

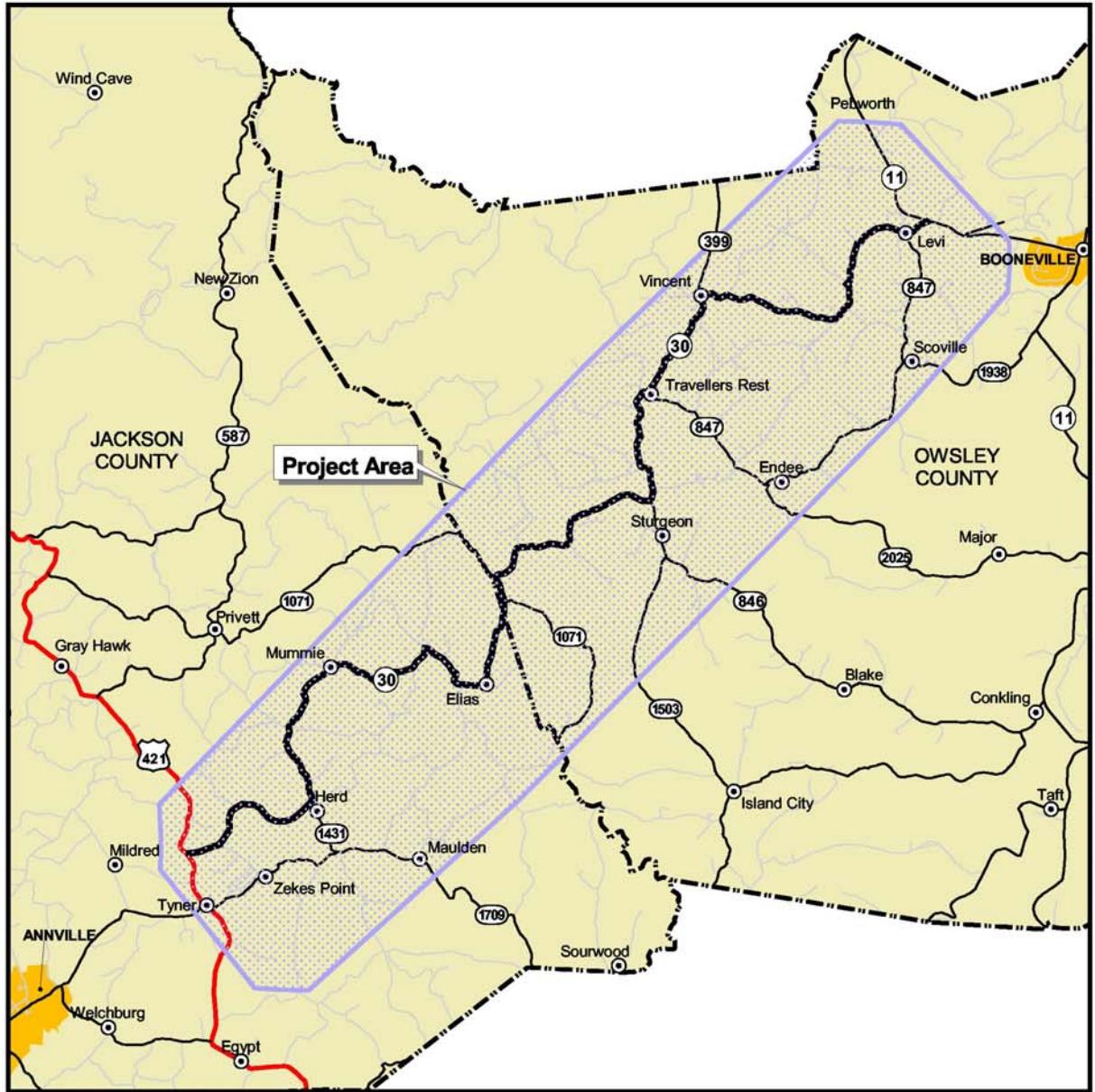
APPENDIX A.

FIGURES

- Figure 1. Project Location
- Figure 2. Year 2001 Traffic and Level of Service
- Figure 3. Vehicle Crash Information by Crash Type
- Figure 4. Year 2025 Traffic and Level of Service
- Figure 5. Estimated 2001 ADT and 2025 ADT Using KY Statewide Traffic Model
- Figure 6. Environmental Footprint Map
- Figure 7. Environmental Footprint Map on Digital Orthophotograph
- Figure 8. Family Clusters
- Figure 9. Geologic Column
- Figure 10. Geotechnical Issues
- Figure 11. Preliminary Corridors Map
- Figure 12. Initial Corridors for Public Review
- Figure 13. Final Corridors for Consideration
- Figure 14. Corridor D-H with Priorities
- Figure 15. Geology of Corridor D-H
- Figure 16. Assessed Property Values (\$)



Location Map



Legend

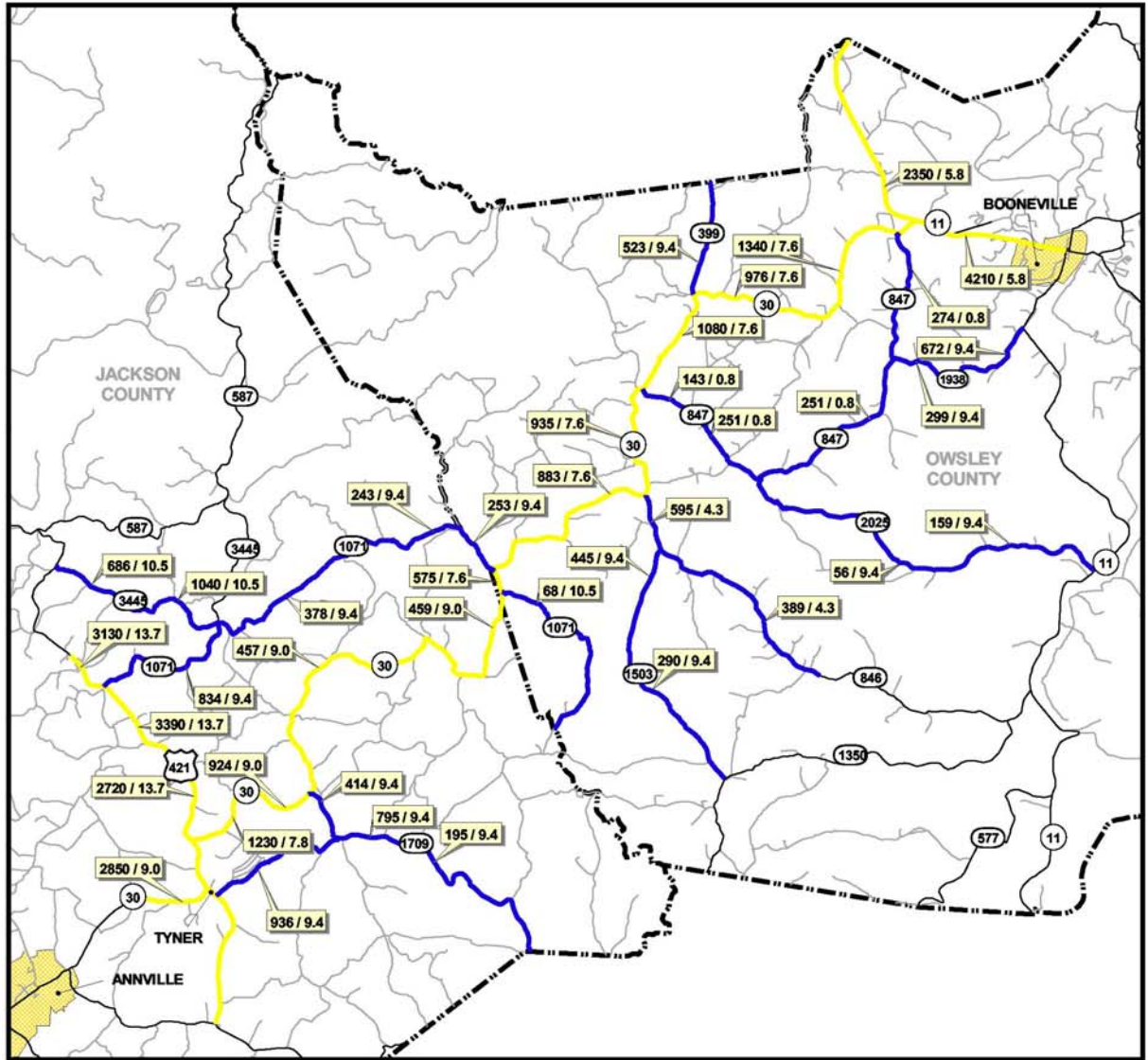
	Project Area
	Corporate Boundary
	U.S. Highways
	State Highways
	Local Roads



Figure 1. Project Location
Reconstruction of KY 30
from US 421 at Tyner to
KY 11 at Booneville
 Jackson and Owsley
 Counties
 Item No. 10-279.50



Location Map



Legend



	ADT/ % Truck Traffic
	LOS C or Better
	LOS D
	LOS E
	LOS F



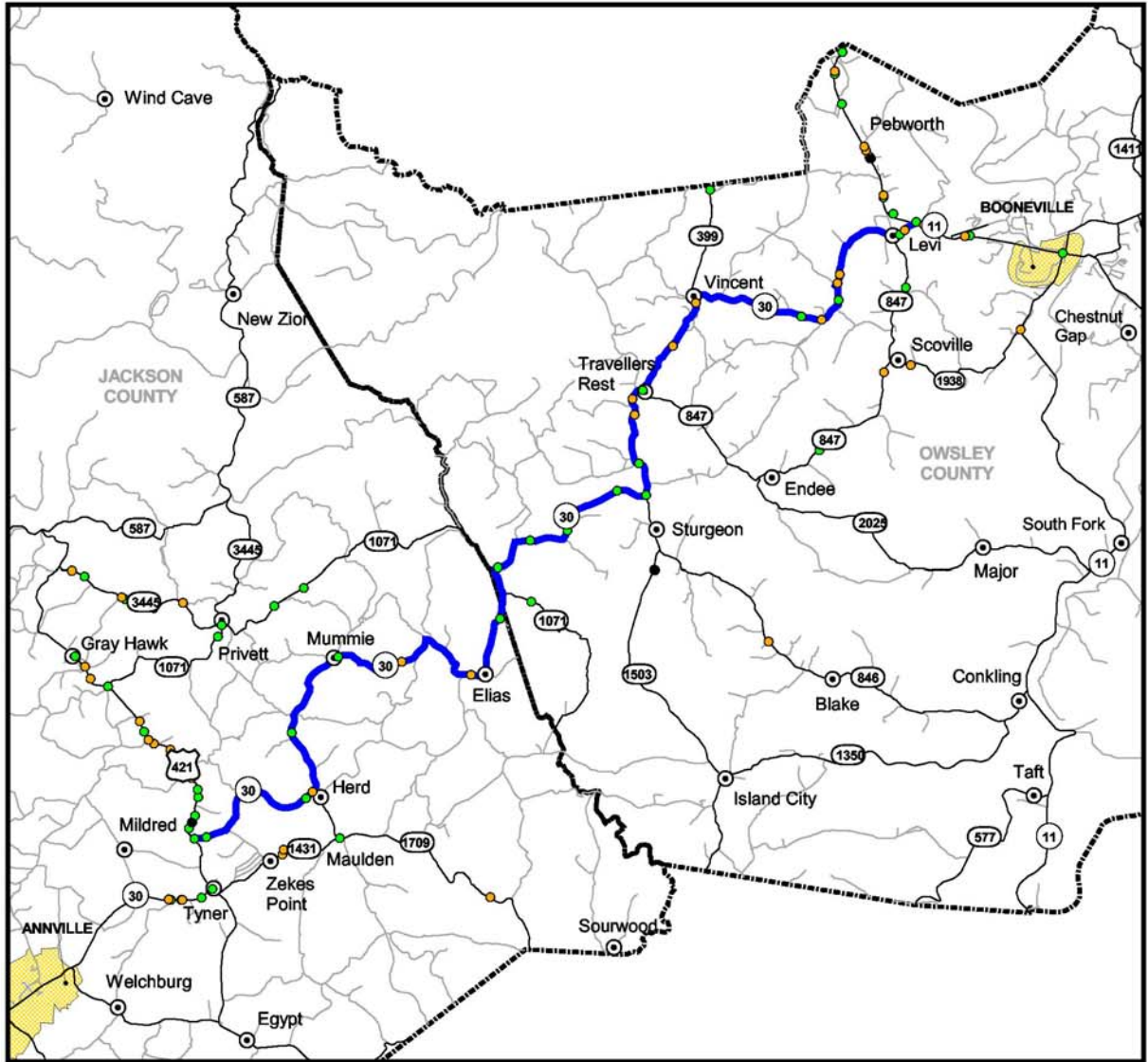
Figure 2. Year 2001 Traffic and Level of Service

Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville

Jackson and Owsley Counties
Item No. 10-279.50



Location Map



Legend



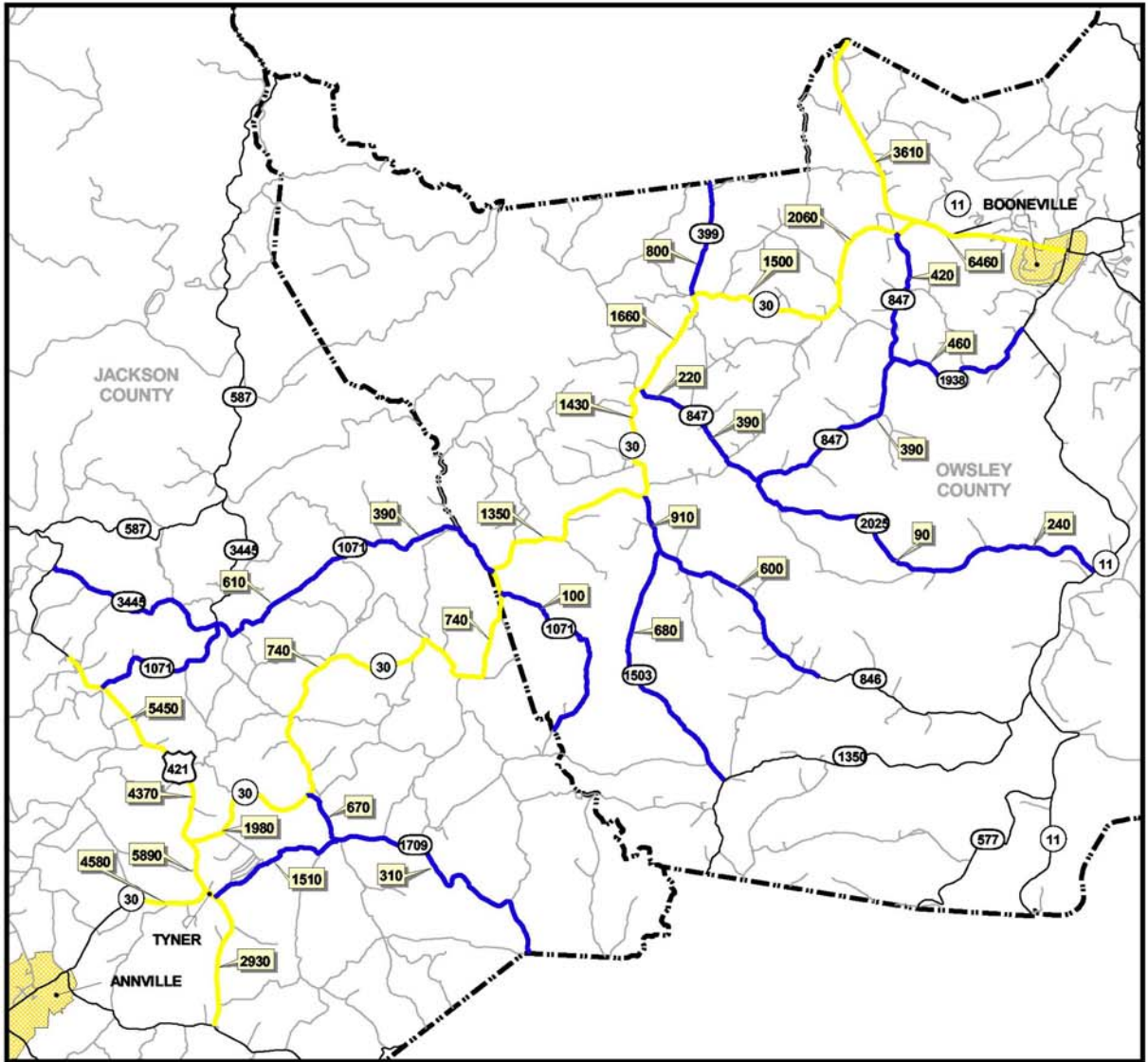
- Fatal Accidents
- Injury Accidents
- Property Damage Only
- Potential High Accident Segments (Critical Rate 0.9-0.99)
- High Accident Segments (Critical Rate ≥ 1.0)



Figure 3. Vehicle Crash Information By Crash Type
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50
 Data Interval (1/97-12/00)



Location Map



Legend



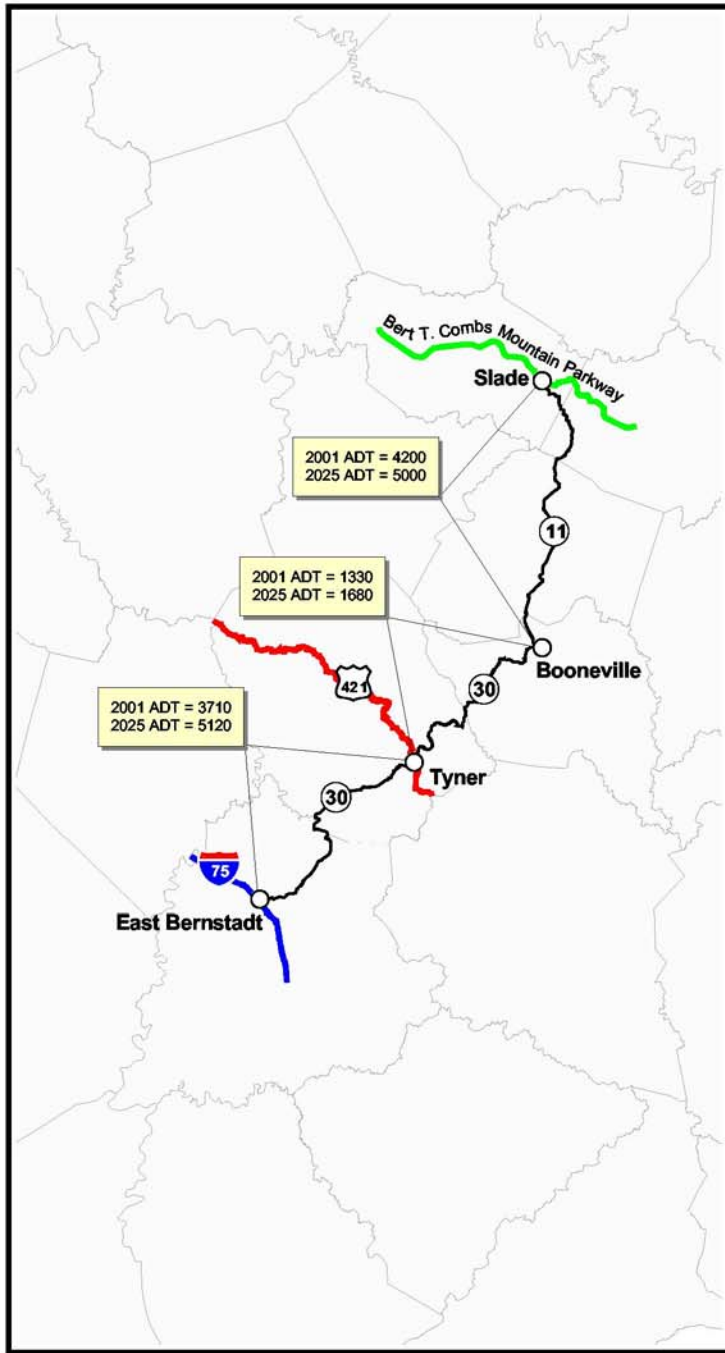
	1365 ADT
	LOS C or Better
	LOS D
	LOS E
	LOS F



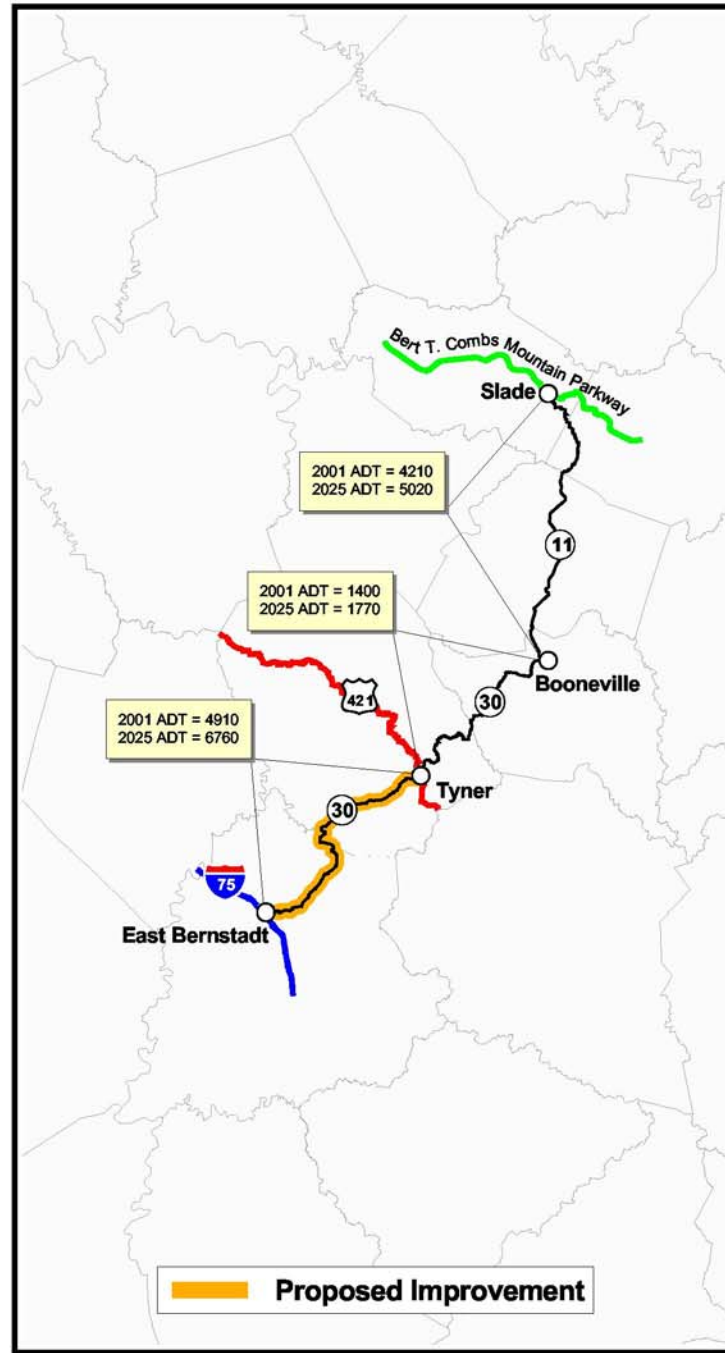
Figure 4. Year 2025 Traffic and Level of Service

Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville

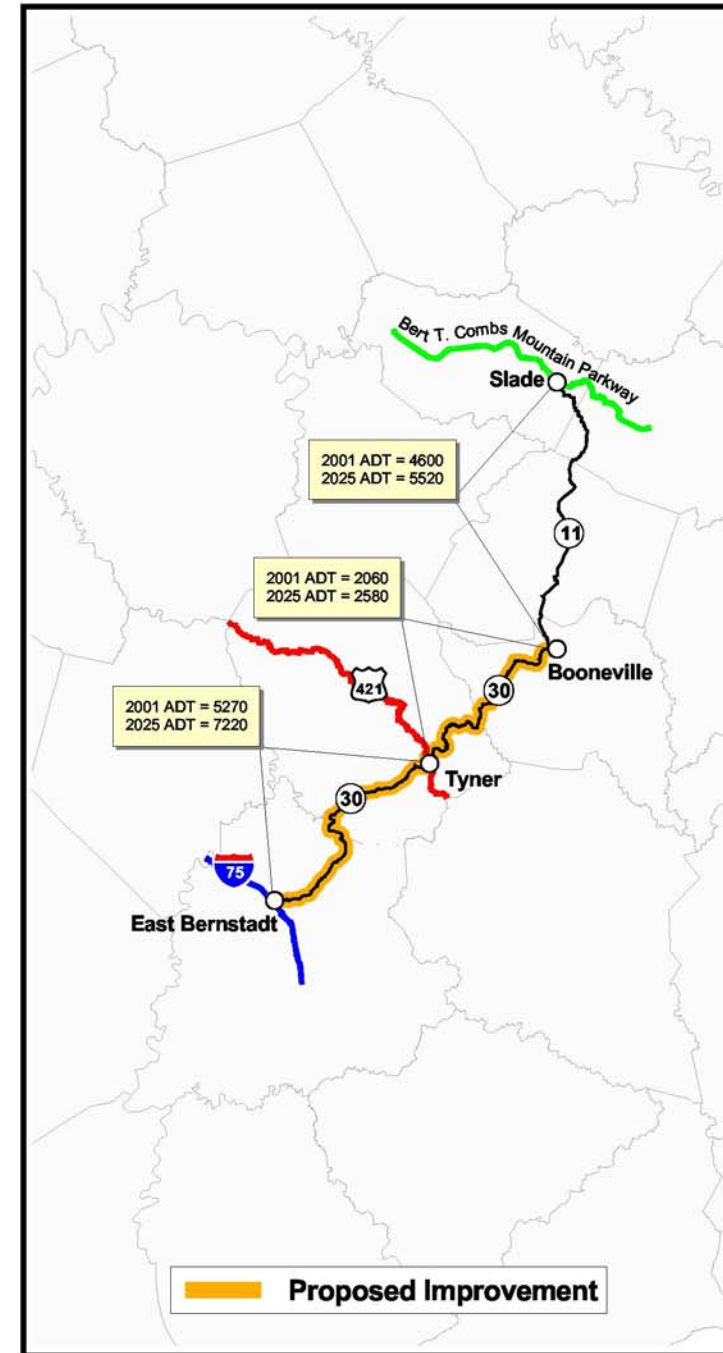
Jackson and Owsley Counties
Item No. 10-279.50



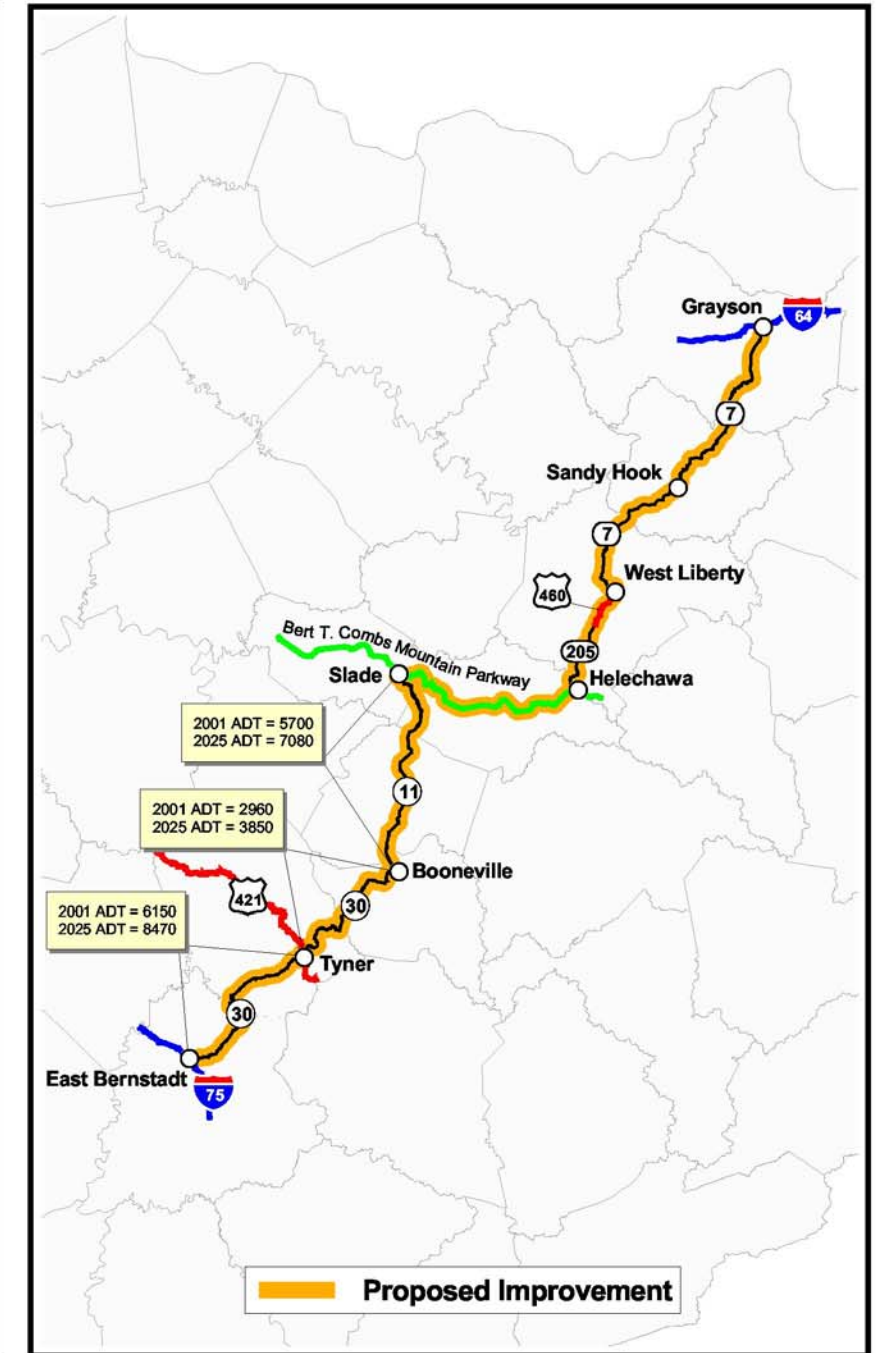
Scenario 1
No Transportation Improvements



Scenario 2
East Bernstadt to Tyner



Scenario 3
East Bernstadt to Booneville



Scenario 4
East Bernstadt to I-64

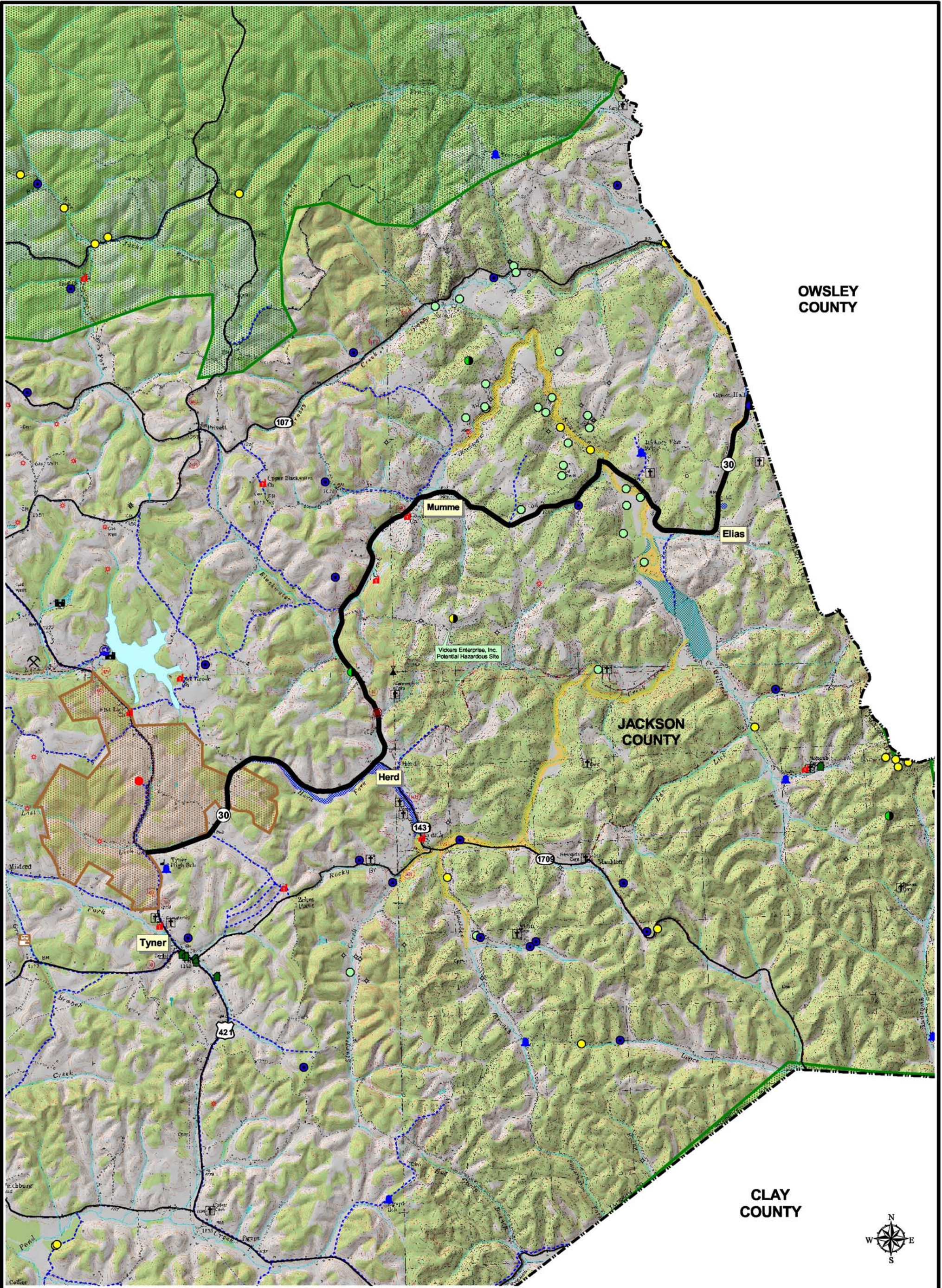


Location Map



Figure 5. Estimated 2001 ADT & 2025 ADT Using KY Statewide Traffic Model
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50





OWSLEY COUNTY

JACKSON COUNTY

CLAY COUNTY



3500 0 3500 7000 Feet

- | | | |
|------------------------------|------------------------|------------------------|
| Historical Structures | Waterwells | Water Lines |
| Antenna Structures | Cemetery | Streams |
| Underground Storage Tanks | Church | Agricultural District |
| Abandoned Mine Lands | School | U.S. Forest Service |
| EPA Site [RCRIS] | Oil well | Lake |
| EPA Pollutant Discharge Site | Gas Well | Floodplain and Wetland |
| Superfund Site | Dry and Abandoned Well | Floodplain Only |
| Illegal Dump Site | Water Tanks | Wetland Only |
| Coal Exploration Sites | Dams | |



Figure 6. Environmental Footprint Map Jackson County
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.

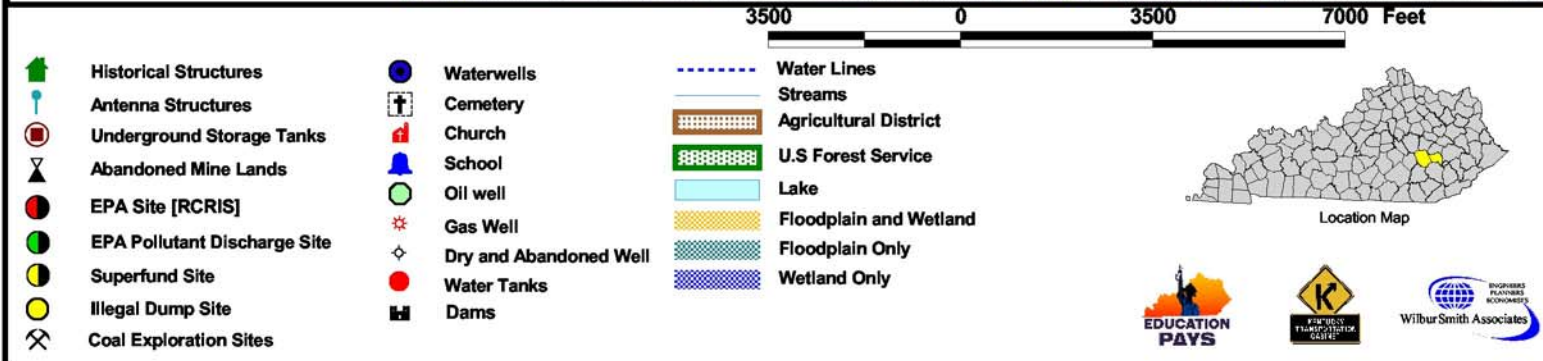
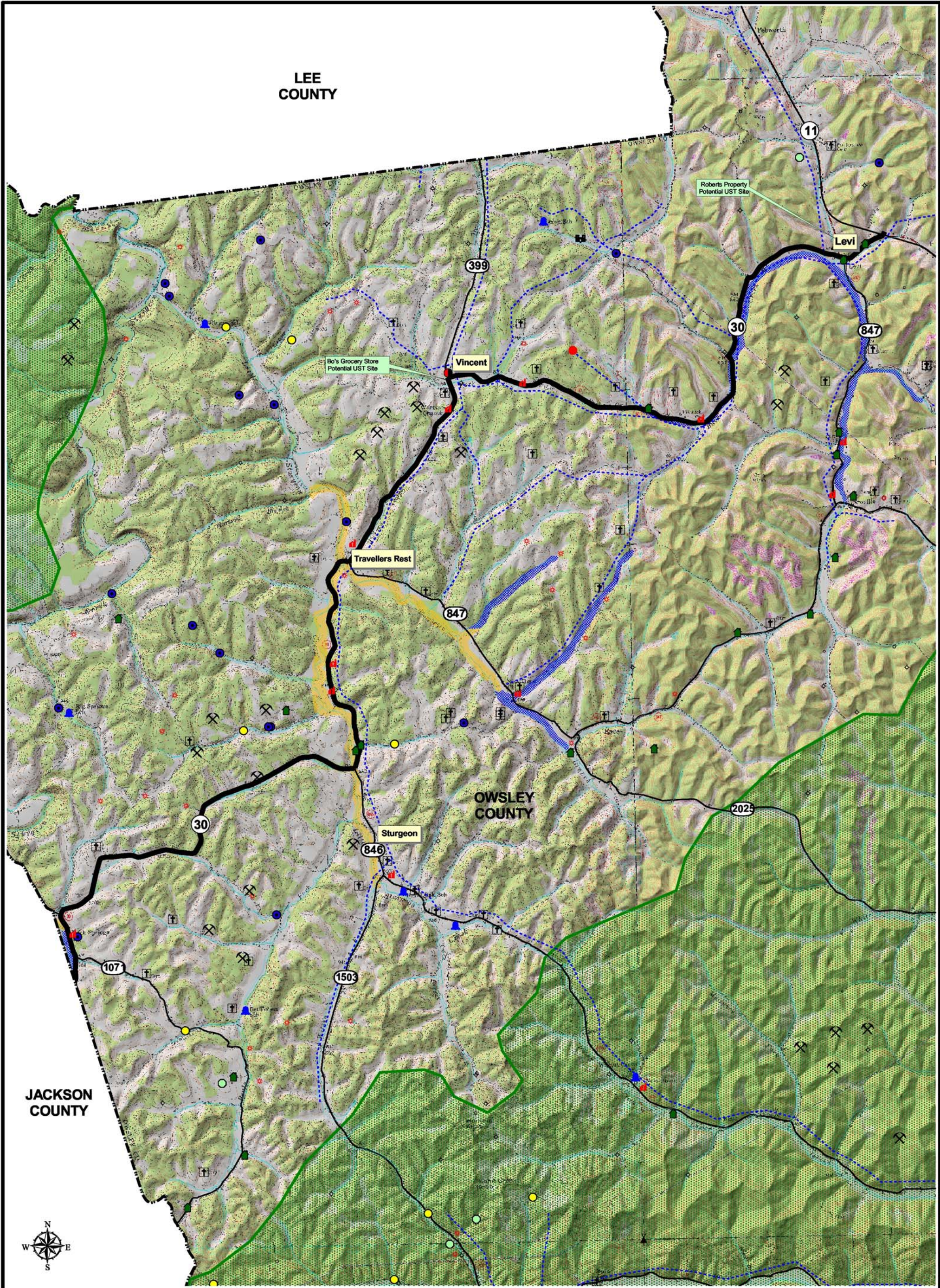
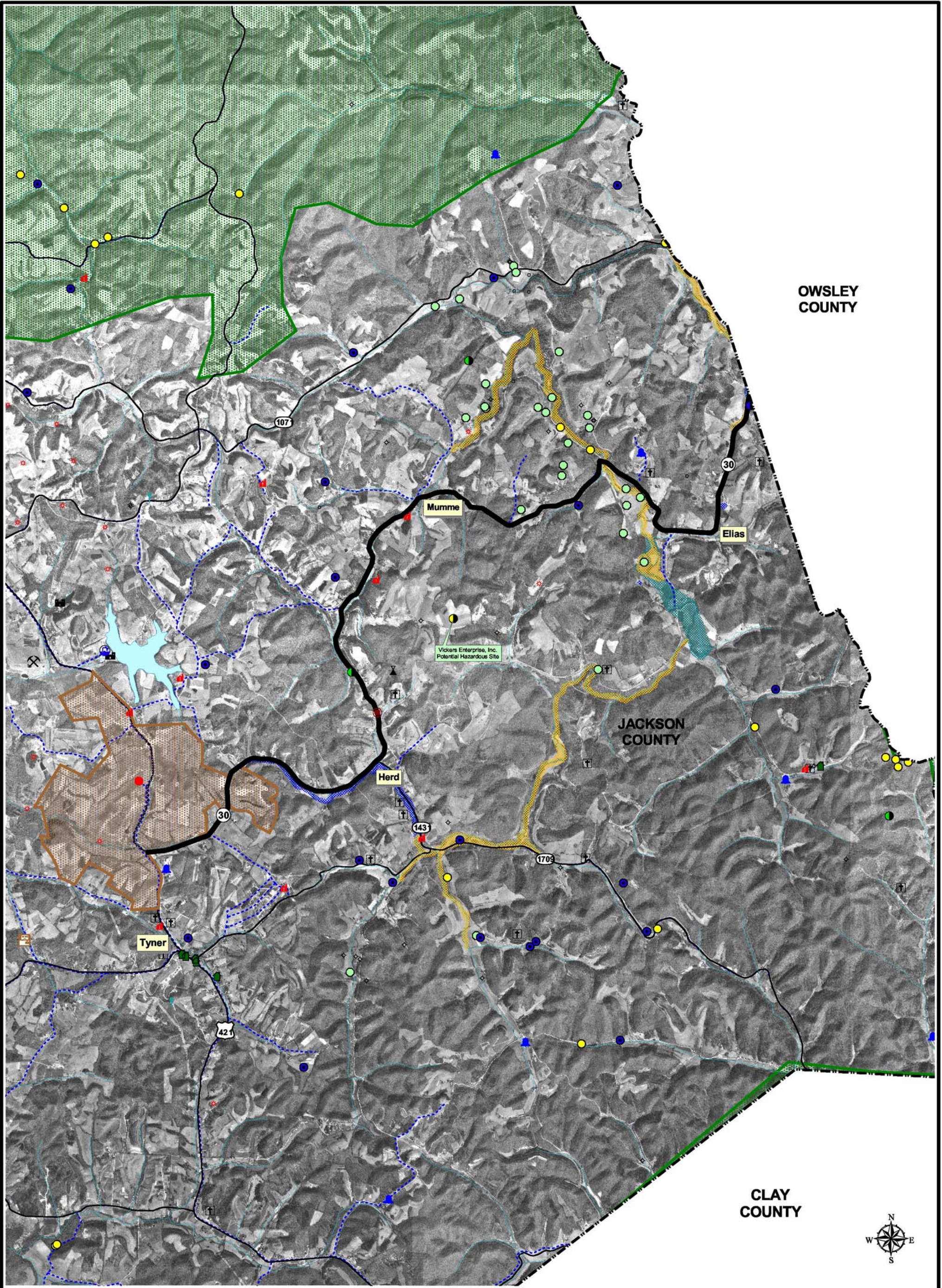


Figure 6. Environmental Footprint Map Owsley County (Continued)
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.



OWSLEY COUNTY

JACKSON COUNTY

CLAY COUNTY



3500 0 3500 7000 Feet

- | | | |
|------------------------------|------------------------|------------------------|
| Historical Structures | Waterwells | Water Lines |
| Antenna Structures | Cemetery | Streams |
| Underground Storage Tanks | Church | Agricultural District |
| Abandoned Mine Lands | School | U.S Forest Service |
| EPA Site [RCRIS] | Oil well | Lake |
| EPA Pollutant Discharge Site | Gas Well | Floodplain and Wetland |
| Superfund Site | Dry and Abandoned Well | Floodplain Only |
| Illegal Dump Site | Water Tanks | Wetland Only |
| Coal Exploration Sites | Dams | |



Figure 7. Environmental Footprint Map on Digital Orthophotograph Jackson County
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.

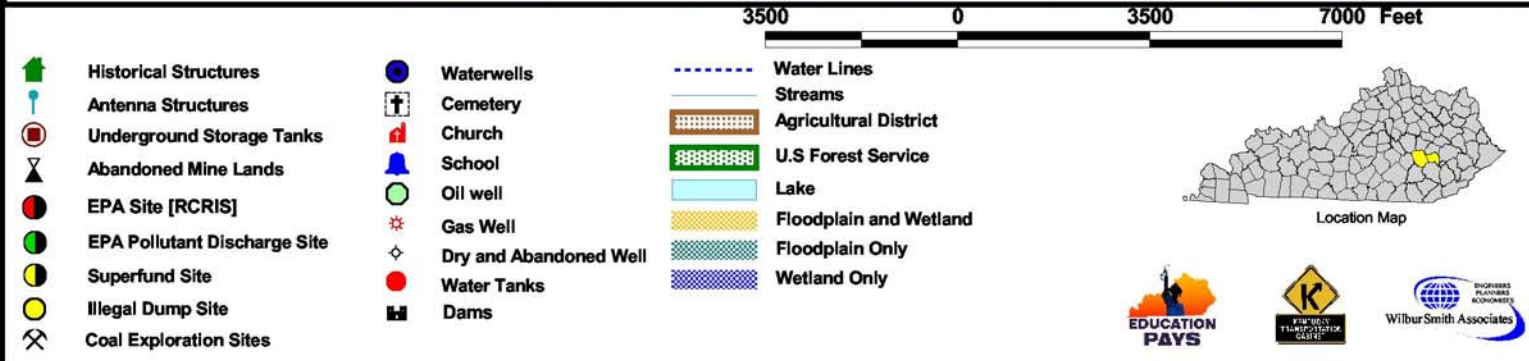
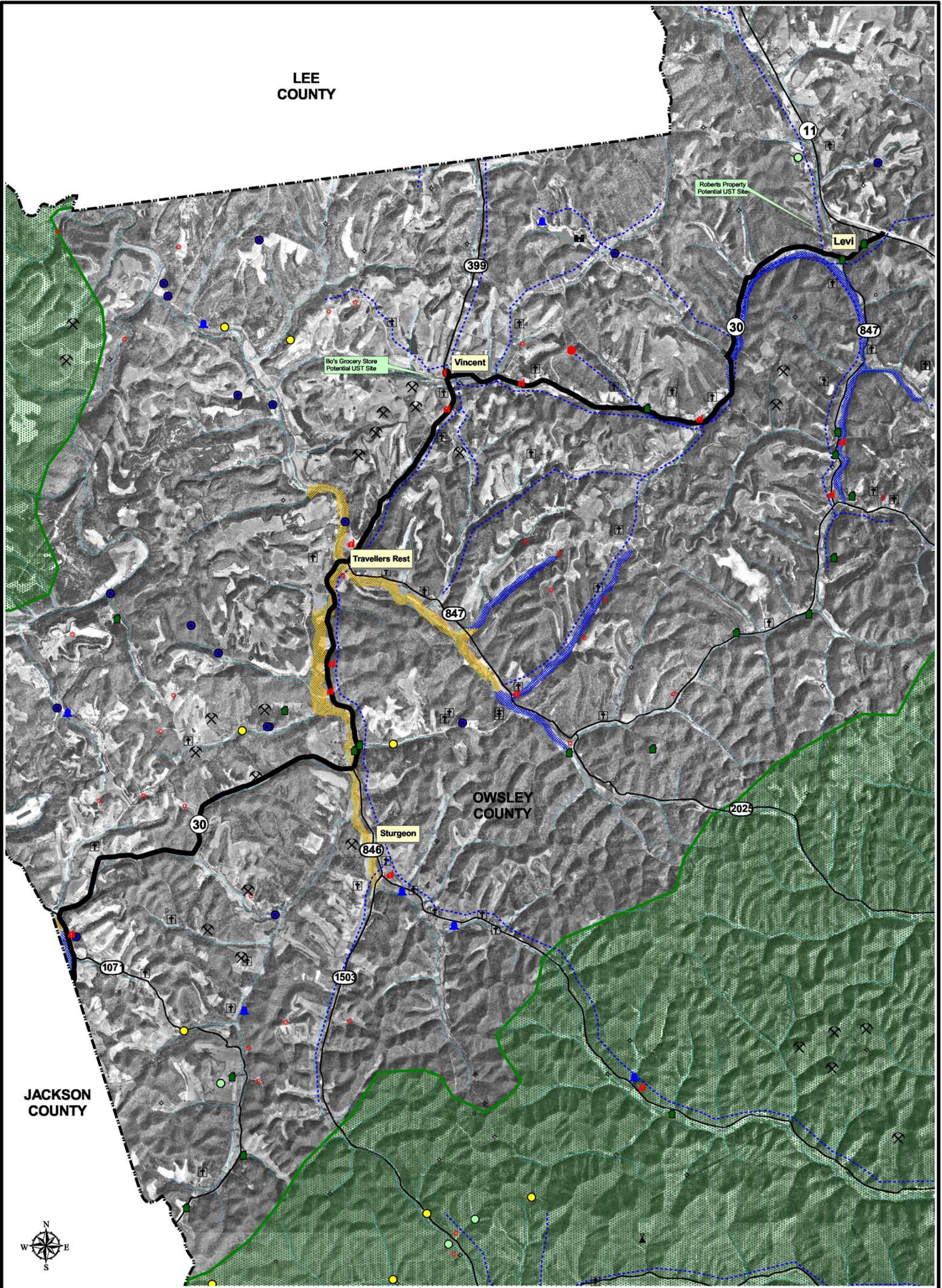
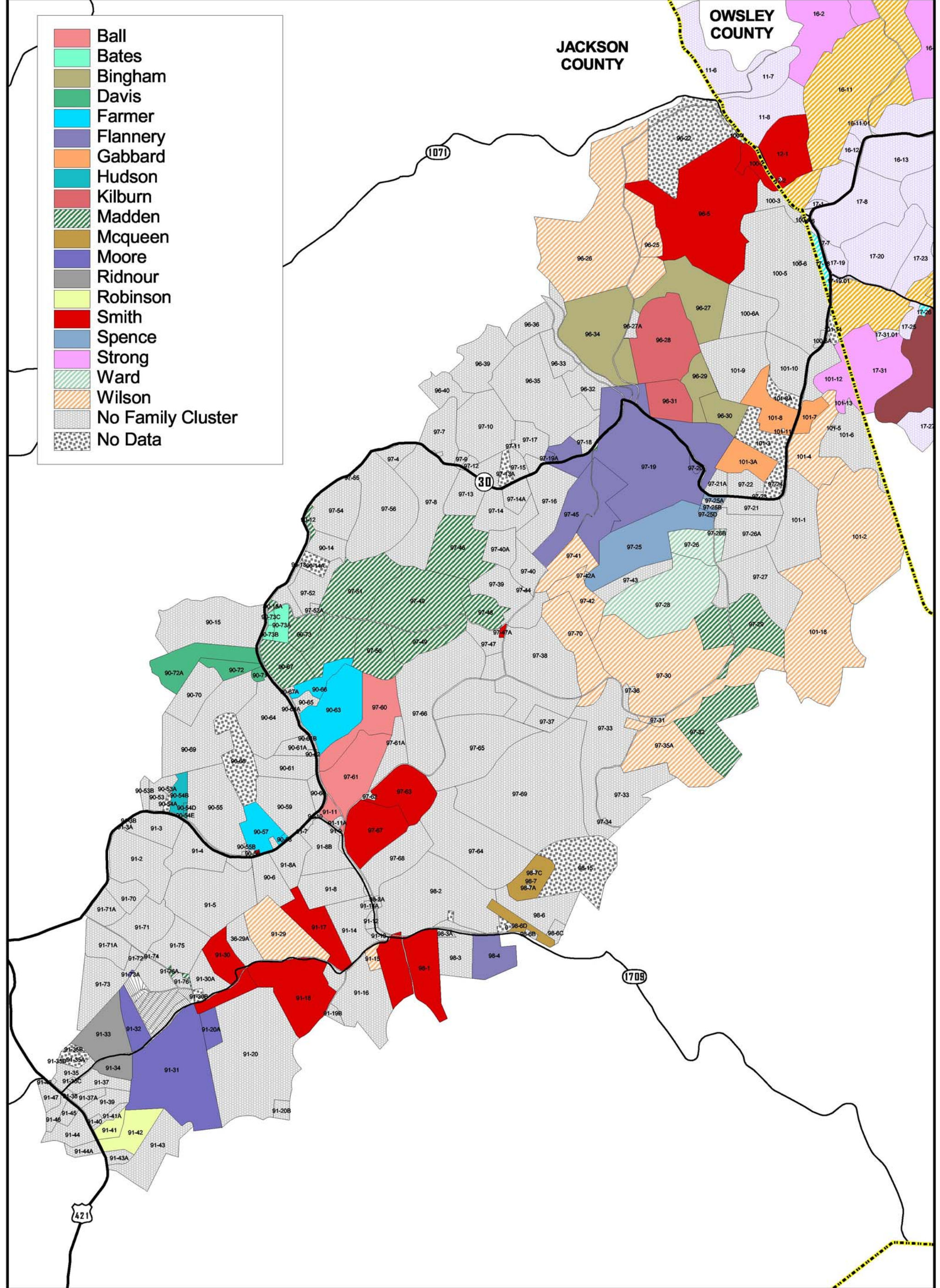


Figure 7. Environmental Footprint Map on Digital Orthophotograph Owsley County (Continued)
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.



**Figure 8. Family Clusters
Jackson County**

**Reconstruction of KY 30
from US 421 at Tyner to
KY 11 at Booneville**

Jackson and Owsley
Counties

Item No. 10-279.50



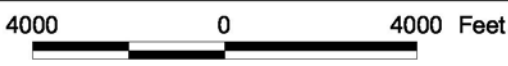
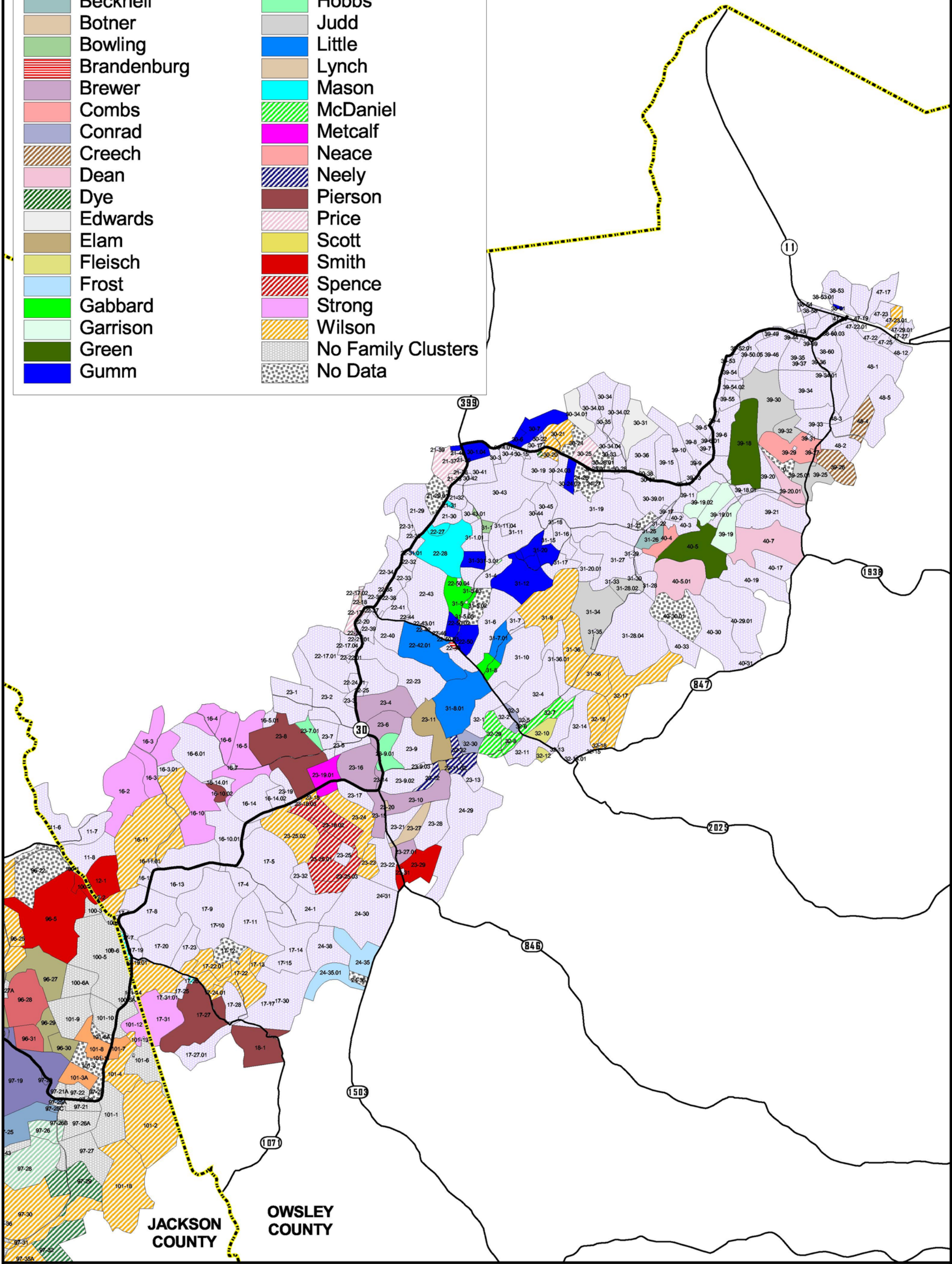
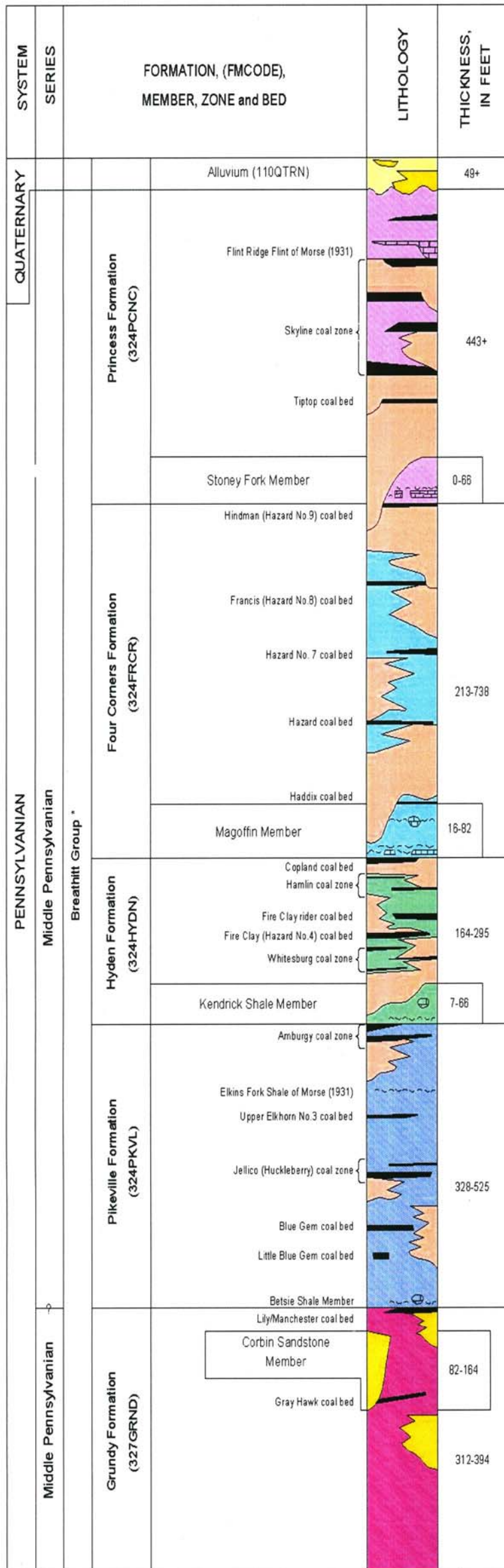


Figure 8. Family Clusters Owsley County (Continued)
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50

DESCRIPTIONS OF MAPPED UNITS



Modified from Rice (1985).

*Breathitt Group replaces Breathitt Formation (Chesnut, 1992). Group is divided into formations based upon widespread shales with marine fossils (all previously recognized as members). Formations occurring in this quadrangle are the Grundy, Pikeville, Hyden, Four Corners, and Princess (Chesnut, 1992).

Qal

ALLUVIUM (QUATERNARY) — Sand, silt, clay, and gravel. Clay, silt, and sand dominate rivers and tributaries, but pebbles and cobbles of locally derived sandstone, limestone, and coal also occur, especially in tributaries. Silts locally occur as remnants of alluvium on cutoff meanders and terrace deposits of larger rivers. Unit commonly grades into colluvium and landslide debris (not mapped) along valley sides. Only larger alluvial deposits are mapped, and contacts are approximately located.

BREATHITT GROUP (LOWER TO MIDDLE PENNSYLVANIAN) — The Breathitt was mapped as a formation on the twenty-four 7.5-minute geologic quadrangle maps that were used to construct the Hazard 30 x 45 minute quadrangle map, but Chesnut (1992) elevated the Breathitt to Group status and divided the group into formations based on regionally widespread shale members with marine fauna. Several of these shale members were mapped on the 7.5-minute maps and are described below. The Breathitt Group contains conglomerates, sandstones, siltstones, shales, coals, and limestones. Two types of sandstones occur: quartzarenites (more than 90 percent quartz), in the Corbin Sandstone Member, which was previously assigned to the Lee Formation, but was reassigned to the Grundy Formation by Chesnut (1992); and an unnamed sandstone beneath the Corbin Sandstone, informally called the Hazel Patch sandstone (Blancher and Brown, 1970). More common in the rest of the Breathitt Group are light- to medium-gray, tan- to brown-weathering sandstones that are fine to medium grained, locally coarse grained, siliceous but locally calcareous, and arkosic to sublitharenitic. They consist of 60 to 80 percent quartz, 2 to 15 percent feldspar, and lesser amounts of mica, opaque minerals, and rock fragments. Conglomerates in the Corbin are composed of quartz pebbles; in other Breathitt sandstones they consist of shale, siderite, and coal clasts.

All the formations in the Breathitt Group are lithologically similar. The shale members (Betsie, Kendrick, Magoffin, Stoney Fork) at the base of each formation generally contain a thin, black to dark-gray clay shale and discontinuous, dark-gray to black limestone or sideritic sandstone with common marine fossils (summarized in Chesnut, 1991a). Basal shales grade upward into laminated, dark-gray silty shale with abundant siderite laminae and nodules, elliptical saucer-shaped carbonate concretions, and scarce fossils. Silty shales coarsen upward into thin-bedded, often bioturbated siltstone interbedded with fine-grained, ripple-bedded sandstone and shale; the siltstone-sandstone-shale unit in turn coarsens upward into massive to crossbedded sandstone, which may truncate the coarsening-upward profile.

Coarsening-upward shale members are overlain by four to five coal zones. Each zone consists of multiple coals that may split laterally or grade into carbonaceous shales and rooted seat rocks, although at least one of the coals is usually extensive and mapped on the 7.5-minute quadrangle maps. Coal zones are separated by shales, siltstones, and sandstones, and generally exhibit considerable lateral variability. Some sandstones are locally extensive and useful as stratigraphic markers.

Ppr

PRINCESS FORMATION (MIDDLE PENNSYLVANIAN) — Named by Chesnut (1992) for strata between the base of the Stoney Fork Member and the base of the Conemaugh Formation, which is not preserved in this quadrangle. The formation is equivalent to a unit mapped as the upper Breathitt Formation by Rice (1985). The base of the Stoney Fork Member (Ping and Rice, 1979) is locally a thin (0 to 4 ft) carbonate, which was mapped on some 7.5-minute quadrangle maps as the Lost Creek Limestone of Morse (1931); the Lost Creek Limestone is not currently recognized as a formal bed. In the northeastern part of the Hazard Quadrangle, a second carbonate, the Flint Ridge Flint (Morse, 1931), occurs above the Skyline coal zone and is mapped on some 7.5-minute quadrangle maps. The Flint Ridge Flint consists of tan chert and yellowish-gray to dark-gray, sparsely fossiliferous, thin-bedded limestone and sandstone; it is generally less than 3 ft thick, although it may be as much as 30 ft thick in channel deposits (Hinrichs, 1978b). Coals in the Princess Formation, in descending order, are the Skyline coal zone (Hazard No. 11), equivalent to the upper and lower Knob coal zone (Hinrichs, 1978b), (Mixon, 1965a-b); and the Tiptop (Hazard No. 10) coal. Because the formation occurs only in the tops of hills in the northeastern part of the Hazard Quadrangle, it is generally not well exposed, although the Stoney Fork Member is exposed in upper roadcuts along Kentucky Highway 80 in the Hazard North 7.5 minute quadrangle (Cobb and others, 1981; Chesnut, 1991b).

Pfc

FOUR CORNERS FORMATION (MIDDLE PENNSYLVANIAN) — Named by Chesnut (1992) for strata between the base of the Magoffin Member and the base of the Stoney Fork Member, which is equivalent to the middle Breathitt Formation of Rice (1985). The Magoffin Member (Outerbridge, 1978), which is equivalent to the Magoffin Beds of Morse (1931) and earlier usage, is the most widely recognized of the marine zones in the Breathitt Group; it varies from 0 to 85 ft in thickness across the Hazard Quadrangle, thickening to the east. The base of the unit was used as a color break on many of the 7.5-minute quadrangle maps that compose the Hazard Quadrangle. Coals in the Four Corners Formation, in descending order, are the Hindman (Hazard No. 9), Francis (Hazard No. 8), Hazard No. 7, Hazard zone (which includes the Leatherwood, Hazard No. 5, Hazard No. 5A, and Hazard No. 6 coals), and the Haddix zone. This unit was named for the Four Corners exposure at the intersection of Kentucky Highway 15 and Kentucky Highway 80 (Cobb and others, 1981), and is also well exposed along the Daniel Boone Parkway west of Hazard (Home, 1978) and along Kentucky Highway 80 east of Hazard (Chesnut, 1991b).

Ph

HYDEN FORMATION (MIDDLE PENNSYLVANIAN) — Named by Chesnut (1992) for strata between the base of the Kendrick Shale Member and the base of the Magoffin Member. The Kendrick (Jillson, 1919) varies from 0 to 45 ft in thickness and was not mapped on several 7.5-minute quadrangle maps because it had been replaced by sandstone (e.g., Rice and Lee, 1978). Where the Hyden Formation is missing, the top of the Amburgy coal is considered the base of the formation. Coals in the Hyden Formation, in descending order, are the Copland, Hamlin zone, Fire Clay rider, Fire Clay (Hazard No. 4), and Whitesburg zone. The Fire Clay coal contains a distinctive 2- to 6-in.-thick, black to brown flint clay with conchoidal fracture that was deposited as a volcanic ash deposit. Sandstones in the flint clay have been radiometrically dated at 312 ± 1 Ma by Lyons and others (1992) and 311 ± 1 Ma by Rice and others (1994). The Fire Clay coal and flint clay are well exposed along Kentucky Highway 15 near Carr Fork Lake (Eble and others, 1995). The formation crops out along the Daniel Boone Parkway west of Buckhorn Reservoir (Cobb and others, 1981), near the dam at Buckhorn State Park (Danilchik and Lewis, 1978a), and along the Kentucky Highway 15 bypass around Hazard (Eble and others, 1995).

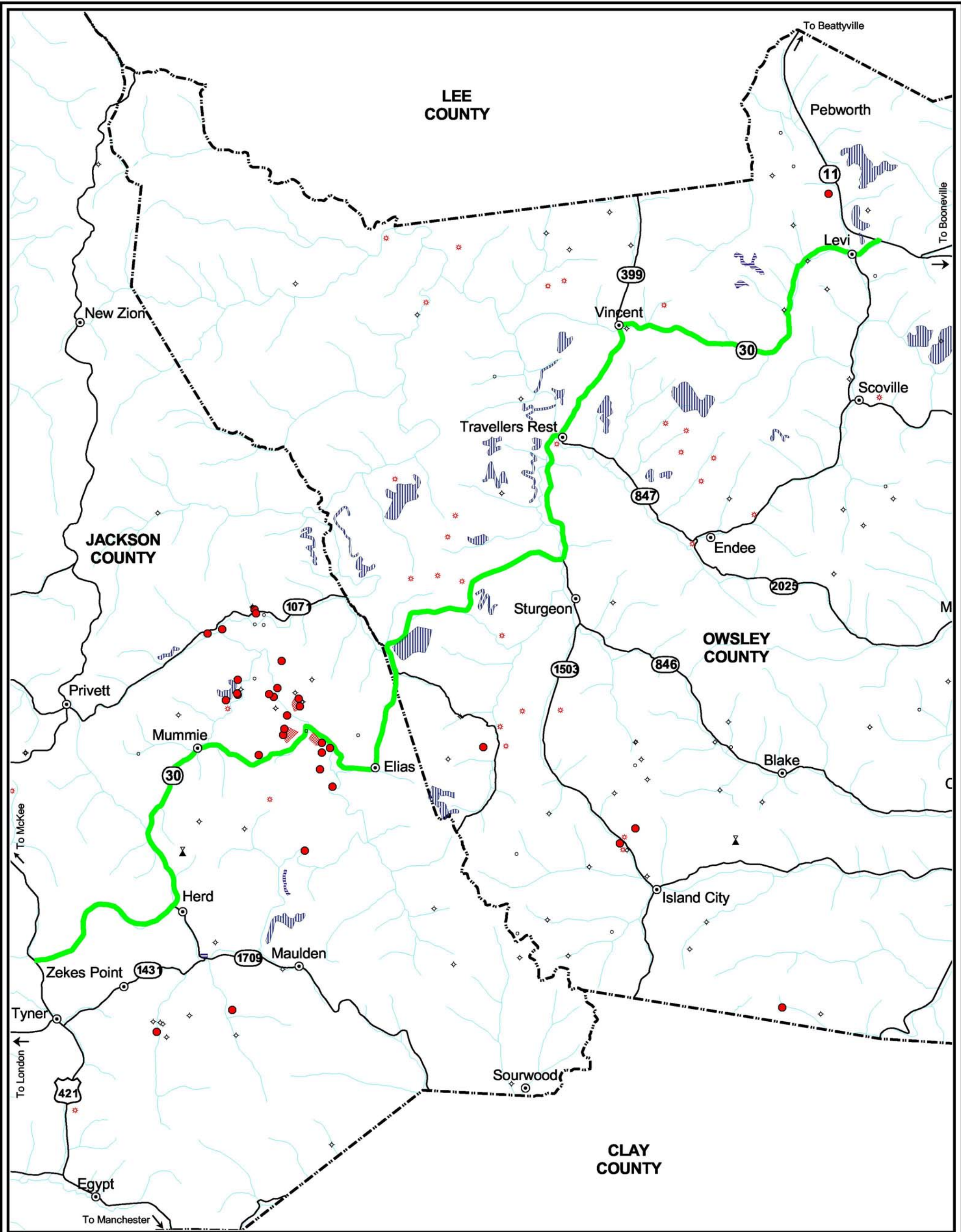
Ppk

PIKEVILLE FORMATION (MIDDLE PENNSYLVANIAN) — Named by Chesnut (1992) for strata between the base of the Betsie Shale Member and the base of the Kendrick Shale Member. The Betsie Shale was defined by Rice and others in 1987 and was not shown on 7.5-minute quadrangle maps, although it normally occurs just above the Manchester-Lily coal, which was extensively mapped in 7.5-minute quadrangles in the western part of the Hazard Quadrangle. Coals in the Pikeville Formation that were mapped on 7.5-minute quadrangle maps are, in descending order, the Amburgy zone, Upper Elkhorn No. 3 zone, Jellico-Huckleberry zone, and the Blue Gem/Pond Creek zone. The Upper Elkhorn No. 3 coal is overlain by a carbonaceous shale containing marine fossils, called the Elkins Fork Shale, which was described on several 7.5-minute quadrangle maps. The Kendrick and Elkins Fork Shales are well exposed along the Daniel Boone Parkway in Clay County (Cobb and others, 1981).

Pg

GRUNDY FORMATION (LOWER PENNSYLVANIAN) — Named by Chesnut (1992) for strata from the top of the Bee Rock Sandstone to the base of the Betsie Shale. The upper part of the formation is locally dominated by thick, crossbedded, sandstones. The Corbin Sandstone Member may interfinger with lateral facies at the top of the unit. The upper part of the Grundy contains the Manchester-Lily coal, which is underlain by the Gray Hawk and Beattyville-Tattlers coal. The lower part of the Grundy does not crop out in the mapped area, but it does contain similar coal-bearing rocks.

Figure 9. Geologic Column Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
Jackson and Owsley Counties
Item No. 10-279.50

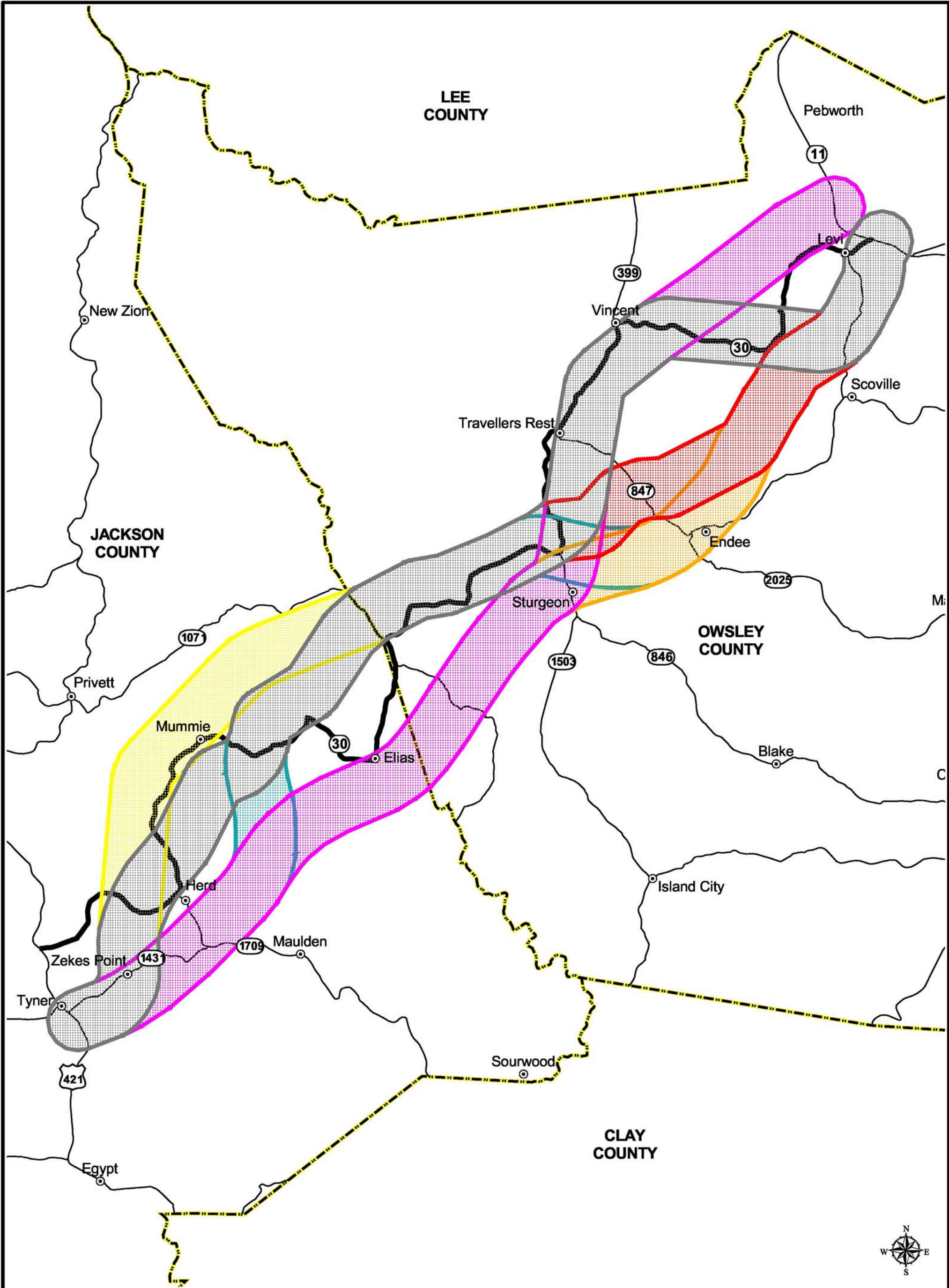


Legend







-  Surface Mined Areas
-  Potential Deep Mines
-  Oil Well Locations
-  Oil well
-  Gas Well
-  Dry and Abandoned Well
-  Abandoned Mine Lands



Figure 10. Geotechnical Issues
Reconstruction of KY 30
from US 421 at Tyner to
KY 11 at Booneville
 Jackson and Owsley
 Counties
 Item No. 10-279.50



6000 0 6000 12000 Feet

-  Corridor A
-  Corridor B
-  Corridor C
-  Corridor D
-  Corridor E
-  Corridor F



Location Map

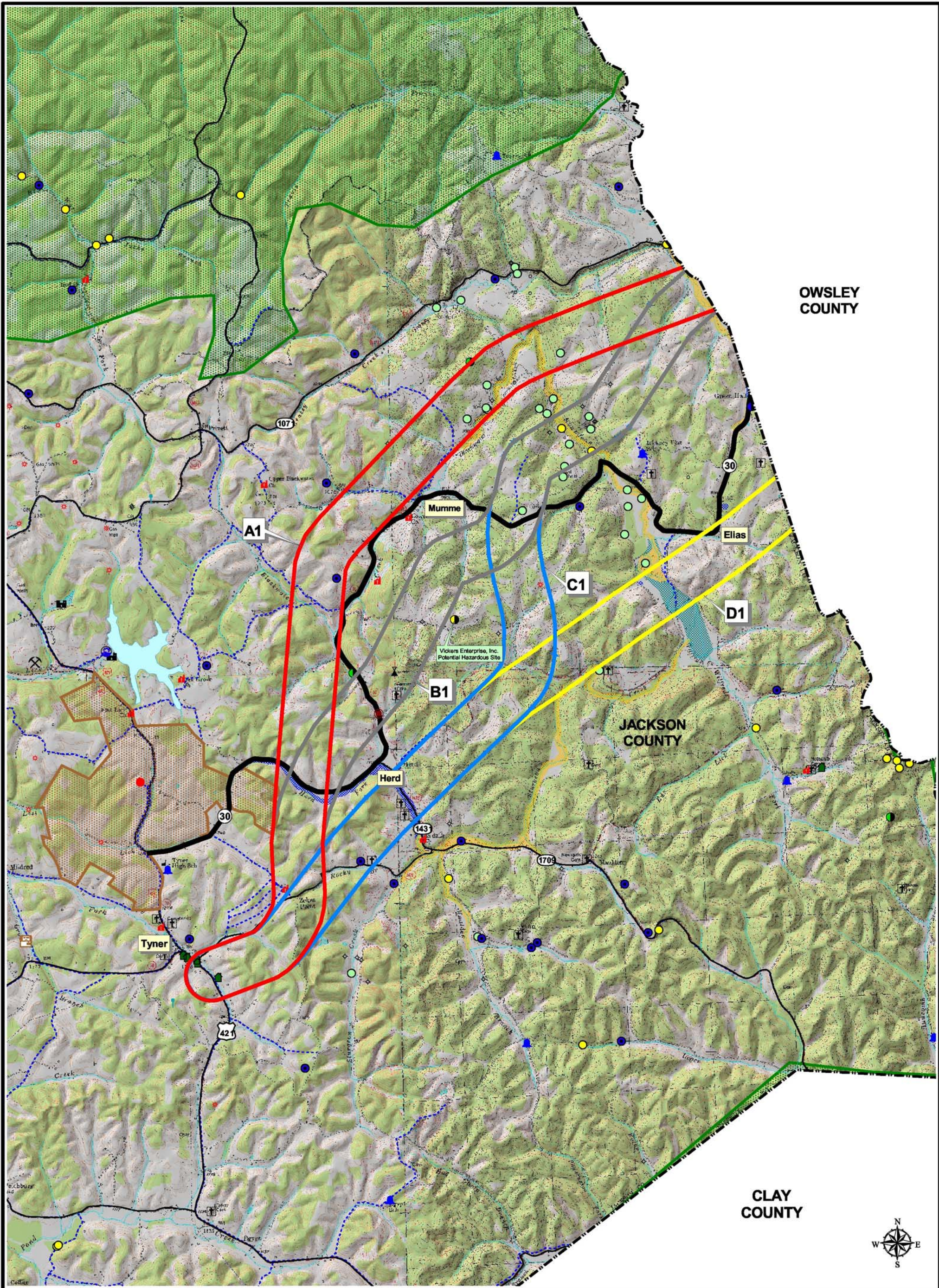


Figure 11. Preliminary Corridors Map

Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville

Jackson and Owsley Counties

Item No. 10-279.50



OWSLEY COUNTY

JACKSON COUNTY

CLAY COUNTY



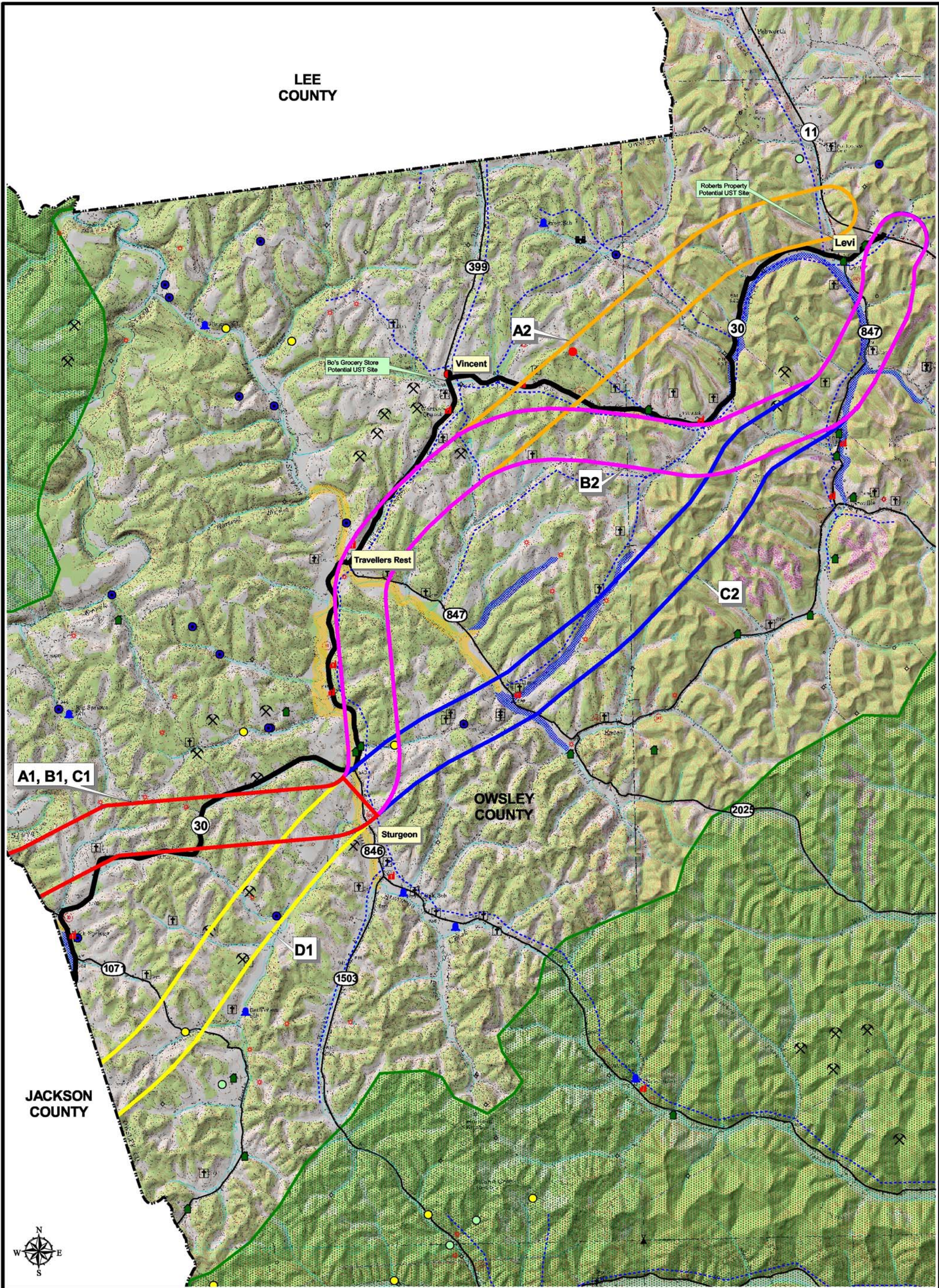
3500 0 3500 7000 Feet

Historical Structures	Waterwells	Water Lines	Corridor A1
Antenna Structures	Cemetery	Streams	Corridor B1
Underground Storage Tanks	Church	Agricultural District	Corridor C1
Abandoned Mine Lands	School	U.S. Forest Service	Corridor D1
EPA Site [RCRIS]	Oil well	Lake	
EPA Pollutant Discharge Site	Gas Well	Floodplain and Wetland	
Superfund Site	Dry and Abandoned Well	Floodplain Only	
Illegal Dump Site	Water Tanks	Wetland Only	
Coal Exploration Sites	Dams		



Figure 12. Initial Corridors for Public Review Jackson County
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50



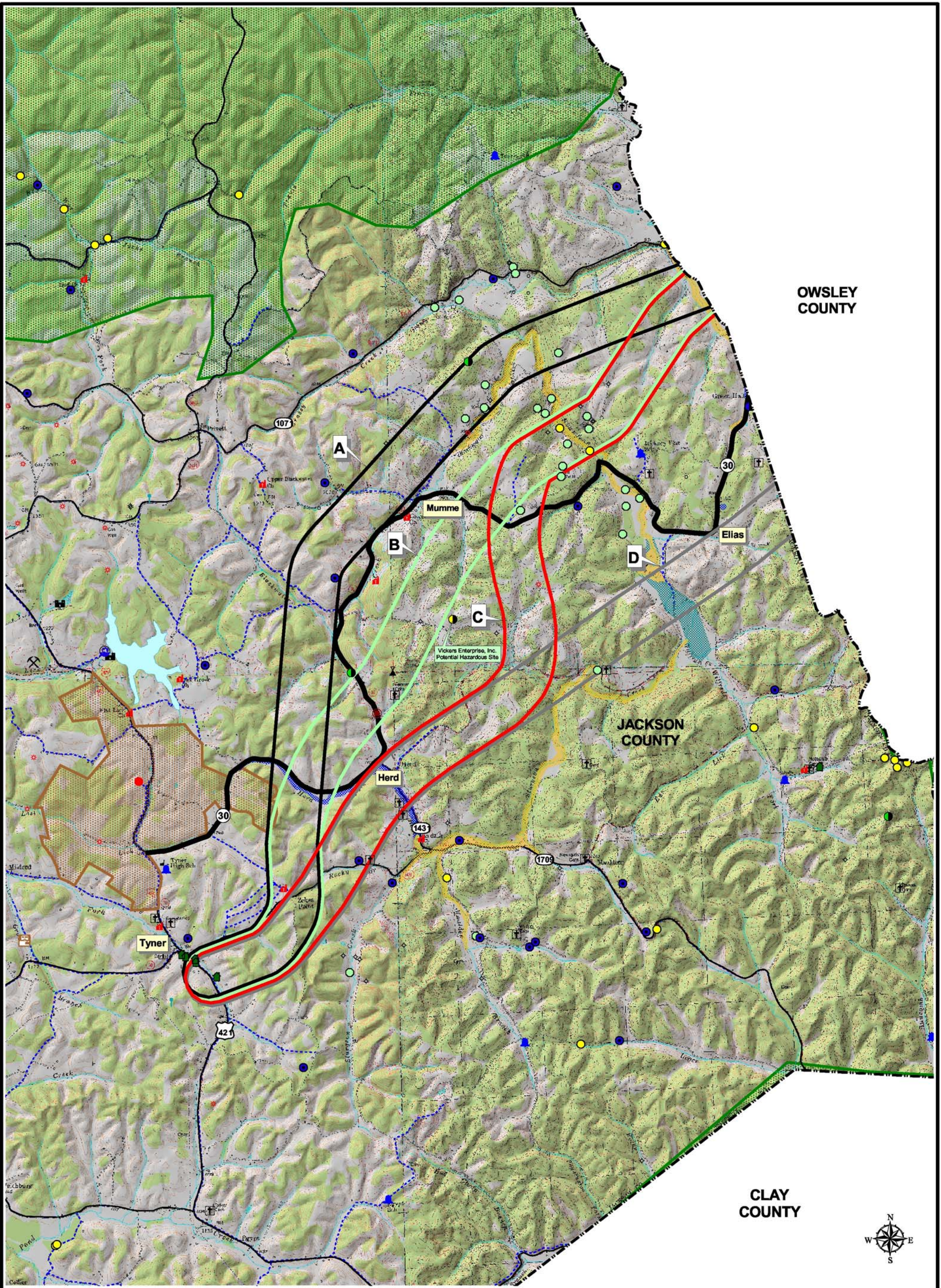


- | | | | |
|------------------------------|------------------------|------------------------|---------------------|
| Historical Structures | Waterwells | Water Lines | Corridor A1, B1, C1 |
| Antenna Structures | Cemetery | Streams | Corridor D1 |
| Underground Storage Tanks | Church | Agricultural District | Corridor A2 |
| Abandoned Mine Lands | School | U.S. Forest Service | Corridor B2 |
| EPA Site [RCRIS] | Oil well | Lake | Corridor C2 |
| EPA Pollutant Discharge Site | Gas Well | Floodplain and Wetland | |
| Superfund Site | Dry and Abandoned Well | Floodplain Only | |
| Illegal Dump Site | Water Tanks | Wetland Only | |
| Coal Exploration Sites | Dams | | |



Figure 12. Initial Corridors for Public Review Owsley County (Continued)
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50





OWSLEY COUNTY

JACKSON COUNTY

CLAY COUNTY



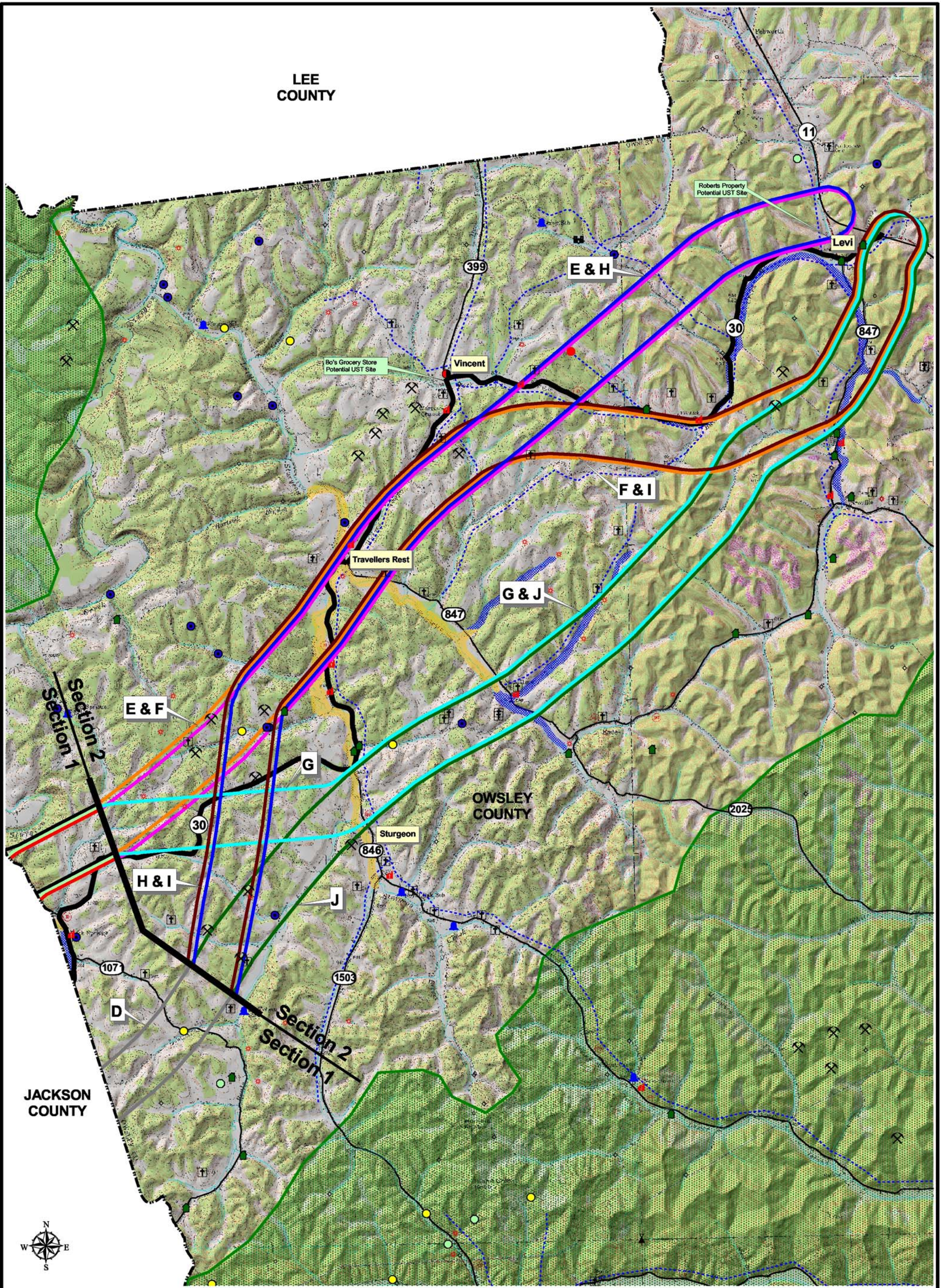
3500 0 3500 7000 Feet

- | | | | |
|------------------------------|------------------------|------------------------|------------|
| Historical Structures | Waterwells | Water Lines | Corridor A |
| Antenna Structures | Cemetery | Streams | Corridor B |
| Underground Storage Tanks | Church | Agricultural District | Corridor C |
| Abandoned Mine Lands | School | U.S. Forest Service | Corridor D |
| EPA Site [RCRIS] | Oil well | Lake | |
| EPA Pollutant Discharge Site | Gas Well | Floodplain and Wetland | |
| Superfund Site | Dry and Abandoned Well | Floodplain Only | |
| Illegal Dump Site | Water Tanks | Wetland Only | |
| Coal Exploration Sites | Dams | | |



Figure 13. Final Corridors for Consideration Jackson County Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville Jackson and Owsley Counties Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.



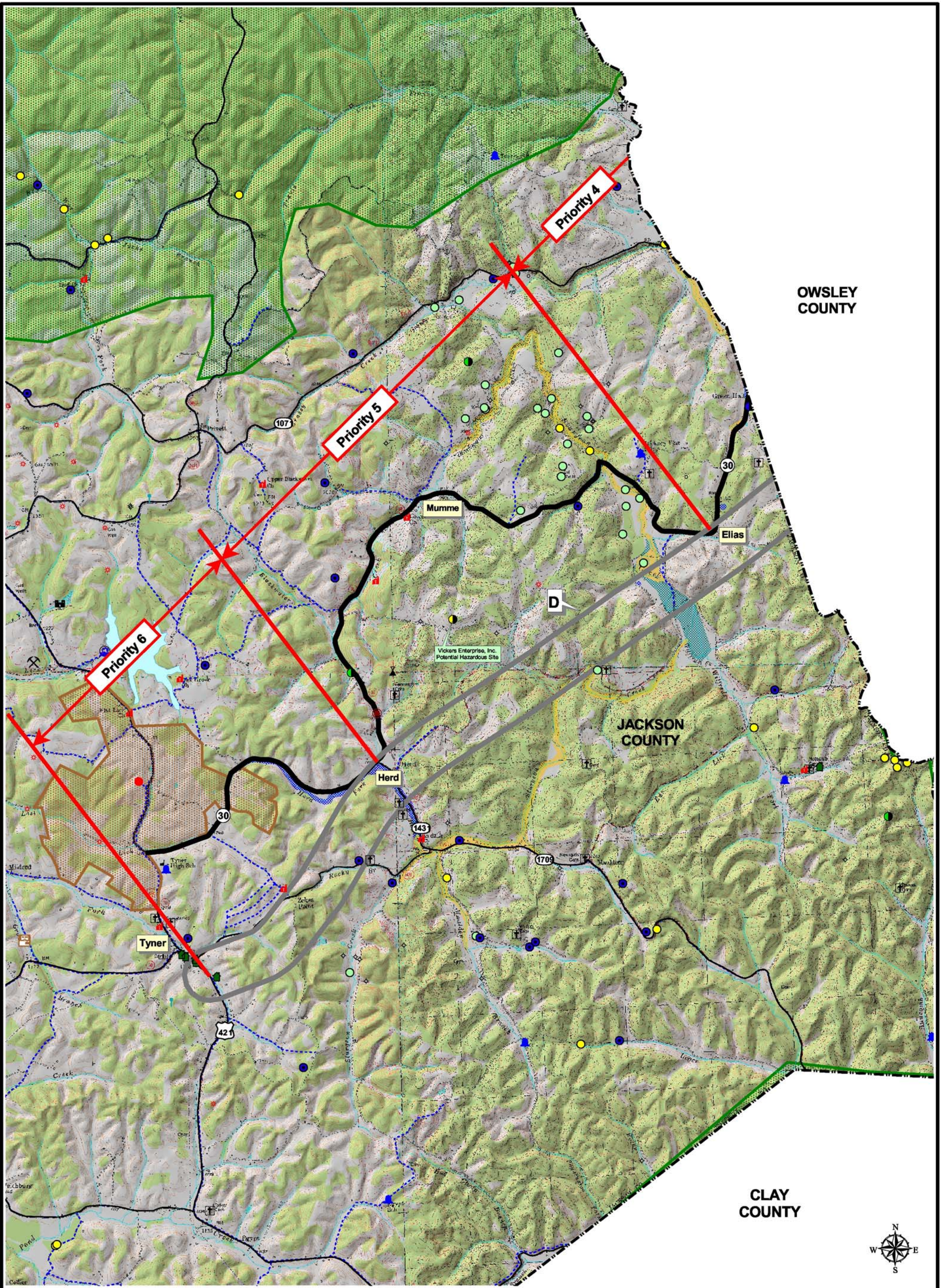
3500 0 3500 7000 Feet

Historical Structures	Waterwells	Water Lines	Corridor A
Antenna Structures	Cemetery	Streams	Corridor B
Underground Storage Tanks	Church	Agricultural District	Corridor C
Abandoned Mine Lands	School	U.S. Forest Service	Corridor D
EPA Site [RCRIS]	Oil well	Lake	Corridor E
EPA Pollutant Discharge Site	Gas Well	Floodplain and Wetland	Corridor F
Superfund Site	Dry and Abandoned Well	Floodplain Only	Corridor G
Illegal Dump Site	Water Tanks	Wetland Only	Corridor H
Coal Exploration Sites	Dams		Corridor I
			Corridor J



Figure 13. Final Corridors for Consideration Owsley County (Continued)
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
 Jackson and Owsley Counties
 Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.



OWSLEY COUNTY

JACKSON COUNTY

CLAY COUNTY



3500 0 3500 7000 Feet

Historical Structures	Waterwells	Water Lines	Corridor D
Antenna Structures	Cemetery	Streams	Agricultural District
Underground Storage Tanks	Church	U.S. Forest Service	Lake
Abandoned Mine Lands	School	Floodplain and Wetland	Floodplain Only
EPA Site [RCRIS]	Oil well	Wetland Only	
EPA Pollutant Discharge Site	Gas Well		
Superfund Site	Dry and Abandoned Well		
Illegal Dump Site	Water Tanks		
Coal Exploration Sites	Dams		



Figure 14. Corridor D - H with Priorities
Jackson County
Reconstruction of KY 30
from US 421 at Tyner to
KY 11 at Booneville
Jackson and Owsley
Counties
Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.

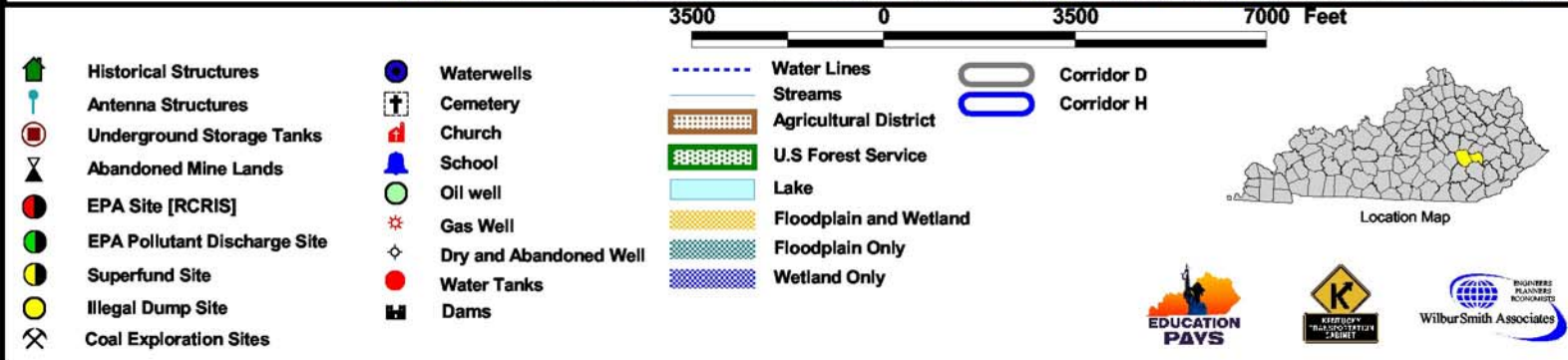
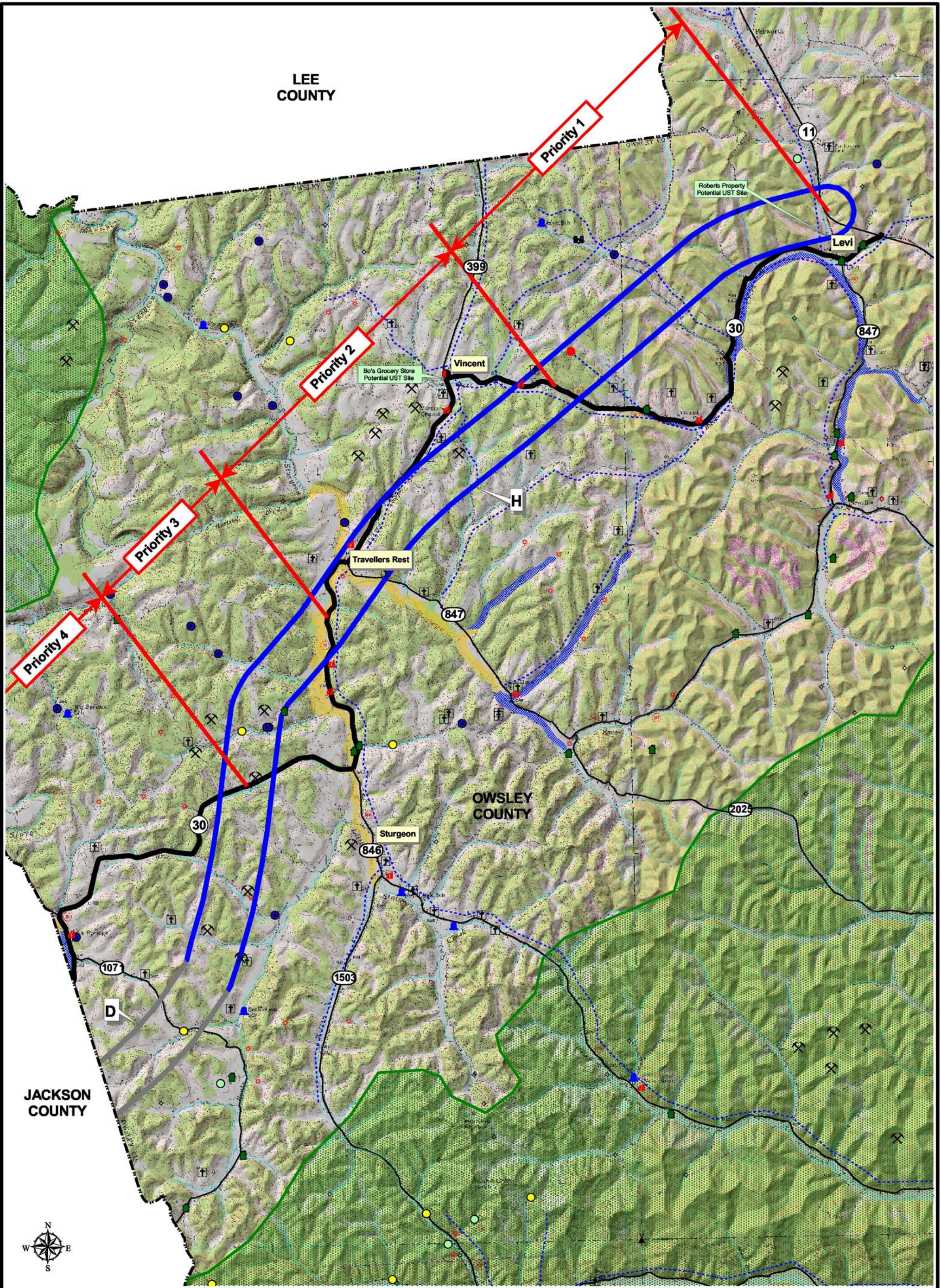
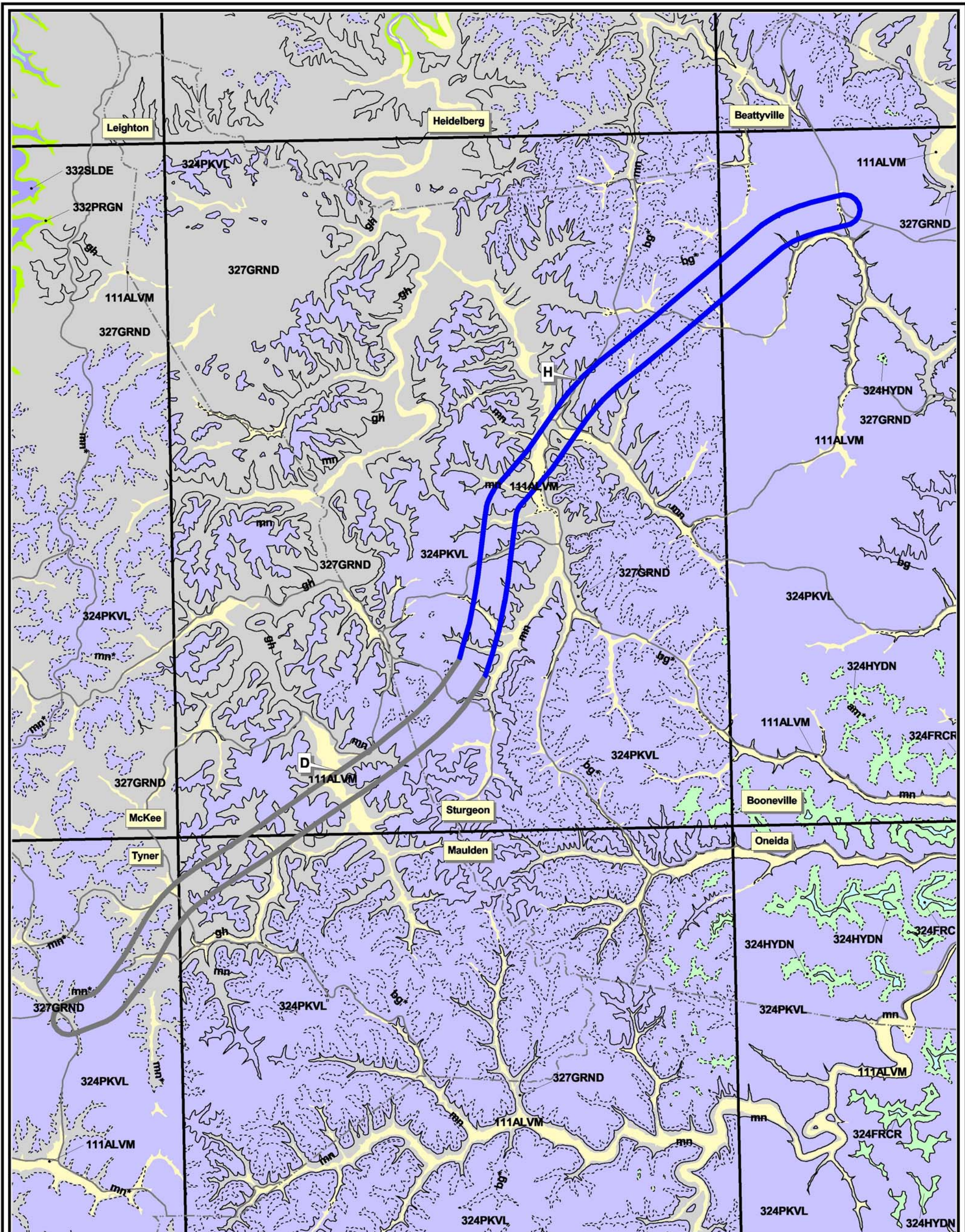


Figure 14. Corridor D - H with Priorities Owsley County (Continued) Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville Jackson and Owsley Counties Item No. 10-279.50

Note: Archaeological sites not shown due to the sensitive nature of the data.



Information Source: Kentucky Geologic Survey

Legend

	111ALVM (Alluvium)
	324FRCR (Four Corners Formation)
	324HYDN (Hyden Formation)
	324PKVL (Pikeville Formation)
	327GRND (Grundy Formation)
	332PRGN (Paragon Formation)
	332SLDE (Slade Formation)
	337BRDN (Borden Formation)
	Corridor D
	Corridor H
	Booneville
	USGS Quadrangle Name



Location Map

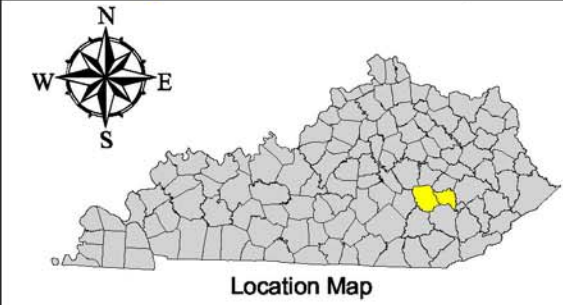
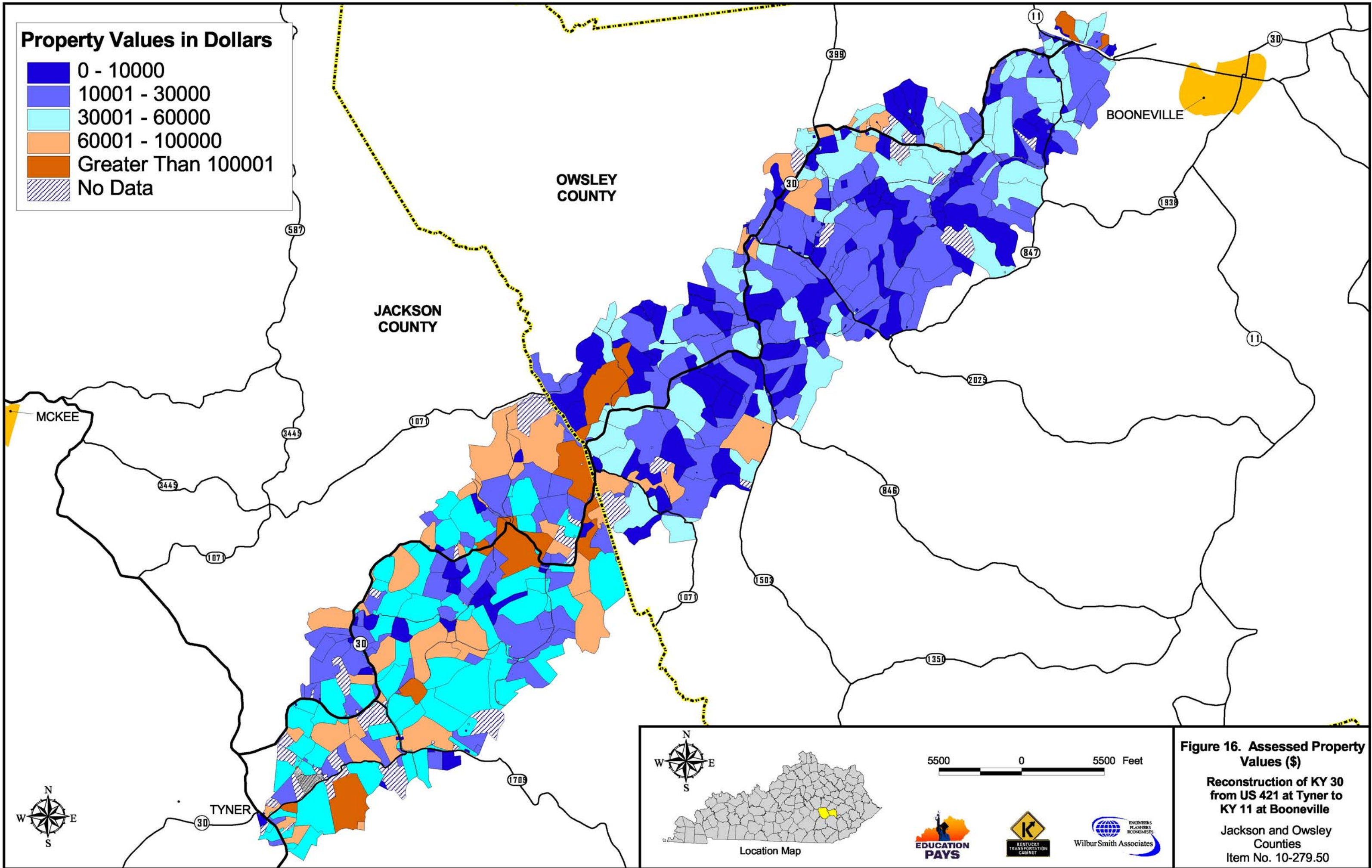
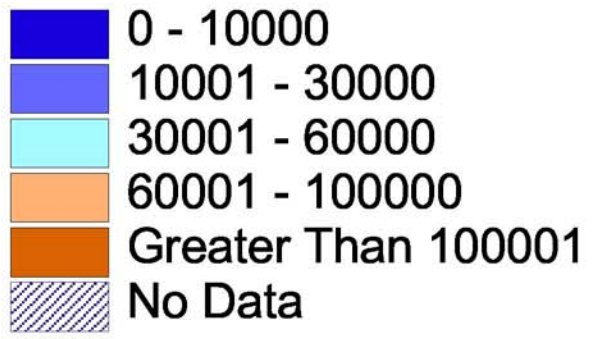
Figure 15. Geology of Corridor D - H

Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville

Jackson and Owsley Counties
Item No. 10-279.50



Property Values in Dollars



5500 0 5500 Feet



Figure 16. Assessed Property Values (\$)
Reconstruction of KY 30 from US 421 at Tyner to KY 11 at Booneville
Jackson and Owsley Counties
Item No. 10-279.50