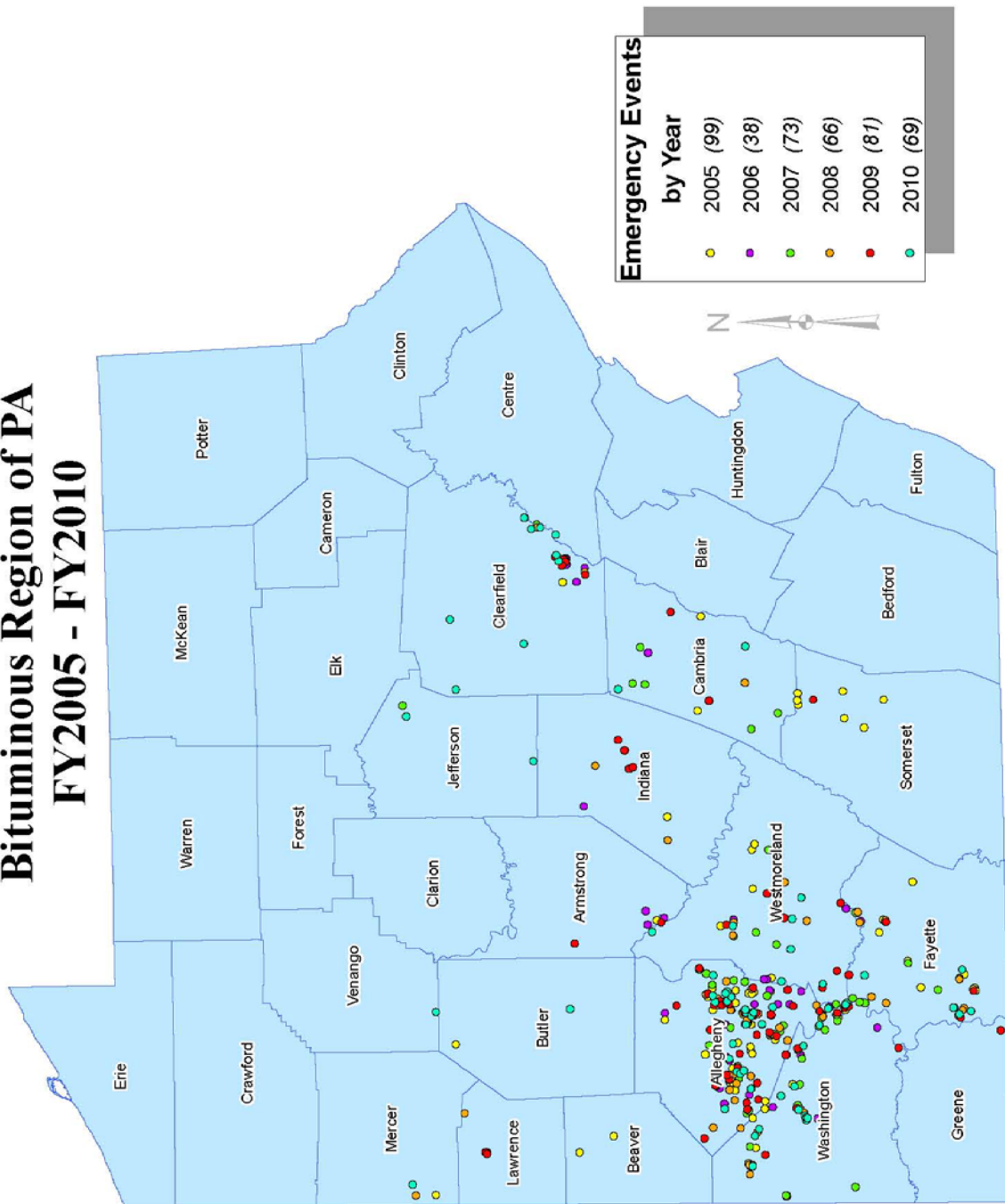


Figure 8 – Location of OSM Emergency Projects with the Bituminous Region of Pennsylvania (Federal Fiscal Years FY2005 – FY2010)

Emergency Projects Expenditures

During the 6-years, 2005 to 2010, OSM's total expenditure on AML Emergency Projects was \$25,243,873. Approximately 45% (\$11,415,001) of the total amount spent went toward addressing a single emergency project located in Pennsylvania's Anthracite Coal Region, the Dolph Colliery Mine Fire Control Project. This project skews the data when statistically analyzing trends or typical annual and project costs. Therefore, while the Dolph Colliery Mine Fire Control Project information is included in most data tables in this report, notes to indicate whether or not it was used for data analysis purposes are included to clarify the numbers and the analyses completed. Table 16 provides a breakdown of OSM's total expenditures on emergency projects by fiscal year and by region within Pennsylvania.

Table 16 – Total Construction Cost of OSM Emergency Projects in PA

Fiscal Year	Bituminous	Anthracite	Total
2005	\$ 2,068,914	\$ 821,235	\$ 2,890,149
2006*	\$ 786,795	\$ 12,561,256	\$ 13,348,051
2007	\$ 1,254,882	\$ 1,125,471	\$ 2,380,353
2008	\$ 1,795,353	\$ 1,234,078	\$ 3,029,431
2009	\$ 1,427,739	\$ 500,881	\$ 1,928,620
2010	\$ 1,286,236	\$ 381,033	\$ 1,667,269
Totals	\$ 8,619,919	\$ 16,623,954	\$ 25,243,873
* - Includes \$11,415,001 for the Dolph Colliery Mine Fire Control Project			

Table 17 – Contract Range and Typical Project Costs

Analysis of Emergency Project Costs (FY2005 – FY2010)	
Contract Range	No. of Projects
Contracts > \$100,000*	33
\$50,000 - \$100,000	26
\$25,000 - \$50,000	53
\$10,000 - \$25,000	94
\$5,000 - \$10,000	53
Contracts < \$5,000	509
Total	768
* - Includes Dolph Colliery Mine Fire Control Project	
Typical Project Values	
Average Project Cost**	\$18,840
Median Project Cost**	\$2,000
**- Excluding the Dolph Colliery Mine Fire Control Project and projects completed by others or with no cost information	

A project construction cost evaluation shows that 656 of the 768 (85.4%) emergency projects undertaken by OSM in PA during the FY2005 through FY2010 period cost less than \$25,000 to address. The average project cost was \$18,840 and the median project cost was \$2,000. Only about 15% or 112 of the 768 projects had a construction cost in excess of \$25,000. Only 1.4% or 11 of the projects had a construction cost in excess of \$250,000 and the Dolph Colliery Mine Fire Control Project was the only project with a construction cost in excess of \$500,000. Table 17 shows a breakdown by various cost ranges of the construction costs of the emergency projects completed during this evaluation period. The table also shows the average and median project costs. Projects with no cost information and projects that were completed by others were not included in the statistical analyses.

Types of AML Problems Addressed

OSM Emergencies addressed within Pennsylvania from 2005 through 2010 generally fit within one of six AML problem types including mine subsidence (including open caveholes, cropfalls and damage to structures or other surface improvements); mine drainage (impacting homes, businesses, roads or other improved property), mine gases (primarily methane, carbon dioxide, or carbon monoxide), mine fires (burning coal refuse or underground mine fires); mining induced landslides (caused by mine drainage or mine subsidence); or mine openings (vertical shafts, slope entries, or portals). During the evaluation period, 606 of the 768 emergencies, or approximately 79%, dealt with mine subsidence problems. Mine openings ranked second accounting for 66 of the 768 emergencies, or approximately 9% of the total. Table 18 shows a breakdown of the AML problems types for each fiscal year.

Table 18 – Number, Total Cost and Types of OSM Emergencies

Federal Fiscal Year	OSM Emergencies	Total Construction Cost	Subsidence	Mine Drainage	Mine Gas	Fires	Land Slide	Mine Opening
2005	166	\$ 2,890,149	123	8	10	8	3	14
2006*	116	\$ 13,348,050	96	2	3	3	0	12
2007	139	\$ 2,380,353	112	7	6	3	2	9
2008	115	\$ 3,029,431	96	4	2	1	4	8
2009	117	\$ 1,928,620	93	7	5	5	1	6
2010	115	\$ 1,667,269	86	5	4	2	1	17
Totals	768	\$25,243,872	606	33	30	22	11	66
Avg.	128	\$ 4,207,312	101	6	5	4	2	11
Average		\$ 2,304,812	(Excluding the Dolph Mine Fire Control Project)					
Percent			79%	4%	4%	3%	1%	9%
Type of AML Emergency			Subsidence	Mine Drainage	Mine Gas	Fires	Land Slide	Mine Opening
* - Includes Costs for the Dolph Colliery Mine Fire Control Project (\$11,415,001)								

Response Time from Notification to Initiation of Construction

One measure of the OSM Emergency Program is the response time from the initial notification of a potential AML problem to the start of some type of project to address the problem. During the evaluation period, OSM initiated an emergency project within one week 20% of the time, initiated nearly 40% within 2 weeks, and over 50% within 3 weeks. Over 85% had a project initiated within 90 days. Only a little less than 3% took longer than 180 days to initiate construction of a project, and only 3 took over a year to begin work. Table 19 shows the response time by intervals in days and the typical response time for all of the emergencies addressed during the evaluation period. The average response time from notification to initiation of a project was 39 days while the median value was 20 days. There can be many reasons for long time periods to initiate projects including: determination of eligibility; exploratory activity; contracting issues; time necessary for design, including development of plans and specifications; coordination issues with resource agencies; time required to obtain permits or other approvals required prior to initiation of construction; land access issues; or other factors which can delay completion of a project. Insufficient data is available to evaluate the reasons for some of the long time periods elapsed between notification and initiation of a project for several of the OSM Emergency Projects undertaken in Pennsylvania during the period of this evaluation.

Table 19 – OSM response time in days from initial report of AML problem to start of construction project to address the problem (FY2005 – FY2010)

Time in Days from Notification to <u>Initiation</u> of Construction OSM Emergency Projects (FY2005 - FY2010)			
Time	No. of Projects	Percent	Cumulative Percent
0 - 3 Days	52	6.8%	6.8%
4 - 7 Days	97	12.6%	19.4%
8 -14 Days	154	20.1%	39.5%
15 - 21 Days	103	13.4%	52.9%
22 - 30 Days	83	10.8%	63.7%
31 - 60 Days	119	15.5%	79.2%
61 - 90 Days	57	7.4%	86.6%
91 - 120 Days	35	4.6%	91.1%
121 - 180 Days	27	3.5%	94.7%
> 181 Days*	22	2.9%	97.5%
Addressed by Others	19	2.5%	100.0%
Totals	768	100%	
Typical Response Times			
Average Response Time*	39 Days		
Median Response Time	20 Days		
* - Includes 3 Projects > 365 Days			

Another measure of the OSM Emergency Program is the response time from the initial notification of a potential AML problem to the completion of a project to address the problem or to determine its eligibility. During the evaluation period, OSM completed work at approximately 7% of the AML emergencies within 30 days, approximately 27% within 60 days, and 63% within 180 days. Nearly 78% were completed within one year. Approximately 7% took over one year to complete. There are 114 projects (15%) that had insufficient data to analyze the time to complete the construction. Table 20 shows the response time by intervals in days and the typical response time for all of the emergencies addressed during the evaluation period. The average response time from notification to completion of a project was 148 days while the median value was 94 days. There can be many reasons for long time periods to complete projects including contract close-out issues, such as processing change orders and final payments; minor work, such as seeding and site restoration which can be delayed for months due to weather; time required to obtain permits or other approvals after initiation of construction; addressing unforeseen problems or site conditions during construction; equipment breakdowns; or other factors which can delay completion of a project. Insufficient data is available to evaluate the reasons for some of the long construction periods associated with several of the OSM Emergency Projects undertaken in PA during the period of this evaluation.

Table 20 – OSM response time in days from initial report of AML problem to completion of construction project to address the problem or determine eligibility (FY2005 – FY2010)

Time in Days from Notification to <u>Completion</u> of Project Construction OSM Emergency Projects (FY2005 - FY2010)			
Time	No. of Projects	Percent	Cumulative Percent
0 - 7 Days	0	0.0%	0.0%
8 -14 Days	5	0.7%	0.7%
15 - 21 Days	21	2.7%	3.4%
22 - 30 Days	26	3.4%	6.8%
31 - 60 Days	154	20.1%	26.8%
61 - 90 Days	107	13.9%	40.8%
91 - 120 Days	97	12.6%	53.4%
121 - 180 Days	77	10.0%	63.4%
181 - 365 Days	111	14.5%	77.9%
> 365 Days*	56	7.3%	85.2%
No Data/Addressed by Others	114	14.8%	100.0%
Totals	768	100%	
Typical Completion Times			
Average Time to Completion*	148 Days		
Median Completion Time	94 Days		
* - Includes 10 Projects > 730 Days (2 years)			

Comparisons between OSM's AML Emergency Program and Pennsylvania's AML Accelerated Response Program

Tables 21 and 22 show comparisons between the OSM administered Emergency Program and PA-BAMR's Accelerated Response Program. In general, the two programs have successfully addressed suddenly occurring, high-priority AML hazards that have occurred across Pennsylvania. The two programs are remarkably similar when comparing average and median project costs, percent of projects costing less than \$5,000 to address, time required to initiate construction, and the percent of the projects completed within 60 calendar days. As would be expected, the problem types being addressed are also very comparable with subsidence problems being by far the most common type of AML hazard being addressed. In the short history of the ARP in Pennsylvania, the program has spent on average nearly \$1 million less per year than OSM did when implementing the AML Emergency Program. Also, the time required to complete construction has, on average, been significantly less for the ARP. This is attributed to the two in-house construction crews maintained by PA-BAMR which can mobilize and respond very quickly avoiding the need for outside contracting.

Table 21 – Comparison of problem types encountered under the OSM Emergency Program and the PA-BAMR ARP

Program	AML Problem Type					
	Subsidence	Mine Drainage	Mine Gas	Fires	Land Slide	Mine Opening
OSM Emergency	79%	4%	4%	3%	1%	9%
PA-BAMR ARP	85%	2%	1%	2%	4%	5%

Table 22 – Comparison of Program Metrics between OSM Emergency Projects and PA-BAMR ARP Projects

Program Metric	OSM Emergency	PA-BAMR ARP
Average Annual Number of Projects	128	74
Average Project Construction Cost	\$18,840	\$19,295
Median Project Construction Cost	\$2,000	\$1,583
Percent of Projects with Cost < \$5,000	66.3%	68.9%
Average Annual Construction Expenditures (Excludes OSM's Dolph Project at \$11.4M)	\$2,304,821	\$1,399,350
Average Total Days to Initiate Construction	39	41
Median Total Days to Initiate Construction	20	22
Percent of projects Initiated in 60 days or less	79.2%	83.1%
Average Total Days to Complete Construction	148	58
Median Total Days to Complete Construction	94	32
Percent of projects Completed in 60 days or less	26.8%	73.6%

Summary and Conclusions

In summary, Pennsylvania has successfully established a program to deal with high-priority, suddenly occurring AML hazards that address the same types of AML problems that OSM addressed through the AML Emergency Program. The Accelerated Response Program (ARP) takes advantage of accelerated contracting procedures allowable within Pennsylvania's Procurement Code to address these types of problems quickly and effectively. In the two plus years that the ARP has been implemented in Pennsylvania, similar trends in types of AML problems addressed, project costs, geographic distributions, and time to investigate and complete work have been observed when compared to historical records of the OSM AML Emergency Program. Some significant differences include the method to accomplish the remediation work and the process under SMCRA and the Federal Assistance Manual that Pennsylvania has used to get an ATP from OSM. The vast majority of ARP projects have been constructed by the PA-BAMR in-house construction crews versus OSM contracting 100% of the AML Emergency Projects. The completion of the Accelerated Response Projects using Commonwealth staff and equipment (in-house construction crews) provides PA-BAMR a significant advantage in its ability to complete the vast majority of projects in less than 60 days.

Through the development of a SOP mutually agreed upon by both OSM and PA-BAMR staff, requests for ATPs are prioritized. For projects that PA-BAMR proposes to address through the ARP, OSM expedites review and approval of ATPs often granting them on the same day as requested or within only 1 or 2 business days following the request.

The Pennsylvania AML Program has set up and implemented the ARP without increasing staff while maintaining comparable service to the citizens living in the coal fields. PA's AML Program has absorbed the cost of the ARP by funding all work with the state's annual Title IV AML Grant funds. One major drawback to these two realities is that staff time now committed to the ARP is not available for work on regular OSM Priority 1 and Priority 2 projects. Additionally, the annual average of \$1.4 million being spent on construction of the Accelerated Response Projects reduces by that same amount the availability of funding for regular AML inventory based reclamation projects. Since Pennsylvania's average reclamation project cost for an AML inventory based site is approximately \$250,000, the impact of the ARP is that five or six AML hazard sites will not be addressed annually. This redirection of reclamation funding keeps many coal field citizens of the Commonwealth exposed to AML hazards for a longer period of time, which could result in more injuries or deaths from these hazards.

Acknowledgements

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