



## RESOURCE EXTRACTION PLAN

### ■ TODAY'S CONDITIONS

Allegheny County has a history of economic and social reliance on resource extraction. The natural resources of the rivers and surrounding lands endowed Pittsburgh with everything necessary for the establishment of a robust center of commerce and industry. Furthermore, the region's natural resources were remarkably easy to obtain – a virgin forest awaiting harvest, abundant seams of coal close to the surface, sand from the rivers for glass, and oil seeping into creeks and up from the ground.

Today, resource extraction is no longer the economic mainstay it once was, and Allegheny County has grown into a densely populated and largely urbanized county. The challenge for Allegheny County is to balance public health and safety and environmental concerns with the rights of mining, drilling, quarrying, energy recovery and timbering industries.



Photo credit: McCormick Taylor

### COAL MINING

Allegheny County is within the Main Bituminous Field of Pennsylvania, specifically within the area of high volatile bituminous coal. Coal is found in numerous beds underlying much of the County. The Pittsburgh Coal bed has been extensively mined. Other important coal beds are the Redstone Coal, Upper Freeport Coal, Middle Kittanning Coal and the Lower Kittanning Coal.

The Pittsburgh Coal bed underlies 50 square miles of southern Allegheny County in the Waynesburg Hills physiographic province. This easily accessible coal bed was the foundation of the County's industrial development and resulting prosperity and, economically, remains an important mineral resource in the County. The Pittsburgh coal bed has an average thickness of about eight feet and each square mile contains eight million tons of coal.

There are no underground mines currently operating in Allegheny County. However, there are two active strip mines, one in Findlay Township and the other in South Park Township.

### MINING HAZARDS

Allegheny County, particularly south of the Allegheny and Ohio Rivers, has been extensively deep and surface mined. The majority of the surface operations and all deep mine operations have been abandoned leaving dangerous pits, shafts, cropfalls (or areas of subsidence) and mine fires, which pose serious environmental and public safety hazards.

Abandoned mines in the County have also contributed to the pollution of area streams, subsidence and underground mine fires.

Within Allegheny County there are seven underground mine fires burning in:

- Plum Borough (at the Renton Mine)
- Two in Findlay Township (one near Clinton and one near Route 60)
- Jefferson/West Elizabeth (at the Tepe Pump Station Mine)
- Baldwin Borough (near Churchview Avenue)
- Kennedy Township (along Moon Run near Chartiers Creek)
- Hays neighborhood in the City of Pittsburgh

Many previously mined areas remain hazardous and are impediments to development. There are dangerous highwalls, impoundments, embankments, slides, gob piles, hazardous or explosive gas build-ups, and hazardous equipment or facilities remaining (see Map 4F.1). There have been fatalities at abandoned mines and quarries in the County.



Abandoned mine drainage (AMD) is a serious problem in the County, as evidenced by the large number of orange-colored streams. AMD occurs when water from abandoned coal mines seeps into streams, disrupting the ecology and water quality of the stream. AMD poisons aquatic life and renders the stream lifeless. Map 4F.1 shows the locations of streams in Allegheny County affected by AMD.

AMD results from the oxidation of metal sulfides (often pyrite) within rock and overburden after it is exposed to air and water. It is most often due to mining operations, both deep and surface. However, AMD can also occur where sulfide-bearing rock outcrops are naturally exposed or where sulfide-bearing rock is exposed in roadway cuts and excavations.

## OTHER MINING

Industrial mineral mining in Allegheny County is limited to four sites:

- McShane Quarry (sandstone) in Collier Township
- Brown Reserve Site (slag) in West Mifflin Borough
- Redland Brick Inc. (shale/clay) in Harmar Township
- Gascola Pit (slag) in the Municipality of Penn Hills

Additionally 4.5 million tons of river aggregate is dredged annually from a 100-mile stretch of the Allegheny and Ohio Rivers. The actual size of the dredged area totals only about 40 acres. Still, it provides a majority of the sand and aggregate needs for industries in Allegheny County.

## OIL & GAS

Oil fields are predominantly located in the western portion of the County and gas fields in the east. Pennsylvania Department of Environmental Protection's (PADEP) eMapPA website shows nearly 100 oil and gas well locations in the County. The map can be found at <http://www.emappa.dep.state.pa.us/emappa/viewer.htm>.

## RESOURCE RECOVERY

Commercial development of Coalbed Methane (CBM) is a growing industry in the Commonwealth. Currently there are 75 CBM wells in commercial production in Pennsylvania. At this time, there are no known active CBM facilities in Allegheny County. Based on available information, recovery

of coal bed methane is not expected to become an active industry in Allegheny County in the near future, although the potential exists. There are active CBM wells in Cambria, Fayette, Green, Indiana, Washington and Westmoreland Counties, and in nearby northwestern West Virginia.

Throughout Allegheny County there are numerous gob or spoil piles from past mining operations. Some are being re-mined, and the material taken to the Scrubgrass Cogeneration Plant in Butler County. A cogeneration plant burns fuel to produce both electricity and heat, a thermodynamically efficient use of fuel.

According to PADEP, many old spoil piles across the Commonwealth are mined as part of the Government Financed Construction Contract (GFCC) program. There is one such reclamation project in Allegheny County, the ACV Power Corporation, Russelton South Site.

## TIMBER

Over 35% of Allegheny County's land (166,400 acres) remains forested, and nearly all of it is in private ownership. The annual timber harvest has an estimated revenue value of \$1.47 million. Timbering is therefore not a major contributor to the Allegheny County economy. However, as the majority of woodlands are also located on the steeply sloped hills and ridges of the County's stream and river valleys, timbering is still a potential significant industry.

The timber industry is regulated by PADEP through permits, and by Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Bureau of Forestry through guidance and training.

## ■ ISSUES AND ANALYSIS

This section examines what can be done to protect the people and places of Allegheny County from the adverse effects of past mining operations, and to encourage more sustainable timber harvesting and other resource extraction practices.

## KEY CHALLENGES

In developing the Resource Extraction Plan, the Environmental Quality Resource Panel helped to identify these key challenges:

- Impacts of resource extraction on water quality
- Subsidence prone areas due to previous mining operations
- Mine fires

The following provides an understanding of these issues.



Photo credit: Bernadette E. Kazmarski

### WATER QUALITY

Mine drainage from past mining operations is a serious and persistent problem in the County, degrading both water quality and stream ecology. Properties on AMD streams also have reduced potential for economic development and reduced property values.

PADEP's eMapPA shows numerous known points of AMD in Allegheny County. The following streams experience AMD problems:

- Chartiers Creek
- Half Crown Run
- Long Run
- Raccoon Creek
- Dolphin Run
- Little Plum Creek
- Montour Run
- Thompson Run

The eMapPA can be found at: <http://www.emappa.dep.state.pa.us/emappa/viewer.htm>.

Land that has been surface mined, quarried, or heavily timbered can also degrade water quality and seriously impact the ecology of streams, wetlands and rivers. Stripping away vegetation, especially on steep slope areas, can cause increases in the volume and velocity of stormwater

runoff, causing accelerated and increased sediment loads to receiving waterways. Extreme changes to the land surface can also alter the hydrological characteristics of watersheds.

### SUBSIDENCE PRONE AREAS

The extraction of coal removes support from the overlying rock and soil layers, causing them to sag into the void space that is created. The sag spreads upward to the ground surface, causing it to sink or subside. The ground surface area affected by subsidence can be much larger than the mine that causes the subsidence.

Significant subsidence usually only occurs when the depth of the overburden (soil and rock remaining above the mine void) is less than 100 feet and more than 50% of the coal has been removed. According to the study, *Mining and Physiography, Allegheny County, Pennsylvania*, many mined areas in Allegheny County have less than 100 feet of overburden.

Subsidence hazard zones are areas where ground subsidence may occur as a result of past mining activities. The term 'mining activities' includes open pit mining as well as underground mining, since the subsidence hazards that arise from open pits, while not so obvious, can be equally as dangerous as those associated with underground mines.

PADEP's Bureau of Abandoned Mine Reclamation has completed several subsidence control projects in Allegheny County, including one in Plum Borough that protected 193 homes from potential damage from abandoned mine subsidence. Subsidence control projects have also been completed in:

- Baldwin
- Monroeville
- Penn Hills
- West Mifflin
- Carnegie
- Munhall
- Pittsburgh

### MINE FIRES

Mining operations can expose coal seams to fire, causing the coal seam to burn underground. Underground mine fires are hazardous because they strip away remaining coal layers and pillars, causing the ground surface and structures to subside. Mines fires also pose threats to underground utilities, and expose people to hazardous fumes and toxic gases.



The problem with mine fires is that they are very expensive and difficult to extinguish. Generally, massive excavation is required to remove the overburden – in at least a portion of the area that is burning – to gain access to the fire. Mine fires are very easily restarted, too, often by just a spark in the remaining coal seam. Mine fires have been started in the past by camp fires burning in previously mined areas.

PADEP tracks active mine fires and past fires. Currently, PADEP is taking actions to extinguish the mine fires in the County. Allegheny County receives a larger portion of reclamation funds for extinguishing mine fires (and for activities such as spoil pile removal) than other counties, due to the extent of the mining and the density of population in the County.

## RECOMMENDATIONS

### GOAL OF THE PLAN

The negative effects of resource extraction are mitigated.

### OBJECTIVES OF THE PLAN

The objectives of the Resource Extraction Plan are to:

- A. Mitigate the negative effects of resource extraction.
- B. Identify areas of potential mine subsidence.

The following provides an understanding of the objectives.

#### A. Mitigate the Negative Effects of Resource Extraction

Local decision-makers generally have little authority to regulate extractive industries. However, it is still important to understand the potential advantages and problems associated with resource extraction. Information available through PADEP can be invaluable in this regard:

- PADEP maintains a GIS database of mined areas, which is accessible at <http://www.emappa.dep.state.pa.us/emappa/viewer.htm>.

- To check for risk of mine subsidence, PADEP's website (<http://www.dep.state.pa.us/MSIHomeowners/checkrisk.html>) provides mapping by county and municipality. Municipalities, developers and residents can get information here on the location of subsidence prone areas.
- Information on planned areas of resource extraction can be found on DEP's eFACTS web page (<http://www.dep.state.pa.us/efacts/>), which allows for a search of submitted and ongoing permit applications. At the present, no additional areas are proposed for resource extraction.

The County's role in mitigating the negative effects of mining activities is minimal. The greater responsibility lies with State and federal agencies and the mining industry. PADEP and the U.S. Department of the Interior's Office of Surface Mining (OSM) will continue their efforts to remediate existing problems associated with resource extraction (including containing and extinguishing mine fires). PADEP will continue to ensure that active mining operations remediate any pollution they have caused.

There are significant AMD areas in Findlay, North Fayette, Collier, South Fayette, Upper St. Clair Townships, and in the Penn Hills/Churchill/Plum area. The Future Land Use map (Map 4A.1) has targeted future development in these municipalities. The municipalities should continue to support the DEP, nonprofits and others who are working on AMD remediation projects, and coordinate with PADEP to establish additional AMD remediation priorities.

#### B. Identify Areas of Potential Mine Subsidence

PADEP's website (<http://www.dep.state.pa.us/MSIHomeowners/checkrisk.html>) provides mapping by county and municipality that shows where mining has occurred. Landowners in municipalities where subsurface mining has occurred in the past should determine whether they need mine subsidence insurance. Municipalities should require mine subsidence information to be provided as part of the development approval process, and review the zoning of land in severely undermined or subsidence-prone areas.