

Economic Impact Analysis of the Ohio Abandoned Mine Land Program



Prepared for

Ohio Department of Natural Resources Division of Mineral Resources Management

Prepared by

Ohio University's
Voinovich School of Leadership and Public Affairs

April 2014

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Introduction

Program Description: Ohio Department of Natural Resources Division of Mineral Resources Management's Abandoned Mine Land Program

More than 3.6 billion tons of coal has been extracted in Ohio's coal bearing region since the 1800s. The first 150 years of coal mining were unregulated and left impacts on the landscape that are hazardous and environmentally damaging such as: dangerous mine openings, landslides, highwalls, impoundments, highly erodible lands, clogged stream lands, toxic mine spoil, subsidence, and acid mine drainage. The Abandoned Mine Land Inventory System in Ohio documents 4,365 abandoned underground mines and 234,498 acres of surface mines.

By 1972, the problems included:

- 1,300 miles of streams polluted by acid mine drainage
- 500 miles of streams affected by high sediment loads
- Nearly 119,000 acres of land in need of major reclamation
- Hundreds of acres of land prone to subsidence
- Polluted domestic water supplies
- Hundreds of acres of landslides

The Ohio Department of Natural Resources Division of Mineral Resources Management (ODNR-DMRM) has an Abandoned Mine Land (AML) Program to address issues associated with abandoned coal mine features. Abandoned coal mines are defined as mines abandoned prior to 1977 when the Surface Mine Control and Reclamation Act (SMCRA) was passed. SMCRA created the Office of Surface Mining Reclamation and Enforcement (OSMRE) and provided for the collection of severance taxes on coal production to fund projects to address abandoned mine issues. In Ohio, ODNR-DMRM operates the AML Program with annual grant funding provided by OSMRE.

The AML Program has completed approximately 1,400 projects in the last 30 years addressing emergency, public health and safety, and environmental hazards.

Economic Impact Analysis

The Voinovich School of Leadership and Public Affairs at Ohio University has conducted an economic impact analysis of the AML Program in Ohio. The following pages provide estimates of the number of jobs, amount of labor income, and the amount of state and local tax revenue generated by AML spending on reclamation activities in Ohio's coal region. Federal funds allocated to these reclamation projects support local jobs through contracts with private construction companies and businesses for clean-up activities. The analysis covers six years from 2008 to 2013 and is conducted on two study areas: Ohio's 30-county coal region as defined by the Ohio Department of Natural Resources, and the remainder of Ohio's 58 counties. Results of the two analyses are combined to estimate total impacts on the state of Ohio. This report presents impacts for the coal region and Ohio; details of the impacts on the 58 county non-coal

region of Ohio are disaggregated in Appendix A. The map below shows the 30-county coal region in Ohio (shaded portion of Figure 1). A list of county names for the coal region and the non-coal region can be found in Appendix B, along with a more detailed map of abandoned underground mines in Ohio.

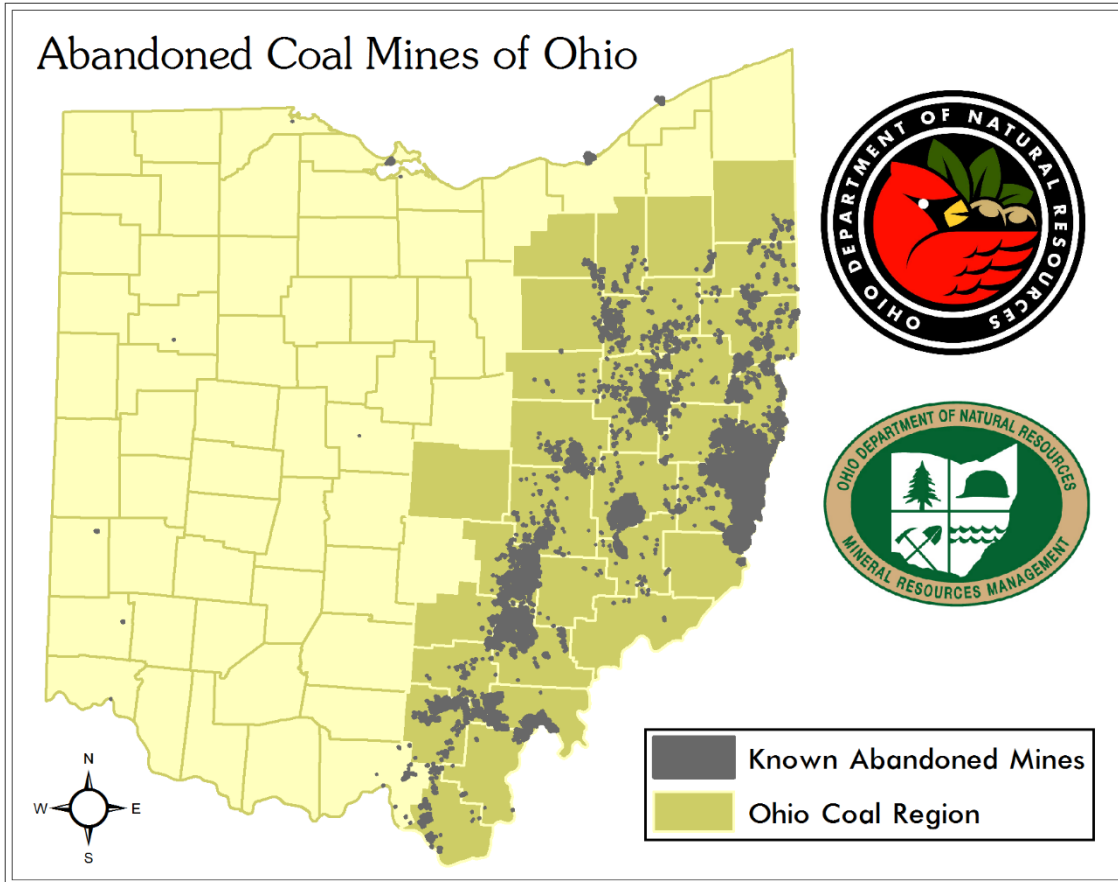


Figure 1. ODNR-DMRM’s map of Ohio’s 30-county coal bearing region.

Data and Methodology

The Ohio Department of Natural Resources Division of Mineral Resources Management provided expenditure data for federal funding administered to Ohio’s Abandoned Mine Land Program for six state fiscal years ending in 2013. The focus of this analysis is AML federal funding expended to private companies and businesses for reclamation activities. Not included in the analysis are items such as salary and benefit-related spending and other operating expenses.

Table 1 details annual spending of federal AML funds in Ohio’s coal region as provided by ODNR. Only funds allocated to private construction companies and businesses performing reclamation work in Ohio’s coal region are displayed.

Year	Annual Funding
2008	\$2,108,585
2009	\$3,419,247
2010	\$3,010,810
2011	\$2,881,455
2012	\$5,436,667
2013	\$6,879,213
Total	\$23,735,977

Economic models of Ohio’s coal region were created for each year from 2008 to 2013 using the IMPLAN V3.1 Modeling System, an input-output economic modeling tool.

By inputting the amount spent on the AML Program in the coal region, the input-output model can be used to estimate the economy-wide response. A Social Accounting Matrix (SAM) is an extended input-output table that includes not only the economic response of the industry directly affected, but also the effect of that industry change on institutions including households, government, inventory, capital and exports. Therefore, using the SAM method provides a more robust picture of the economic impact of the AML Program¹.

For more accurate models and impact estimates, the Multi-Regional Input-Output (MRIO) method is used. This method allows for a demonstration of how the AML Program’s federal funding used in Ohio’s coal region disperses into other regions of Ohio. IMPLAN datasets from 2008 to 2013 were used with the corresponding year’s expenditure data.

The IMPLAN sector used for this analysis is “Waste Management and Remediation Services.” This sector is based on the North American Industry Classification System (NAICS) and includes waste disposal, waste treatment, and other remediation services.

The following report is divided into three sections: employment impact, labor income impact, and tax impact.

- **Employment Impact** – This represents the approximate number of both full and part time jobs created or supported in each year.
- **Labor Income Impact** – Labor income is made up of employee compensation (payment to wage/salary workers), proprietor income, and payroll tax.
- **Tax Impact** – Ohio state and local tax revenue generated by the AML reclamation actives. Payroll taxes are accounted for in the labor income impacts and are therefore not included here. Types of tax revenue included are:
 - production and imports: sales tax, property tax, motor vehicle license, severance tax, and other taxes,
 - household tax: income, fines/fees, personal motor vehicle license, personal property tax, state and local taxes, and
 - corporation tax.

¹ MIG, Inc., IMPLAN System (data and software), 502 2nd Street, Suite 301, Hudson, WI 54016 www.implan.com

For each section, the direct, indirect, induced and total effects are presented by year for the coal region and Ohio. See Appendix A for detailed results of the non-coal region impacts.

- Direct Effect – Pertains to jobs created and labor income generated by contractors completing reclamation work. Only the coal region will show direct effect because this is where the work takes place.
- Indirect Effect – This is initiated by the contractors completing the reclamation work buying material and labor from local companies.
- Induced Effect – These are the jobs created and labor income generated by employees of AML contracted business and employees of companies from which reclamation products or services are purchased spending a portion of their income locally.

Another way of expressing this is that a dollar spent in any sector of a local economy will generate additional dollars in other sectors. For example, an employee working for a contractor performing reclamation work purchases clothes for his or her family at a local clothing store, generating income for the store's owner. The owner saves some of this money and spends the rest, thereby providing income for another local resident. The third person saves part of this money and spends the rest, which becomes income for a fourth person, and so on. The sum of the total direct, indirect and induced income is the total income generated in the local economy by the project spending. Employment works in much the same manner and hence employment in the area of reclamation results in additional employment in the remainder of the local economy. This study determines the total direct, indirect, and induced employment, labor income, and state and local tax revenue contribution of the AML Program to Ohio.

Employment Impact

The tables below show the direct, indirect and induced effect of the AML Program on employment. Note that employment numbers are average full and part-time jobs supported in a given year. Employment numbers should not be totaled across years; the jobs are not new jobs in addition to the previous year.

- Table 2 shows the impact in the 30-county coal region where the reclamation activities have taken place through the years.
- In 2008, the AML Program supported roughly 24 jobs.
- Through additional federal funding allocated to the states, the number of jobs supported nearly tripled from 24 in 2008 to about 65 in 2013.

Table 2. Impact of AML Program on Employment in Ohio's Coal Region

	Direct	Indirect	Induced	Total
2008	11.1	6.4	6.2	23.6
2009	18.6	9.7	10.5	38.7
2010	17.4	7.7	8.8	33.9
2011	13.9	8.3	7.6	29.8
2012	25.4	14.0	13.0	52.4
2013	31.6	17.4	16.2	65.2

Table 3 shows the AML Program's employment impact in Ohio. The numbers represent the sum of direct, indirect and induced jobs in the coal region and the non-coal region each year.

- In the state of Ohio in 2008, about 26 jobs were created or supported. This represents approximately three jobs in addition to the coal region jobs.
- Additional federal funding allowed the number of Ohio jobs created or supported to increase to about 70 in 2013.

Table 3. Impact of AML Program on Employment in Ohio

	Direct	Indirect	Induced	Total
2008	11.1	8.1	7.2	26.3
2009	18.6	11.5	11.7	41.6
2010	17.4	8.7	9.7	35.8
2011	13.9	9.7	8.5	32.1
2012	25.4	16.4	14.5	56.3
2013	31.6	20.4	18.0	70.1

Labor Income Impact

Table 4 displays labor income generated by the AML Program through the years in the coal region. Labor income includes employee compensation, proprietor income, and payroll tax.

- From 2008 to 2013, the AML Program has generated over \$11.5 million in Ohio's coal region.
- The direct effect of the program has more-than-doubled from 2008 to 2013.

Table 4. Labor Income Impact of AML Program in Ohio's Coal Region

	Direct	Indirect	Induced	Total
2008	\$593,971	\$262,138	\$193,830	\$1,049,940
2009	\$961,589	\$408,318	\$345,979	\$1,715,886
2010	\$852,876	\$295,823	\$275,987	\$1,424,687
2011	\$841,634	\$33,054	\$250,486	\$1,429,174
2012	\$1,570,741	\$603,649	\$460,900	\$2,645,290
2013	\$1,996,913	\$767,430	\$585,951	\$3,350,295

Table 5 shows the total amount generated by the AML Program in Ohio.

- Over \$12.5 million has been generated in Ohio from 2008 to 2013 through direct, indirect and induced impacts.
- From 2008 to 2013, over \$915,000 indirect and induced labor income has been generated in the non-coal region alone (see Appendix A).

	Direct	Indirect	Induced	Total
2008	\$593,971	\$351,068	\$324,994	\$1,180,035
2009	\$961,589	\$503,436	\$395,543	\$1,860,569
2010	\$852,876	\$355,968	\$312,636	\$1,521,481
2011	\$841,634	\$409,566	\$288,038	\$1,539,238
2012	\$1,570,741	\$740,147	\$528,809	\$2,839,697
2013	\$1,996,913	\$940,963	\$672,285	\$3,610,161

Tax Impact

Tax impact dollars include state and local tax revenue generated in Ohio from production and imports, household tax, and corporation tax.

The majority of taxes are generated directly in Ohio’s coal region, as shown in Table 6.

- Over \$965,000 was directly generated in the coal region.
- Total direct, indirect and induced effects are over \$1.7 million from 2008 to 2013.

	Direct	Indirect	Induced	Total
2008	\$100,439	\$36,934	\$47,197	\$184,569
2009	\$167,864	\$57,198	\$76,740	\$301,803
2010	\$129,627	\$38,508	\$58,754	\$226,889
2011	\$121,095	\$42,965	\$54,954	\$219,015
2012	\$196,652	\$69,593	\$91,678	\$357,920
2013	\$250,007	\$88,474	\$116,552	\$455,031

Table 7 shows state and local tax revenue generated by the AML Program in the state of Ohio.

- The total direct, indirect and induced tax impact in the state of Ohio is over \$1.8 million from 2008 to 2013.
- Through all years, a total of over \$127,000 of these impacts have been generated by the AML Program in the non-coal region.

Table 7. State Tax Impact of AML Program in Ohio

	Direct	Indirect	Induced	Total
2008	\$100,439	\$48,668	\$55,391	\$204,498
2009	\$167,864	\$70,355	\$86,039	\$324,258
2010	\$129,627	\$45,633	\$64,411	\$239,671
2011	\$121,095	\$51,589	\$61,382	\$234,066
2012	\$196,652	\$84,447	\$101,964	\$383,063
2013	\$250,007	\$107,358	\$129,630	\$486,995

Conclusion

This report has detailed the economic impact of Ohio's Abandoned Mine Land Program on the coal region and Ohio. There are many returns to the reclamation activities outside the scope of the report, such as environmental, recreational, and social benefits as well as additional economic benefits. Increased federal funding and the commitment of ODNR-DMRM to working closely with private contractors and businesses to complete reclamation activities results in growing percentages of funds being used for direct reclamation activities. The points below summarize the overall impact of the AML Program found in this analysis.

- The AML Program supported or created approximately 26 Ohio jobs in 2008, with increased federal funding raising the number to approximately 70 jobs in 2013.
- About 65 of the jobs generated in 2013 are in Ohio's coal region.
- \$11.6 million in labor income has been generated in the coal region from 2008 to 2013. Ohio as a whole has benefited from \$12.5 million in total labor income.
- From 2008 to 2013, federal funding to the AML Program has generated over \$1.8 million in Ohio state and local tax revenue.

Appendix A: Impacts on Ohio's Non-Coal Region

The three tables below detail the employment, labor income, and state/local tax revenue impact for the 58 non-coal counties in Ohio. These numbers summed with the results for the coal-region show impact for Ohio.

	Direct	Indirect	Induced	Total
2008	0.0	1.7	1.0	2.7
2009	0.0	1.8	1.2	2.9
2010	0.0	1	0.9	1.9
2011	0.0	1.4	0.9	2.3
2012	0.0	2.4	1.5	3.9
2013	0.0	3.0	1.8	4.9

	Direct	Indirect	Induced	Total
2008	\$0	\$88,930	\$41,164	\$130,095
2009	\$0	\$95,118	\$49,564	\$114,683
2010	\$0	\$60,145	\$36,649	\$96,794
2011	\$0	\$72,512	\$37,552	\$110,064
2012	\$0	\$136,498	\$67,909	\$204,407
2013	\$0	\$173,533	\$86,334	\$259,866

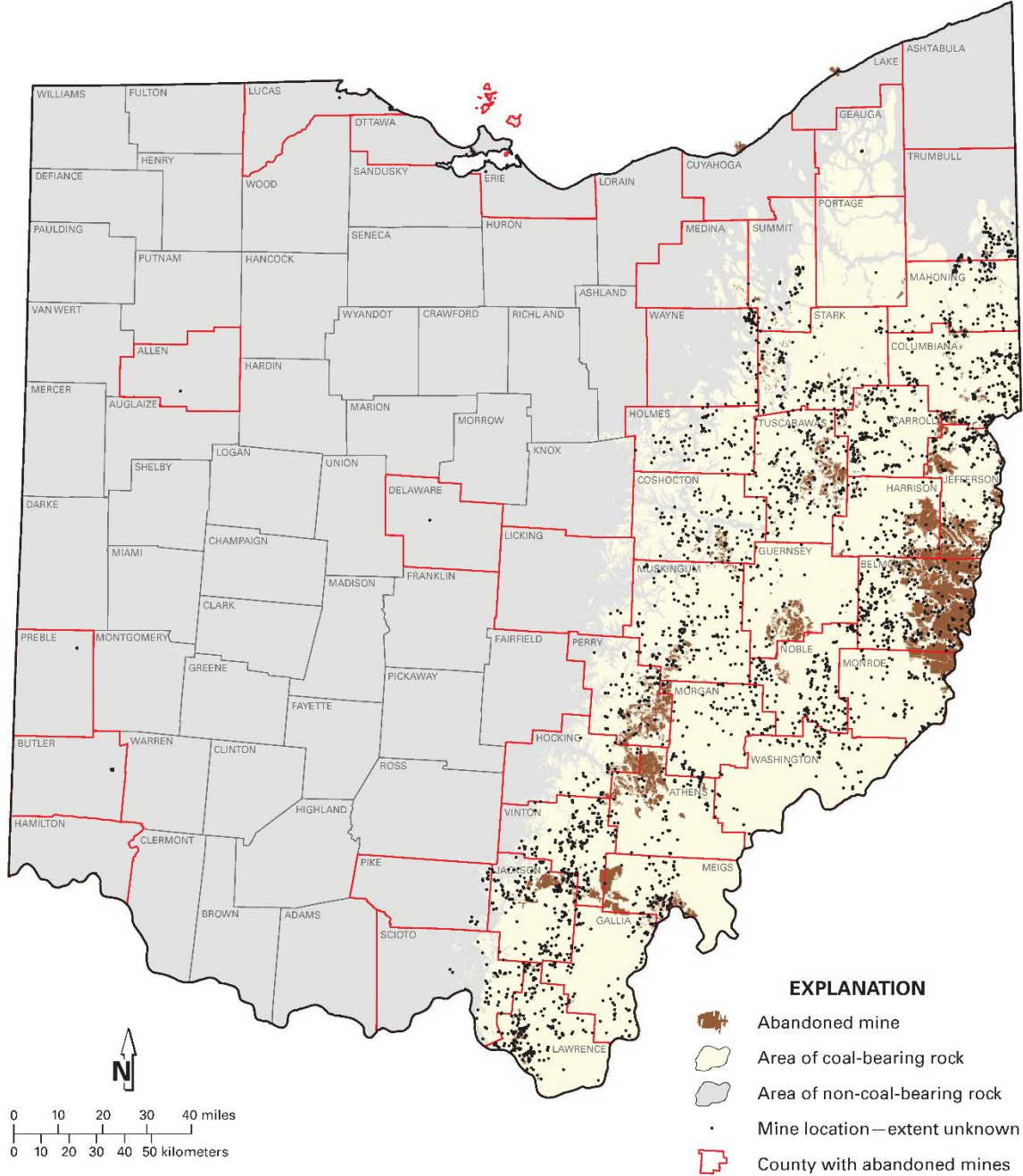
	Direct	Indirect	Induced	Total
2008	\$0	\$11,734	\$8,194	\$19,928
2009	\$0	\$13,157	\$9,299	\$22,456
2010	\$0	\$7,125	\$5,657	\$12,782
2011	\$0	\$8,624	\$6,428	\$15,052
2012	\$0	\$14,854	\$10,286	\$25,140
2013	\$0	\$18,884	\$13,078	\$31,961

Appendix B: Ohio's Coal and Non-Coal Region

In alignment with information from the Ohio Department of Natural Resources, the following table shows the Ohio counties that make up the coal region and the non-coal region in this impact analysis.

Ohio's Coal Region		Ohio's Non-Coal Region			
Athens	Medina	Adams	Delaware	Lake	Putnam
Belmont	Meigs	Allen	Erie	Logan	Richland
Carroll	Monroe	Ashland	Fairfield	Lorain	Ross
Columbiana	Morgan	Ashtabula	Fayette	Lucas	Sandusky
Coshocton	Muskingum	Auglaize	Franklin	Madison	Scioto
Gallia	Noble	Brown	Fulton	Marion	Seneca
Guernsey	Perry	Butler	Geauga	Mercer	Shelby
Harrison	Portage	Champaign	Greene	Miami	Union
Hocking	Stark	Clark	Hamilton	Montgomery	Van Wert
Holmes	Summit	Clermont	Hancock	Morrow	Warren
Jackson	Trumbull	Clinton	Hardin	Ottawa	Williams
Jefferson	Tuscarawas	Crawford	Henry	Paulding	Wood
Lawrence	Vinton	Cuyahoga	Highland	Pickaway	Wyandot
Licking	Washington	Darke	Huron	Pike	
Mahoning	Wayne	Defiance	Knox	Preble	

ABANDONED UNDERGROUND MINES OF OHIO



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