COVER PHOTOGRAPH: Family digging for barite. Witman (1941), National Archives Catalog.

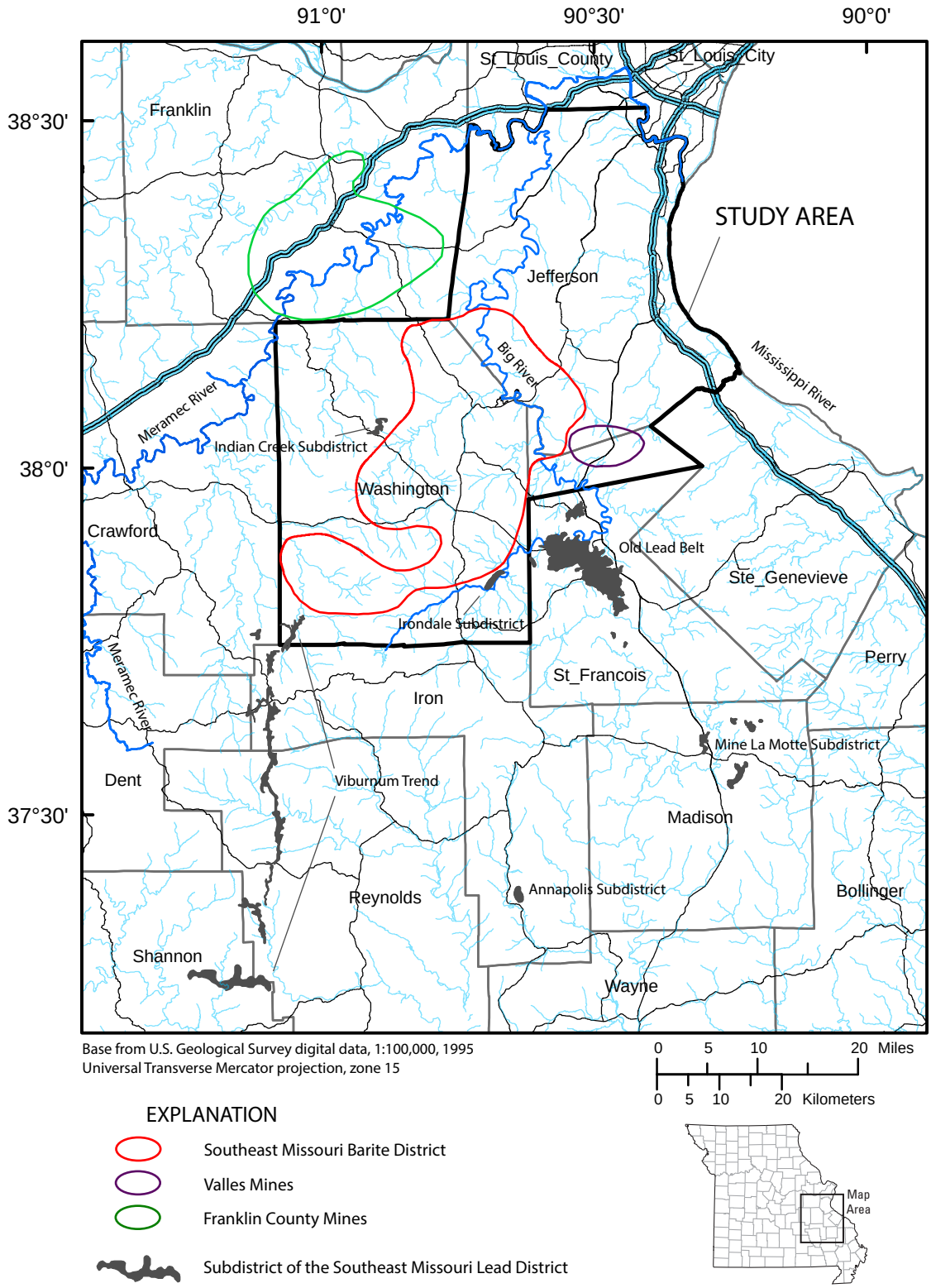


Figure 1. Study area, Southeast Missouri Barite District, Valles Mines, Franklin County Mines, and subdistricts of the Southeast Missouri Lead District. Southeast Missouri Lead District subdistricts modified from Schott (2012) and Leach and others (2010). Franklin County MInes modified from Rueff (2003).

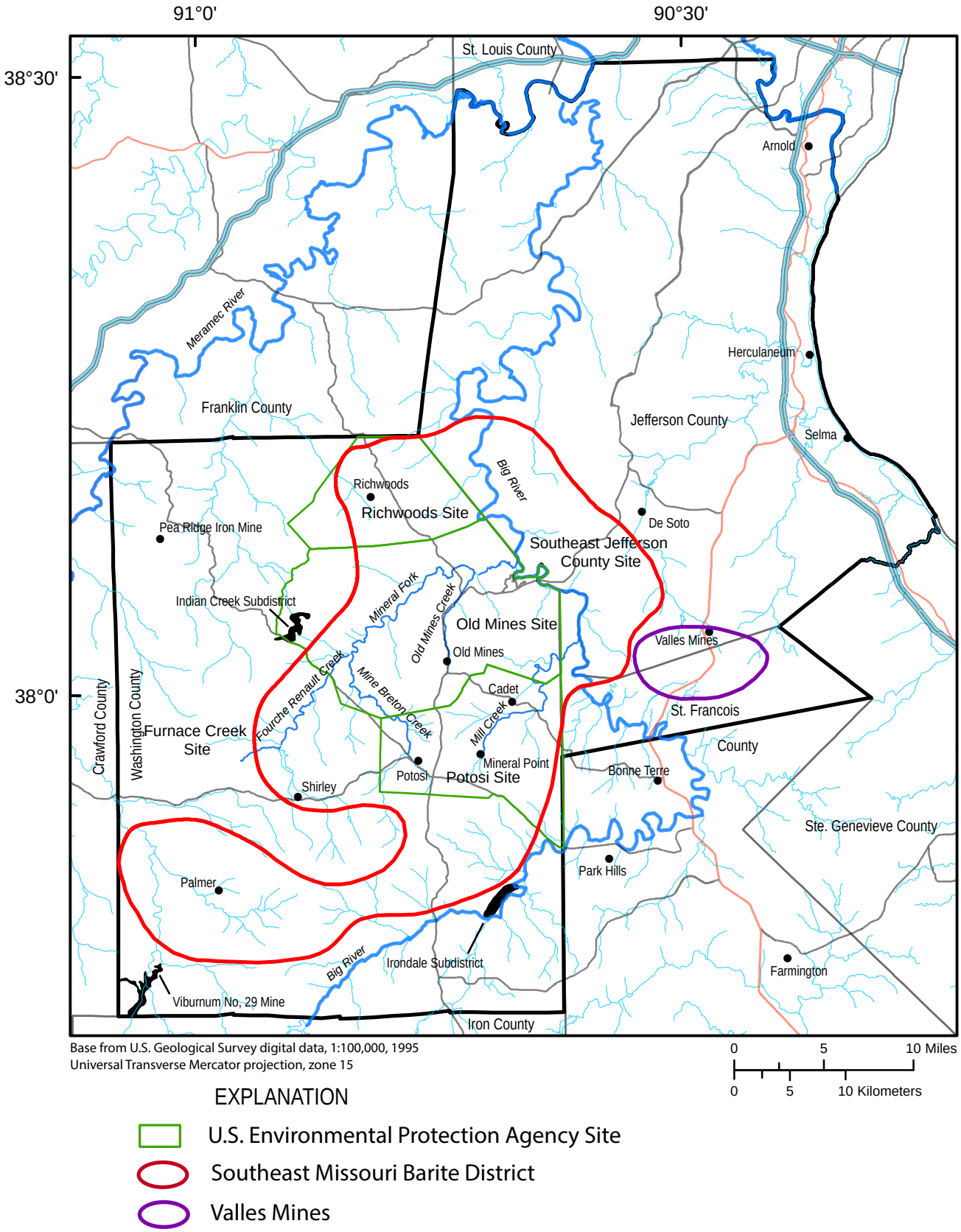


Figure 2. Study area, Southeast Missouri Barite District, Valles Mines, and U.S. Environmental Protection Agency sites in Washington and Jefferson Counties.

TIME-STRATIGRAPHIC UNIT		ROCK-STRATIGRAPHIC UNIT		BARITE, LEAD, ZINC, MINERALIZATION
ERA	SYSTEM			
PALEOZOIC	PENNSYLVANIAN	Undifferentiated for this report		
	MISSISSIPPIAN	Undifferentiated for this report		
	DEVONIAN	Undifferentiated for this report		
	ORDOVICIAN	Undifferentiated for this report		
		Cotter Dolomite		Contains a small number of barite-lead-zinc deposits of the Southeast Missouri Barite District and deposits in adjacent counties
		Jefferson City Dolomite		
		Roubidoux Formation		Contains a small number of barite-lead-zinc deposits of the Southeast Missouri Barite District and deposits in adjacent counties, particularly the Franklin County Mines
		Gasconade Dolomite		
	CAMBRIAN	Eminence Dolomite		The second-most important host of barite-lead-zinc deposits of the Southeast Missouri Barite District and Valle Mines is in the Eminence Dolomite and its residuum
		Potosi Dolomite		The most important host of barite-lead-zinc deposits of the Southeast Missouri Barite District and Valles Mines is in the Potosi Dolomite and its residuum
		Elvins Group	Derby-Doerun Dolomite	
			Davis Formation	The lower part of the Davis Formation locally contains lead-zinc mineralization of the Southeast Missouri Lead District
		Bonneterre Formation		Contains most of the lead-zinc mineralization of the Southeast Missouri Lead District
		Lamotte Sandstone		The upper part of the Lamotte Sandstone contains some lead-zinc mineralization of the Southeast Missouri Lead District, especially in the Mine LaMotte and Indian Creek Subdistricts
PRECAMBRIAN		Undifferentiated Intrusive and Volcanic Igneous Rocks		

Figure 3. Stratigraphic column of the study area and vicinity, showing formations that host ore deposits of the Southeast Missouri Barite District, Valles Mines, and Southeast Missouri Lead District.

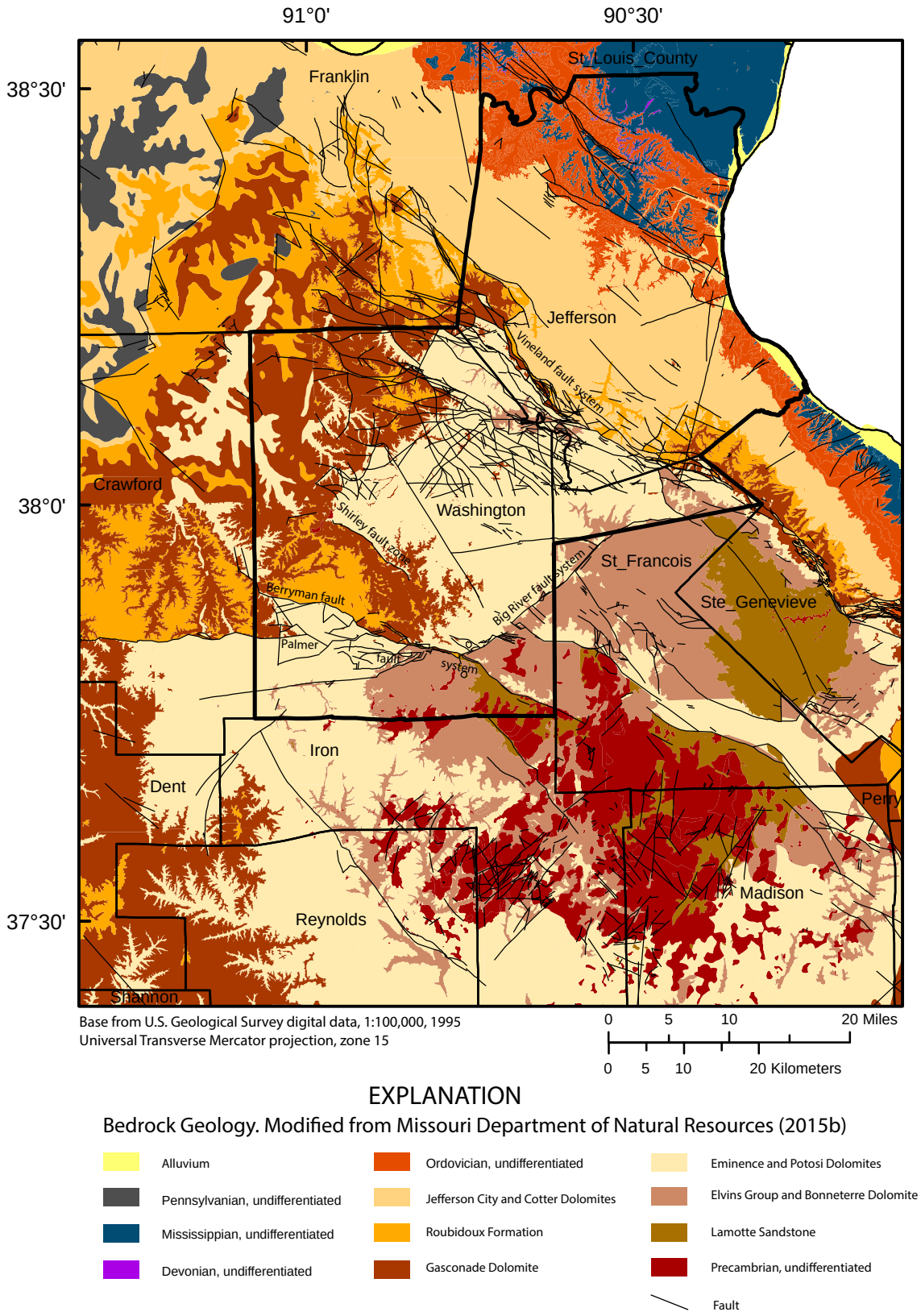
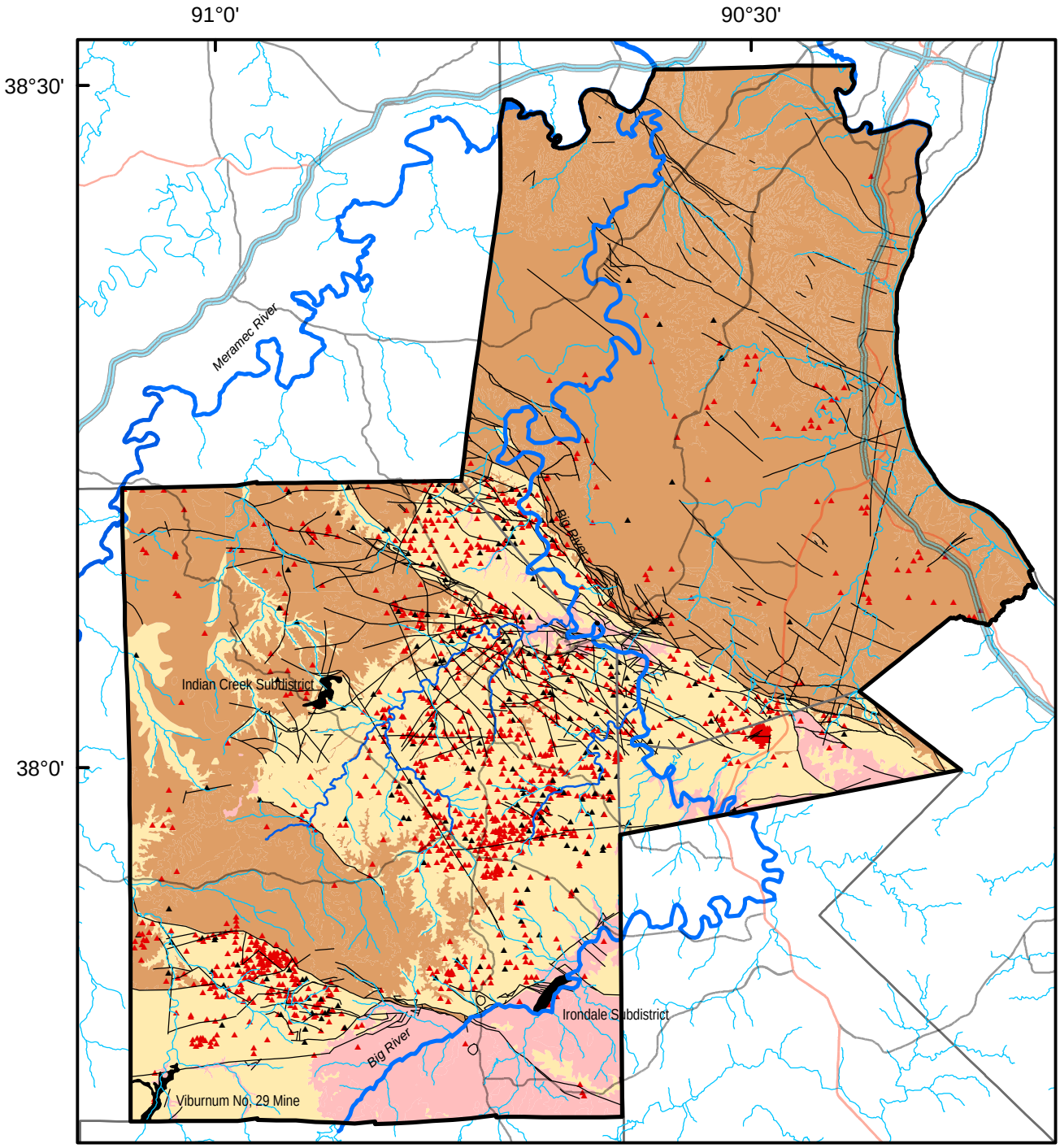


Figure 4. Geologic map of the study area and vicinity



Base from U.S. Geological Survey digital data, 1:100,000, 1995
Universal Transverse Mercator projection, zone 15

0 5 10 Miles
0 5 10 Kilometers

EXPLANATION

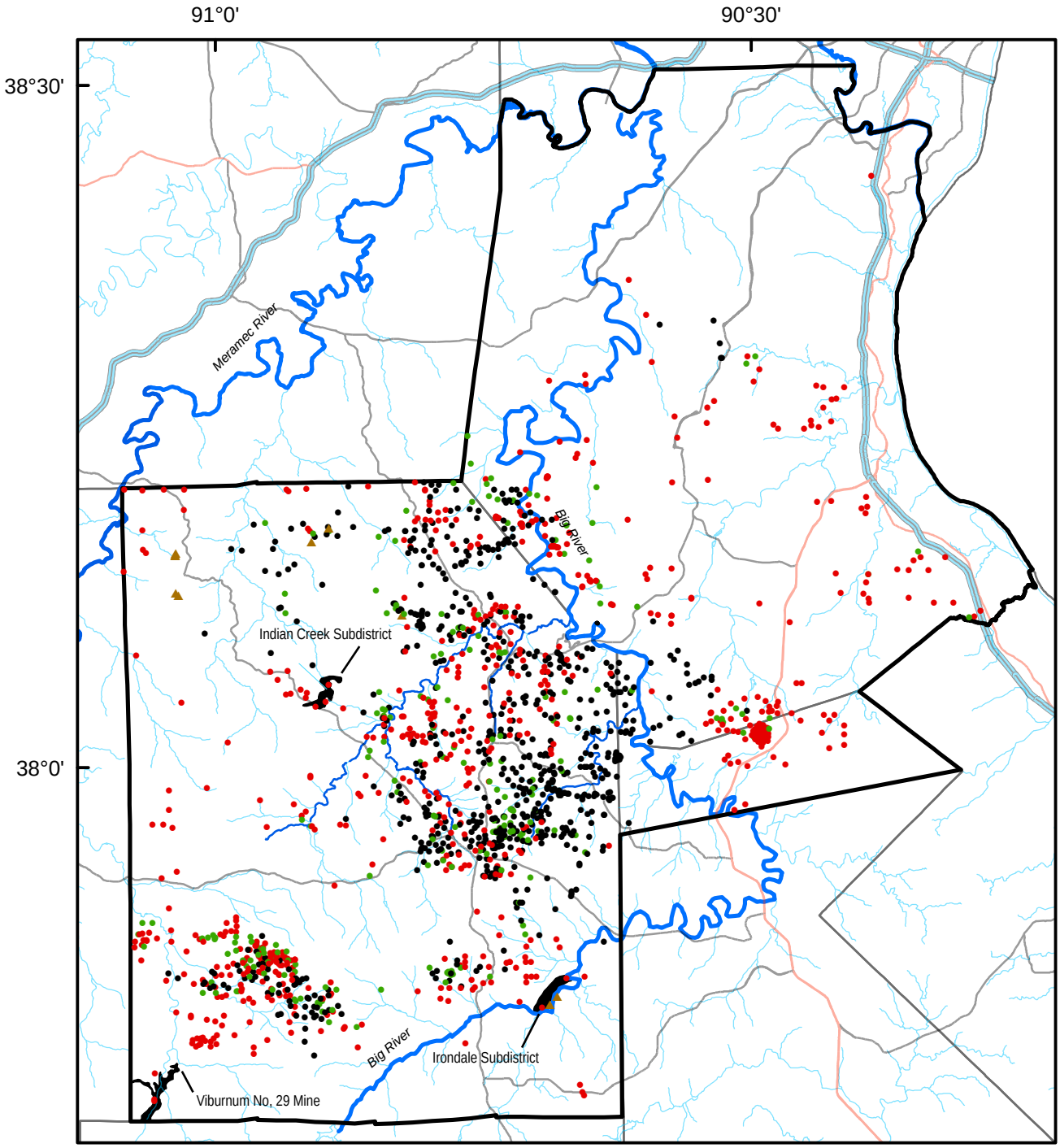
Bedrock Geology. Modified from Missouri Department of Natural Resources (2015b)

- Formations younger than the Eminence Dolomite
- Potosi Dolomite and Eminence Dolomite
- Formations older than the Potosi Dolomite
- Fault

Lead, Zinc, Copper, Barite Mineralization - Missouri Geological Survey Inventory of Mines, Occurrences, and Prospects (Missouri Department of Natural Resources, 2015a).

- Past producers
- Prospects and occurrences

Figure 5. Study area showing the relation of Southeast Missouri Barite District and Valles Mines ore mineralization to bedrock geology, and locations in the study area of ore deposits of Southeast Missouri Lead District.

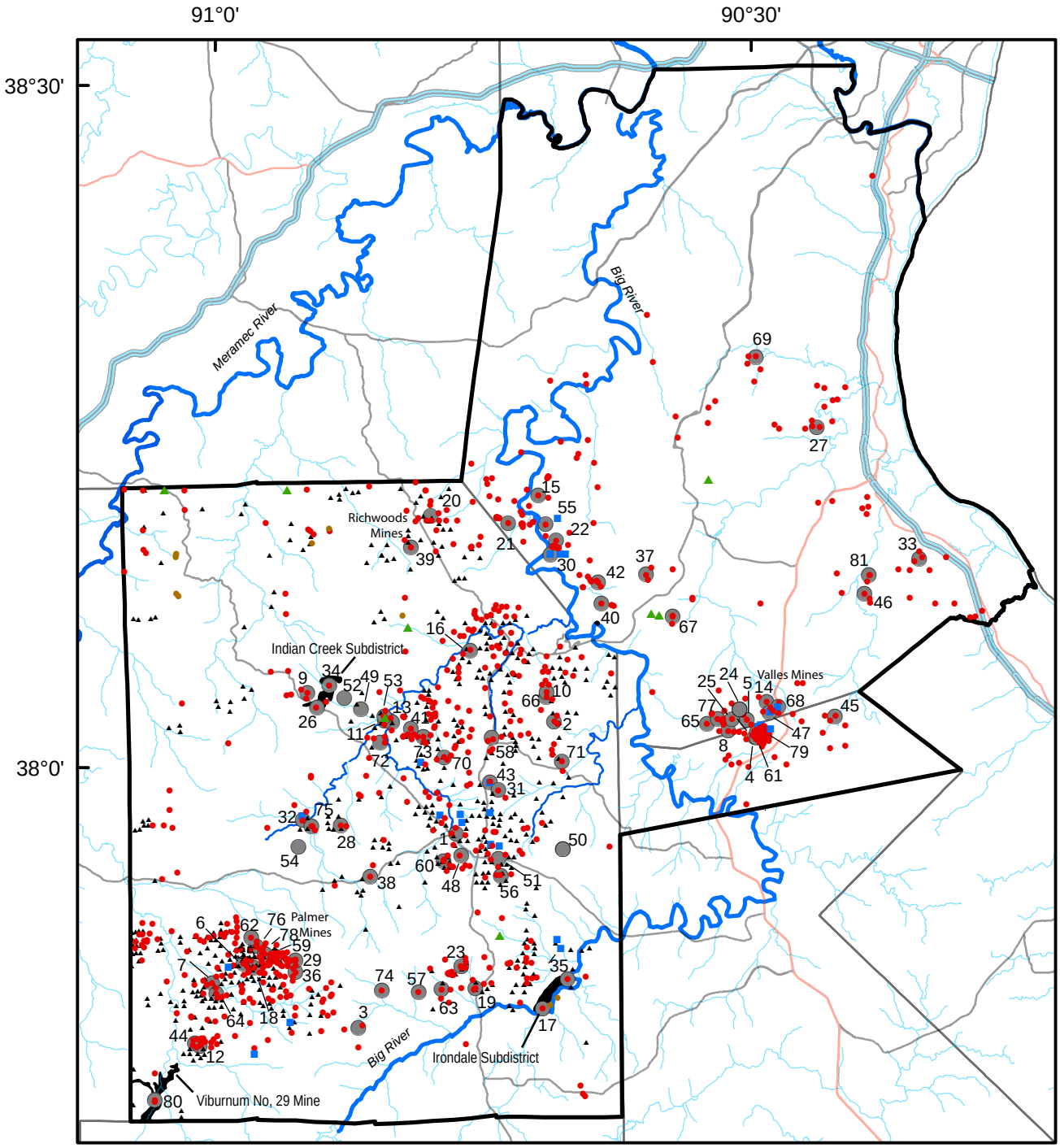


EXPLANATION

Mineralization shown in Missouri Geological Survey Inventory of Mines, Occurrences, and Prospects (Missouri Department of Natural Resources, 2015a)

- Barite, without lead, zinc, or copper
- Lead, zinc, or copper, without barite
- Lead or zinc with barite
- Iron, with or without lead, zinc, or barite

Figure 6. Study area showing the distribution and types of Southeast Missouri Barite District and Valles Mines ore mineralization, and locations in the study area of ore deposits of the Southeast Missouri Lead District



Base from U.S. Geological Survey digital data, 1:100,000, 1995
Universal Transverse Mercator projection, zone 15

0 5 10 Miles
0 5 10 Kilometers

EXPLANATION

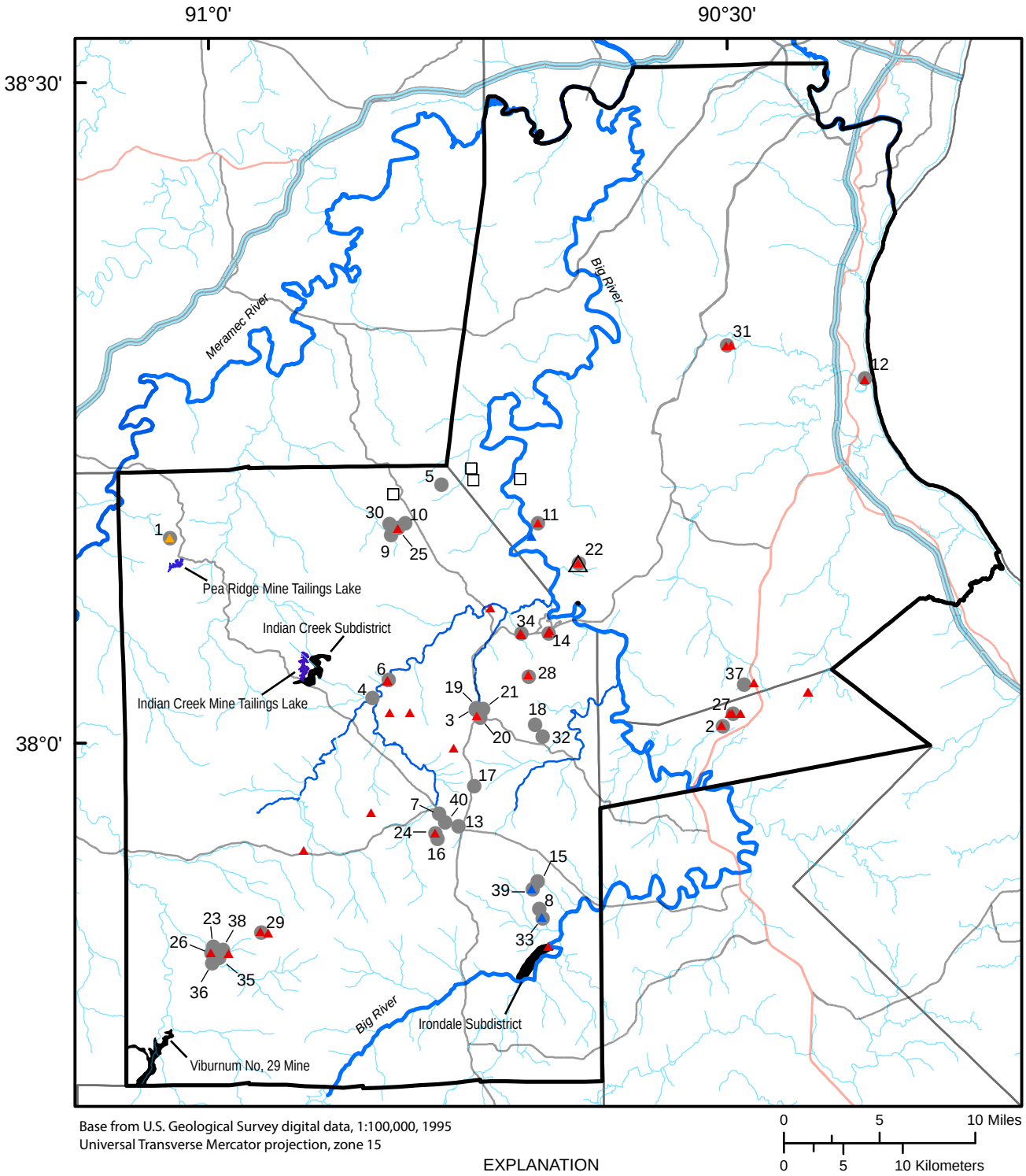
Primary Metal Mined - Missouri Geological Survey Inventory of Mines, Occurrences, and Prospects (Missouri Department of Natural Resources, 2015a).

- Lead
- Zinc
- Copper
- Iron

2 Mine and mine number (table 1) described in this report

Lead mine (Washington County only) shown in Ball (1916)

Figure 7. Study area showing mines the Southeast Missouri Barite District and Valles Mines where lead, zinc, or copper was the primary metal recovered, mines in the study area of the Southeast Missouri Lead District, and locations of iron mines in the study area.

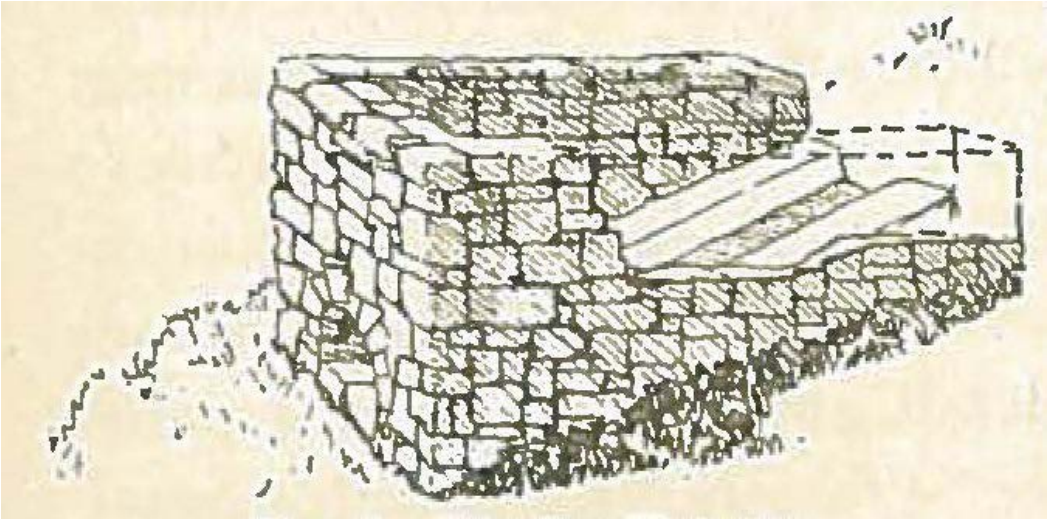


EXPLANATION

Furnaces and mills - Missouri Geological Survey Inventory of Mines, Occurrences, and Prospects (Missouri Department of Natural Resources, 2015a).

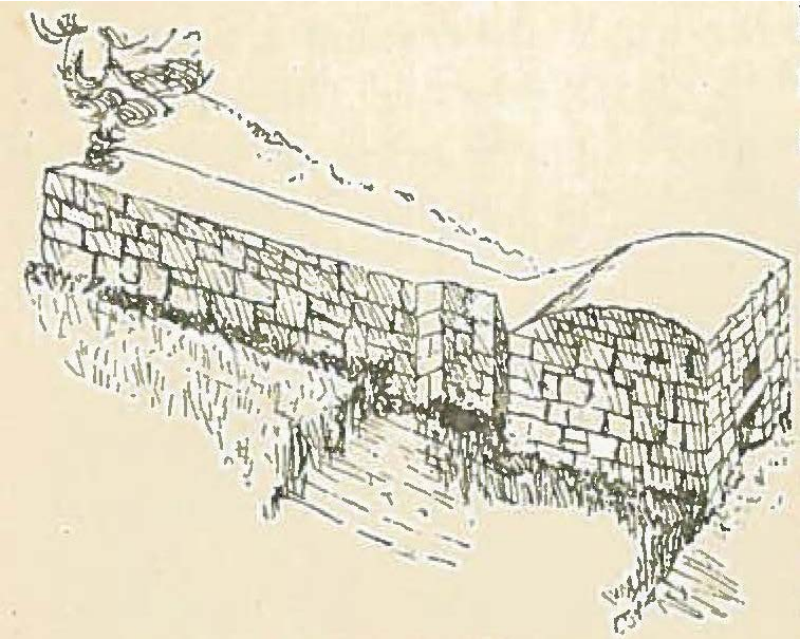
- Lead
- Zinc
- Iron
- Lead mill
- Lead mill and furnace
- 2 Furnace and furnace number (table 2) described in this report

Figure 8. Study area showing locations of lead furnaces, zinc furnaces, and lead mills of the Southeast Missouri Barite District and Valles Mines, and locations in the study area of mines and tailings lakes of the Southeast Missouri Lead District and the Pea Ridge iron mine tailings lake.



Robertson (1894a). Reproduced with permission from the Missouri Geological Survey

Log furnace



Robertson (1894a). Reproduced with permission from the Missouri Geological Survey

Ash furnace

Figure 9. Ash and log furnaces

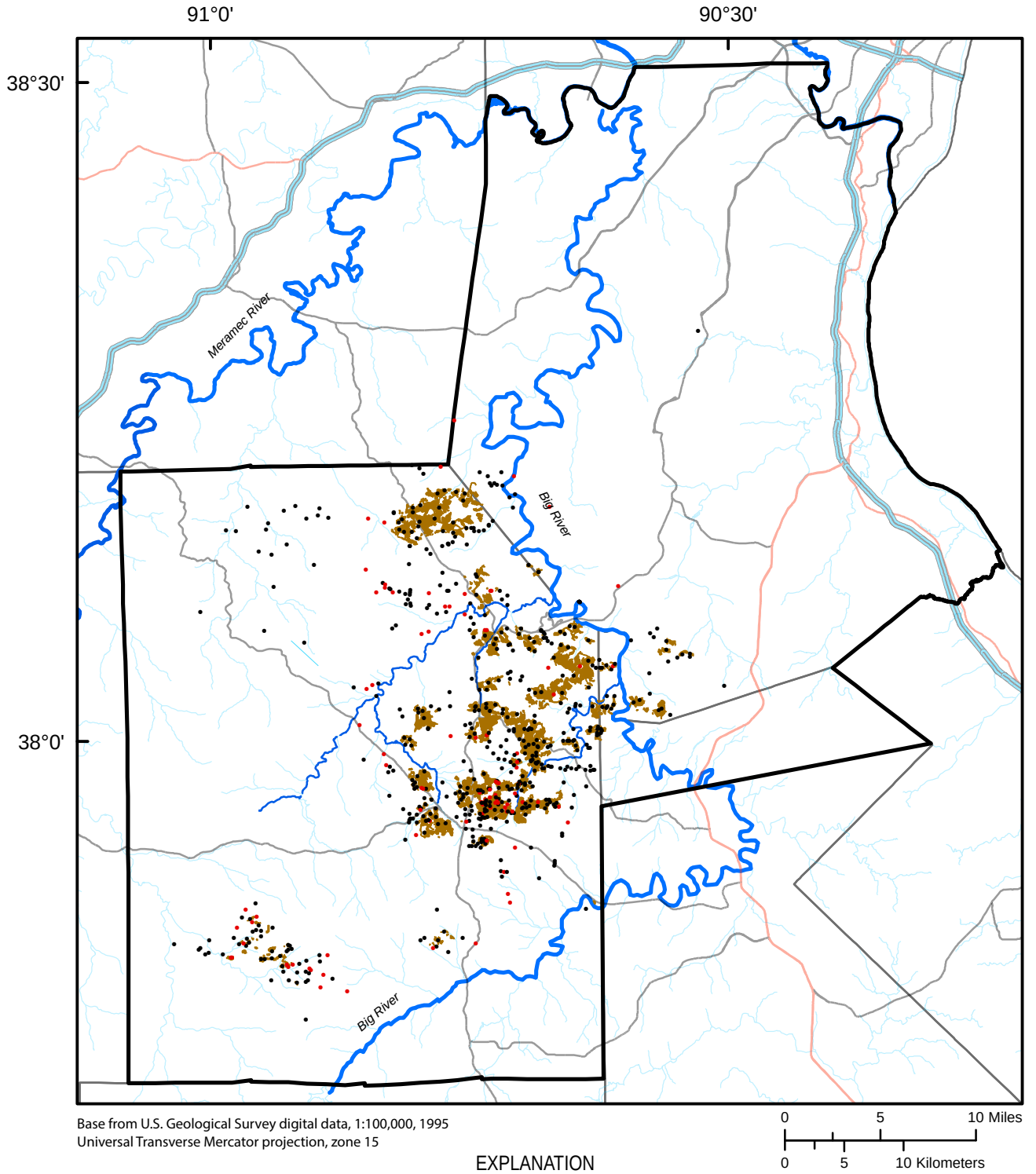
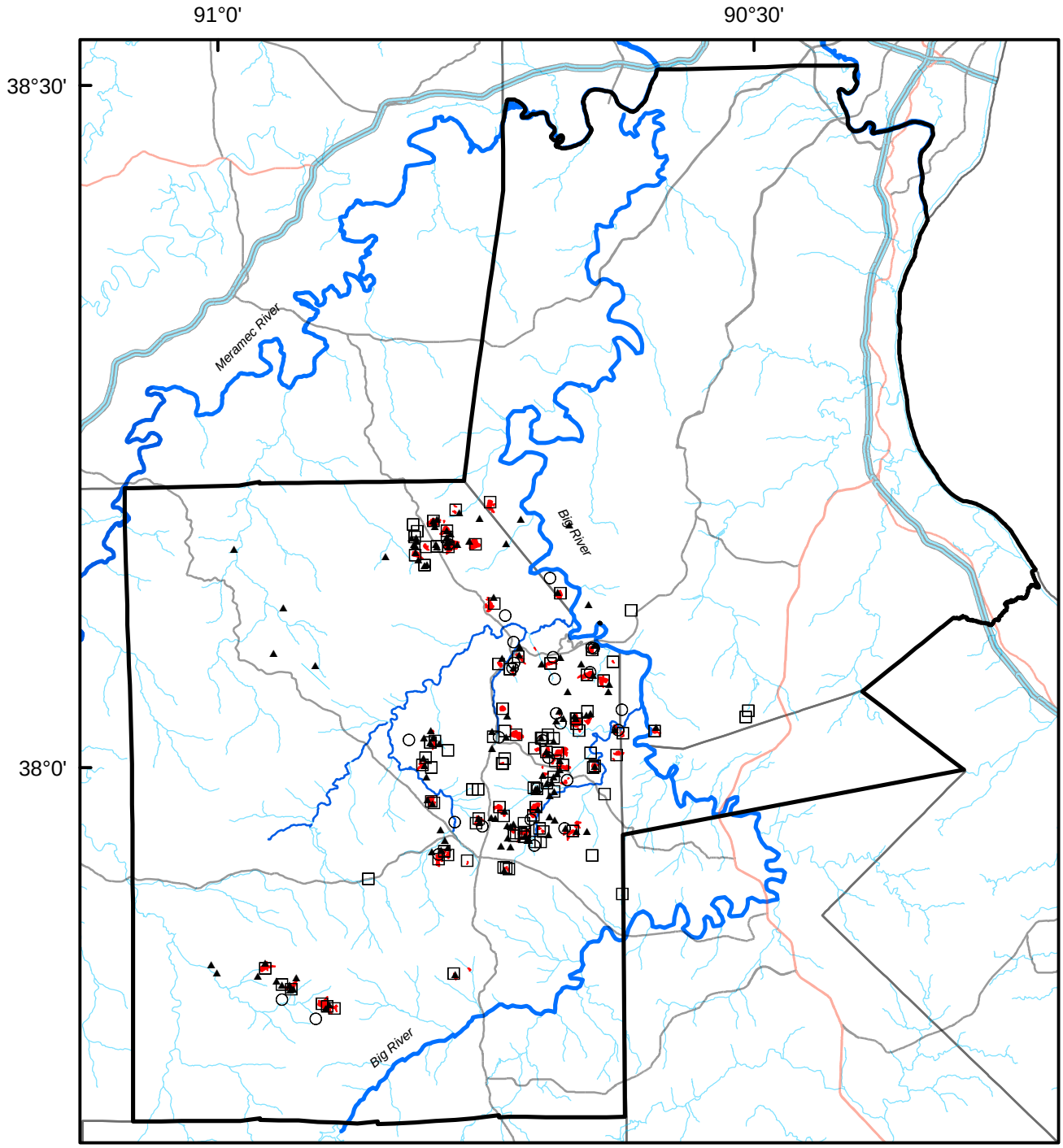


Figure 10. Study area showing locations and types of mineralization of Southeast Missouri Barite District and Valles Mines barite mines.



EXPLANATION

Barite processing plants and tailings lakes- Missouri Geological Survey Inventory of Mines, Occurrences, and Prospects (Missouri Department of Natural Resources, 2015a).

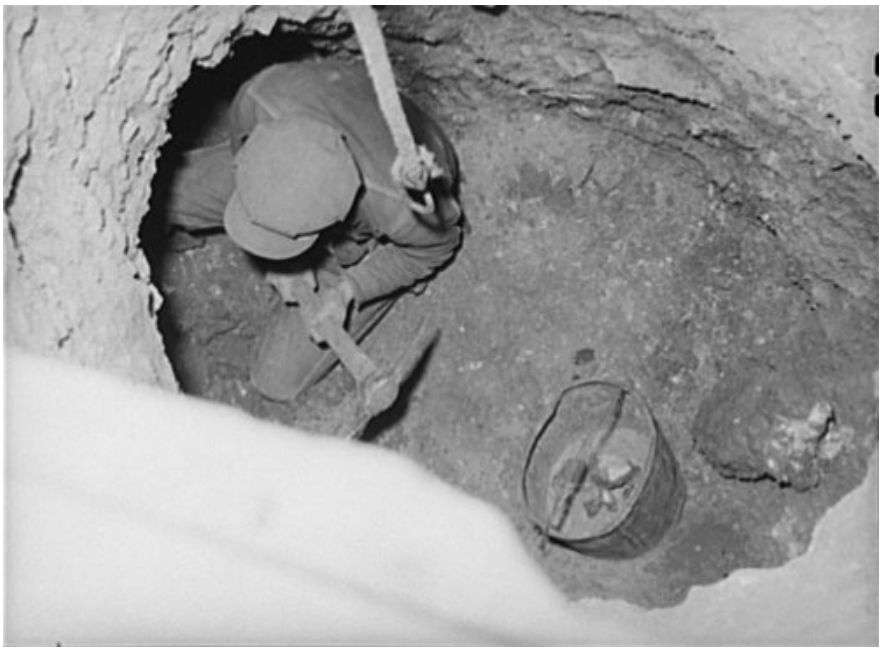
- ▲ Barite processing plant
- □ Barite tailings lake

○ Processing plants (Park, 2006)

Tailings lakes- Missouri Geological Survey Mined Lands Coverage (Cheryl Seeger, Missouri Geological Survey, written communication, October 27, 2015).

- Tailings lake

Figure 11. Study area showing locations of Southeast Missouri Barite District and Valles Mines barite processing plants and tailings lakes.



Rothstein (1939a), Library of Congress

Miner digging laterally at bottom of shaft.

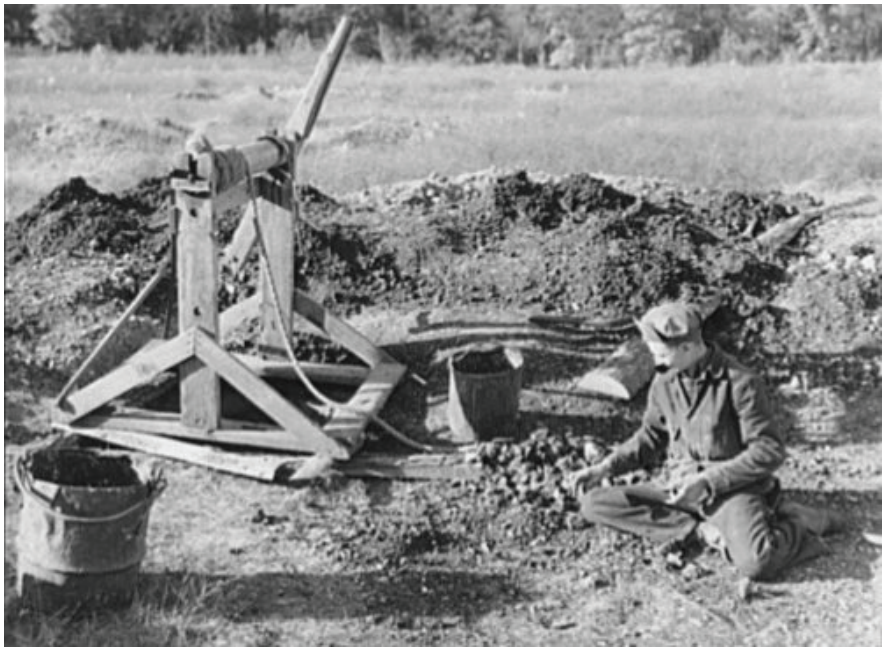
Werner (1937), National Archives Catalog

Miner using windlass to hoist ore from shaft; abandoned shaft and waste piles nearby.

Figure 12. Barite diggings.

U.S. Department of Agriculture (1937), National Archives Catalog

Miner operating windlass to hoist barite ore to the surface.



Rothstein (1939b), Library of Congress

Miner sorting and cleaning barite ore next to shaft and windlass.

Figure 13. Hoisting barite ore to the surface, and cleaning and sorting barite.

Buckley (1908). Reproduced with permission from the Missouri Geological Survey

Cleaned barite stockpiled at mine site; rattle box in lower right.

Buckley (1908). Reproduced with permission from the Missouri Geological Survey

Barite stockpiled along rail line.

Figure 14. Stockpiles of cleaned barite.

Dake (1930). Reproduced with permission from the Missouri Geological Survey

Mining barite with a power shovel.

Dake (1930). Reproduced with permission from the Missouri Geological Survey

Barite strip mine.

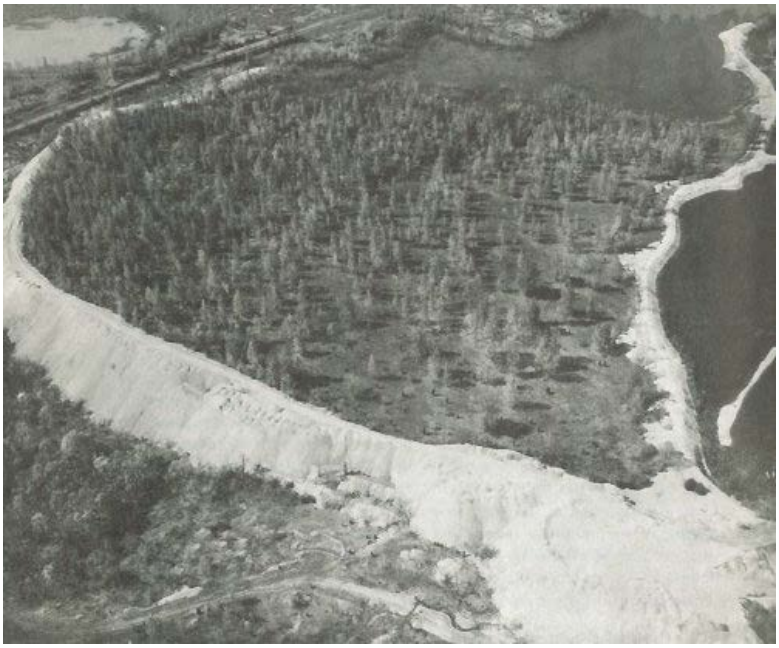
Figure 15. Mechanized barite strip mining

Dake (1930). Reproduced with permission from the Missouri Geological Survey

Figure 16. Barite mill.

Wharton (1972). Reproduced with permission from the Missouri Geological Survey

Barite strip mine, showing network of roads in the mine.



Wharton (1972). Reproduced with permission from the Missouri Geological Survey

Barite tailings pond, partially vegetated.

Figure 17. Aerial photographs of barite strip mine and taliings pond.

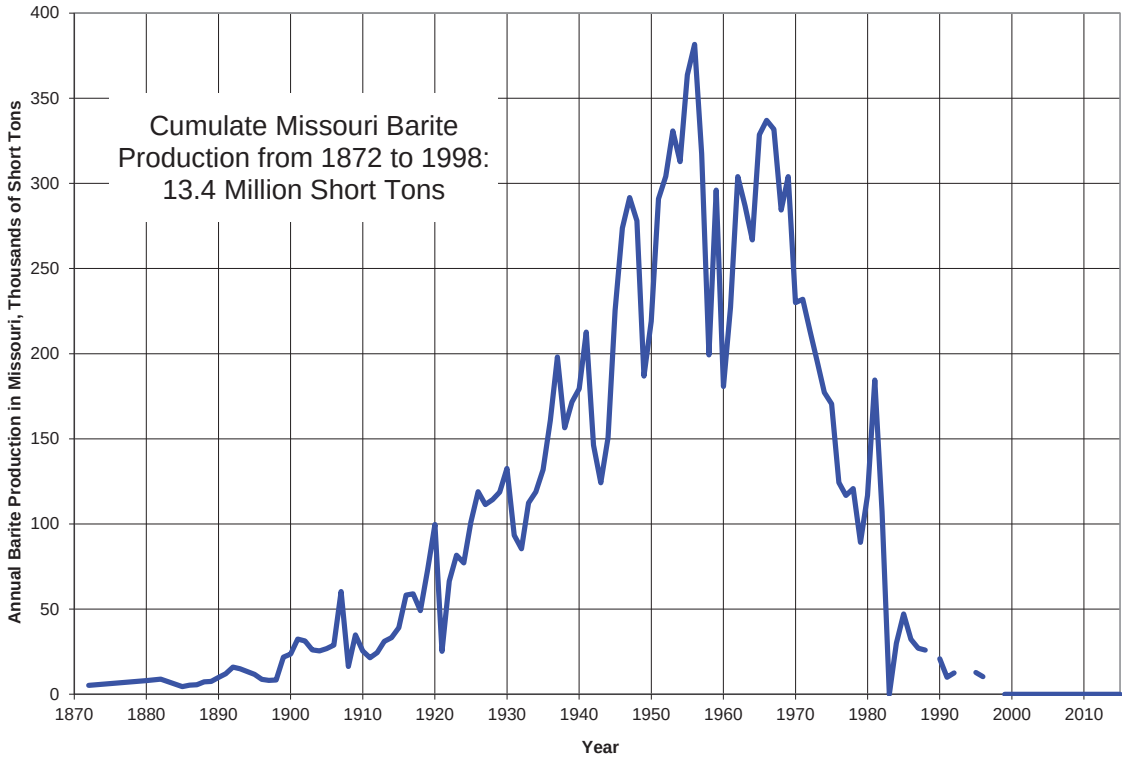


Figure 18. Cumulative Missouri barite production, 1872-1998. Modified from Missouri Geological Survey (2012) with permission from the Missouri Geological Survey.