

Coal Mine Impoundment Safety

D. E. Stump Jr. PE
Office of Surface Mining
Appalachian Region,
Pittsburgh, PA





Coal Mine Regulatory History

- 1891- First federal statute created, establishing minimum ventilation requirements and prohibiting employment of children under 12 years of age.



1910- Bureau of Mines
created, responsible for
conducting research and
reducing accidents in
underground mines

1952- Congress
passed a law to
require annual
inspections of coal
mines

Buffalo Creek

- Disaster occurred February 26, 1972 on the Middle Fork of Buffalo Creek in Logan County, West Virginia



A series of coal
waste embankment
dams failed releasing
132 million gallons of
water and fine coal
waste



Flood damaged Buffalo Creek Hollow communities of Pardee, Lorado, Lundale, Stowe, Crites, Latrobe, Robinette, and...

Citizen Commissioners inspect . . .



. . . the bed of Dam # 3 and remnants of its right abutment bordering the mine haul road.

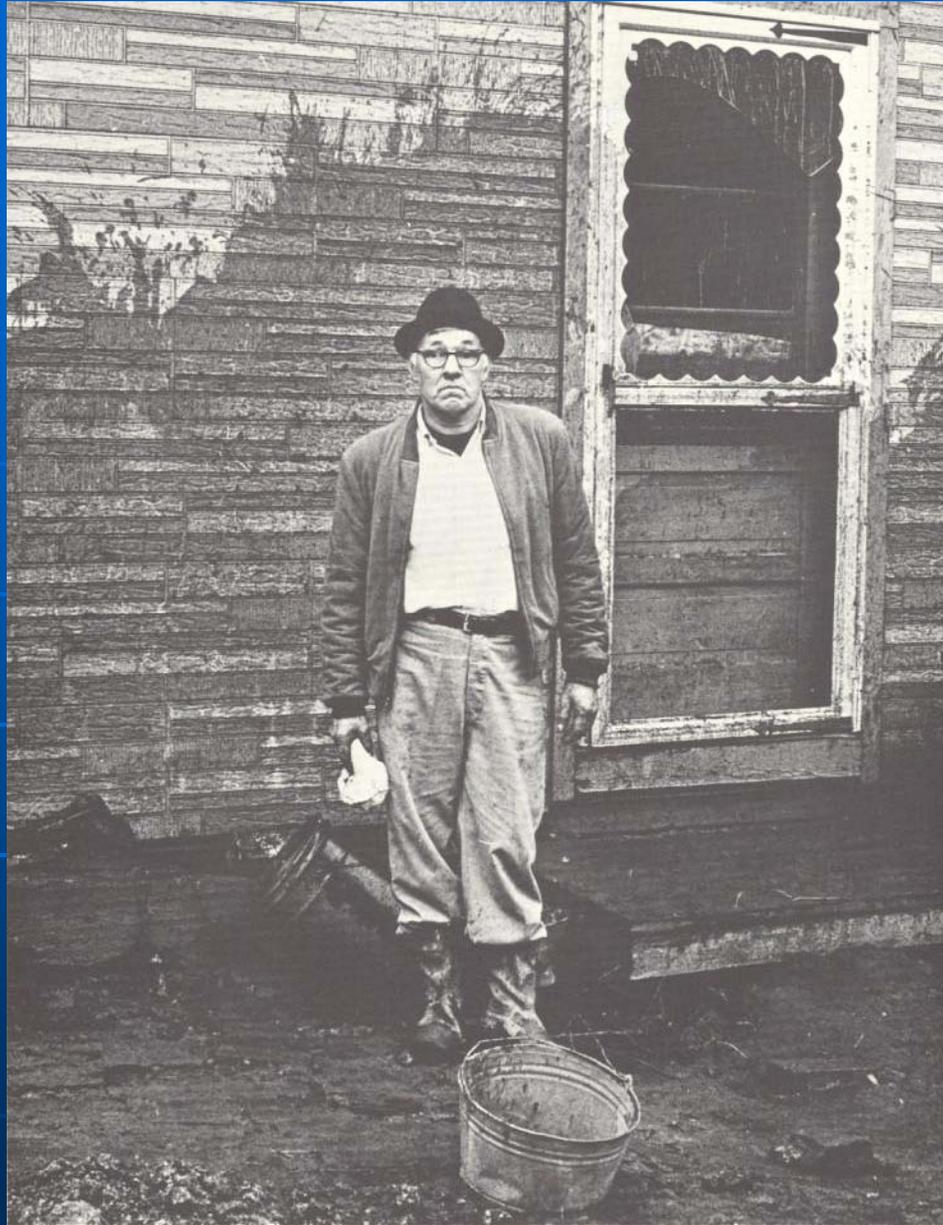
. . . the opposite abutment, noting the vertical disappearance of the entire length of Dam # 3.



124 dead, 4,000
homeless, an estimated
\$50 million in property
damage







Regulatory Changes

- Government and Industry worked together to establish workable rules
- Engineering and Design Manual – Coal Refuse Disposal Facilities, 1975
- Many coal waste impoundments modified

Martin County, Kentucky

- 250 million gallons of coal waste slurry are released from an impoundment, October 2000



Martin County

Inez

KENTUCKY

VIRGINIA

CUMBERLAND PLATEAU

Mammoth Cave N.P.

Cumberland Gap N.H.P.

Black Mt.

Covington

Highland Heights

Ohio

Kentucky

Ashland

FRANKFORT Georgetown

Louisville

Lexington

Morehead

WEST VIRGINIA

Lawrenceburg

Inez

Danville

Berea

Pikeville

Leitchfield

Jenkins

Bowling Green

CUMBERLAND PLATEAU

Barbourville

Middlesboro

Cumberland

Cumberland Gap N.H.P.

Black Mt.

The embankment did not fail

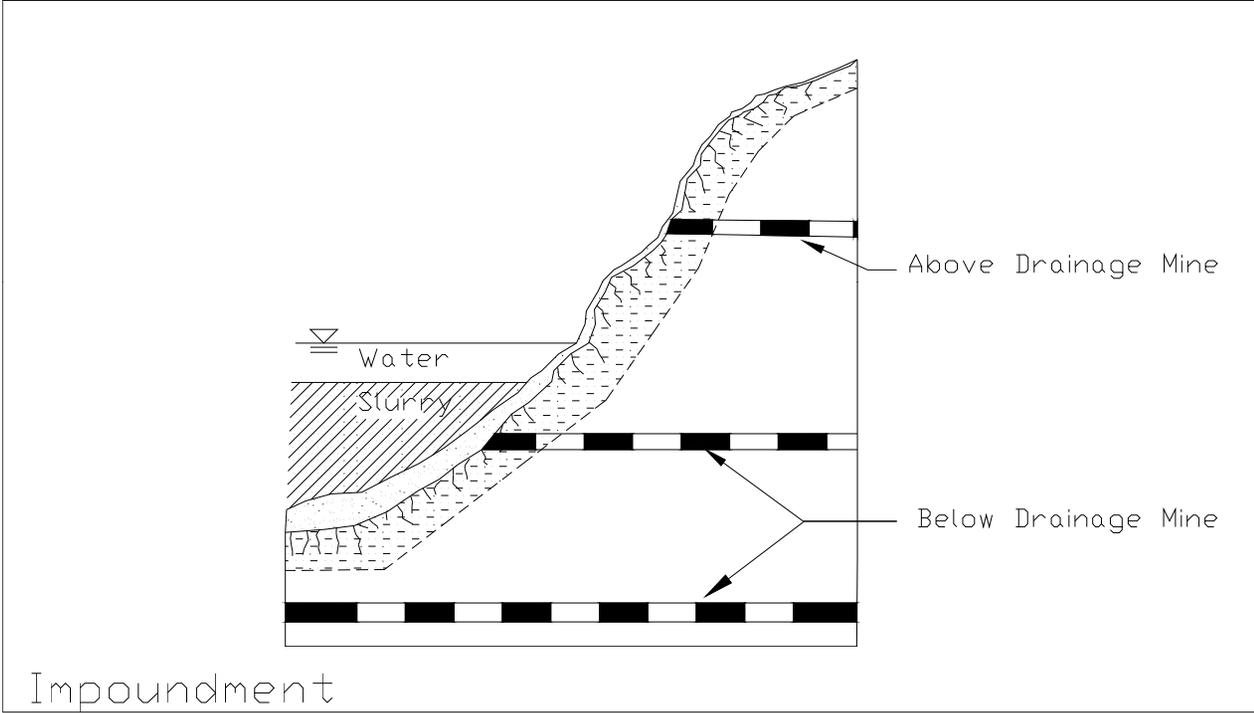
The coal waste slurry flowed
through underground mine
workings

**Breakthrough
Location**

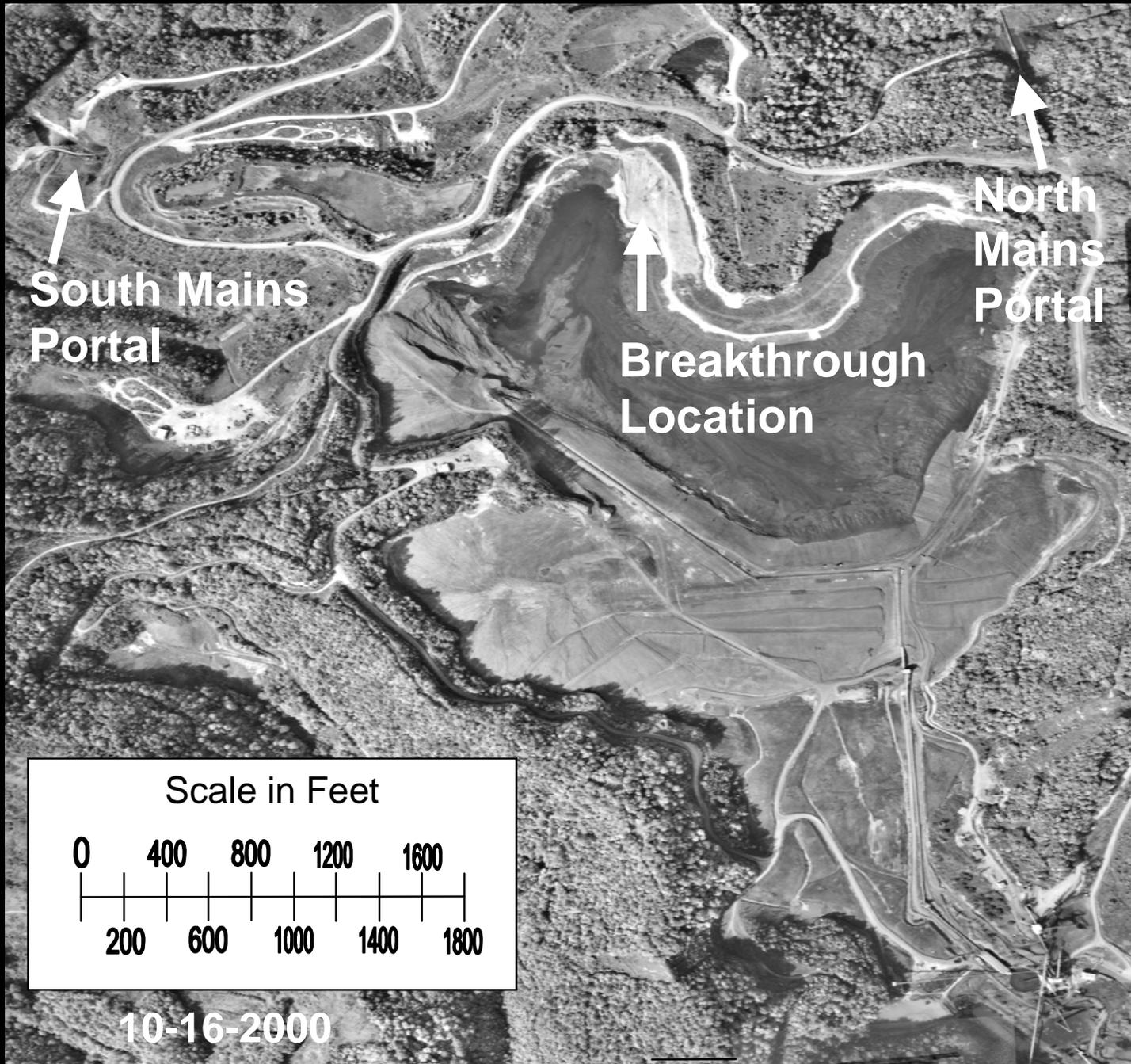


An aerial photograph showing a dam spillway. The spillway is a wide, light-colored concrete structure with water flowing over it. In the foreground, a large, flat area of grey material, likely sand or silt, has been pushed out from the spillway. A road with several vehicles is visible on the right side of the material pile. The background consists of a dense forest of trees with some autumn foliage. The text "Material pushed out to stop discharge" is overlaid in white on the right side of the image.

**Material pushed out
to stop discharge**



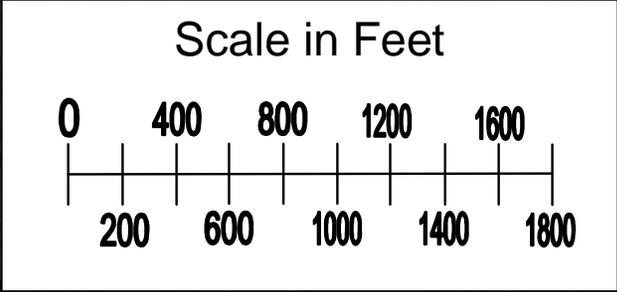
Impoundment



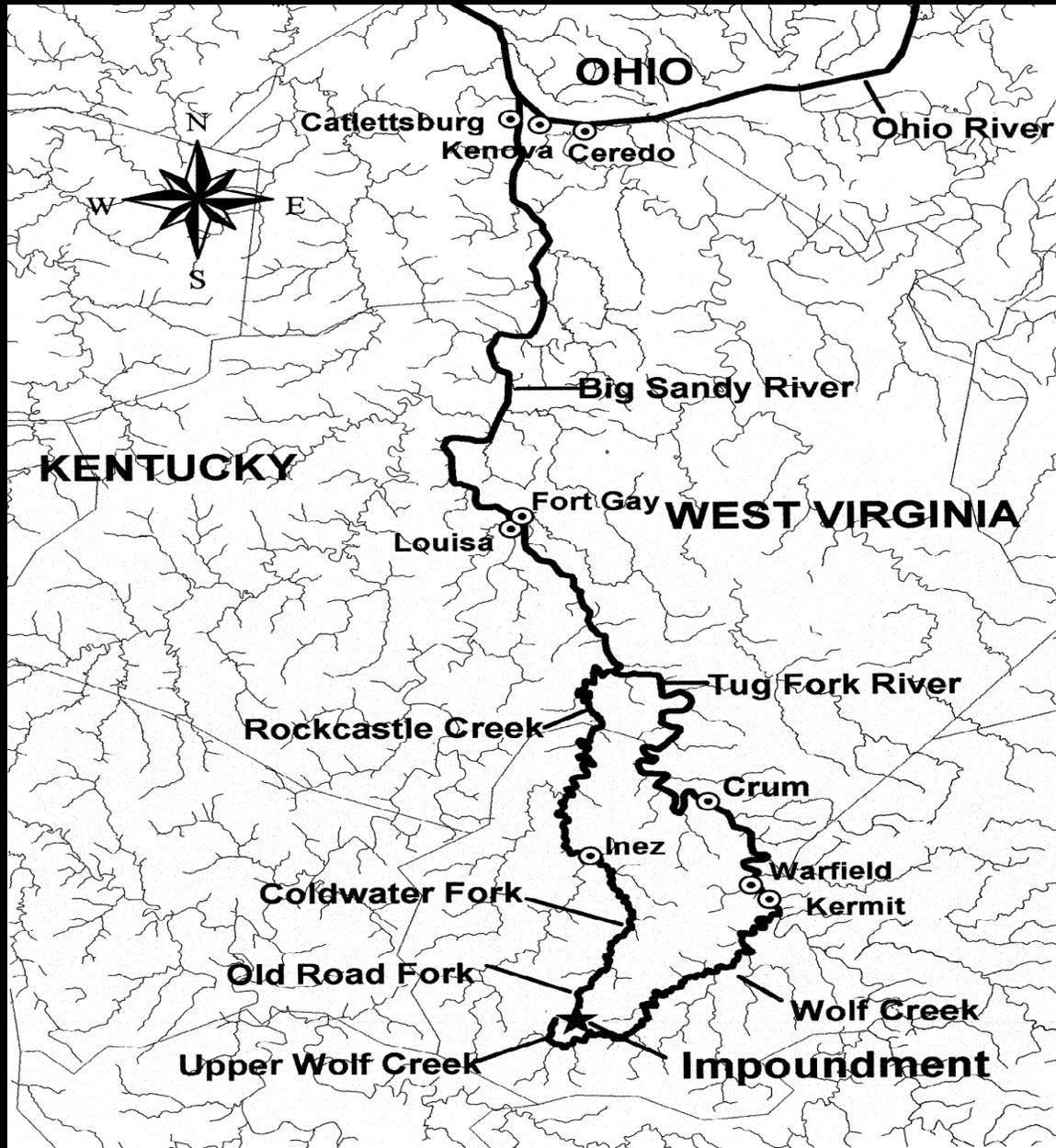
**South Mains
Portal**

**Breakthrough
Location**

**North
Mains
Portal**



10-16-2000



No lives were lost but
environmental damage was
significant

North Mains Portal



Coldwater Fork





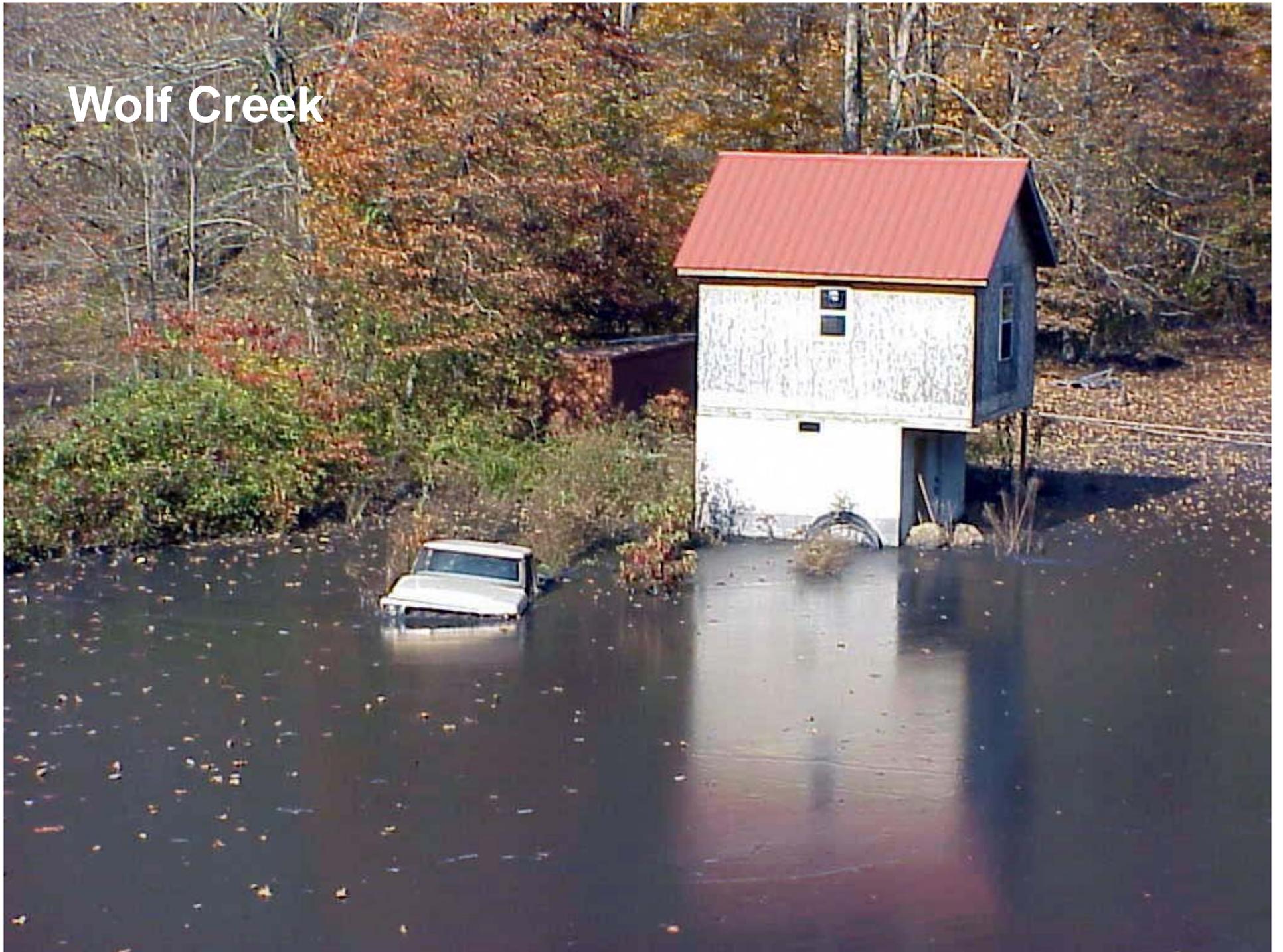


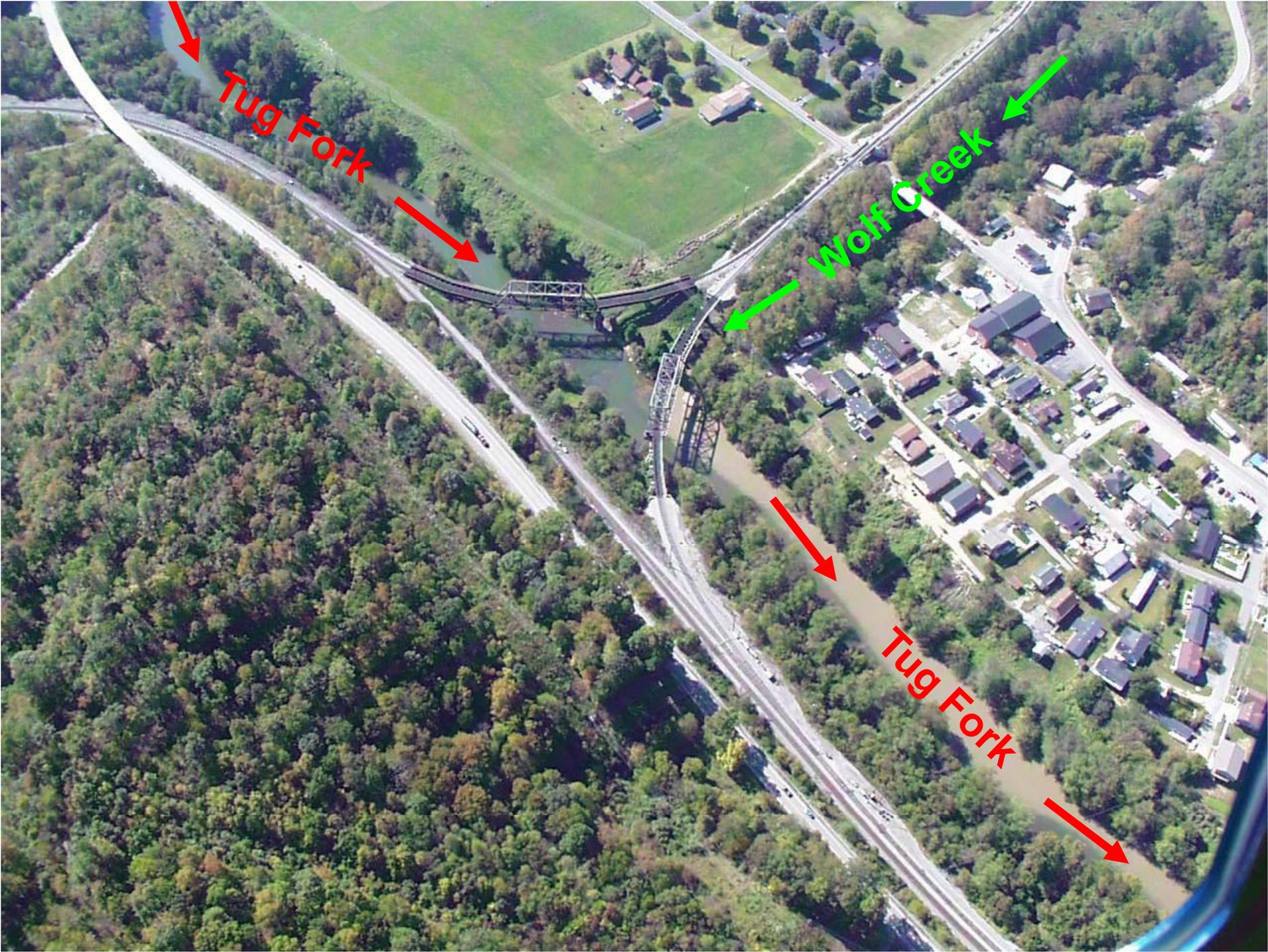


South Mains Portal



Wolf Creek





Tug Fork

Wolf Creek

Tug Fork

Regulatory Response

- Congress funds a study by the National Research Council

OSM, MSHA, Kentucky
Investigate

Engineering and Design
Manual is updated

All coal waste impoundments
evaluated for breakthrough
potential



Don Stump, PE
412-937-2164
dstump@osmre.gov