

Figure 1.3.3\_1: Modified from the Geologic Map of Tennessee, East-Central Sheet after Hardeman, William D., 1966. Colors represent varying rock units. Note the southwest-northeast trend of bedrock in the Valley and Ridge Province of the Appalachian Mountains of Tennessee.

Soil Map—Roane County, Tennessee  
(Kingston Fossil Plant)

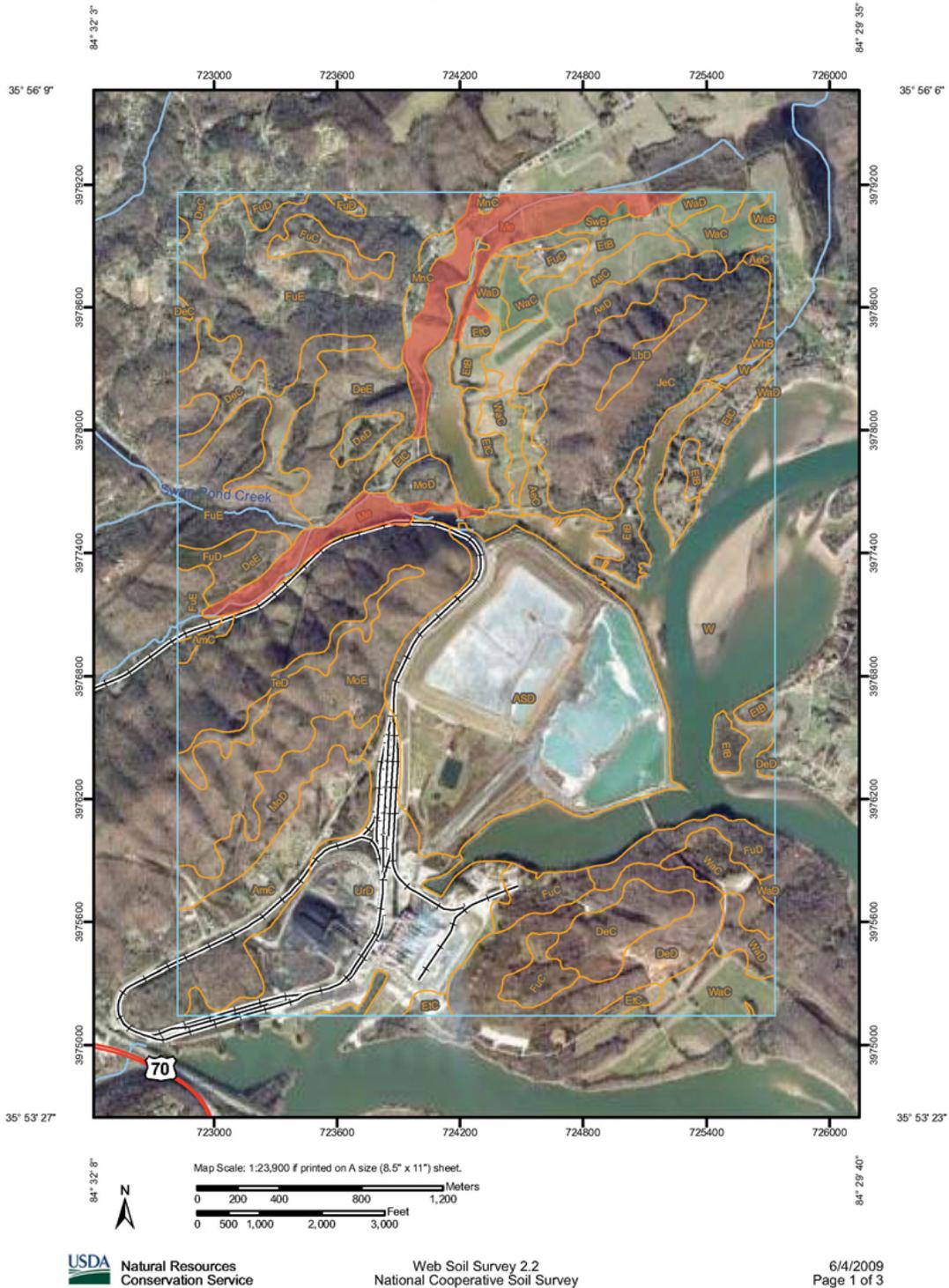


Figure 1.3.3\_2: Soils map of the project area. The Melvin Series, highlighted in red, is the soil expected to correspond to native soil beneath the ash disposal area. The “Percent Clay” map was chosen for the highlighting.

Soil Map—Roane County, Tennessee  
(Kingston Fossil Plant)

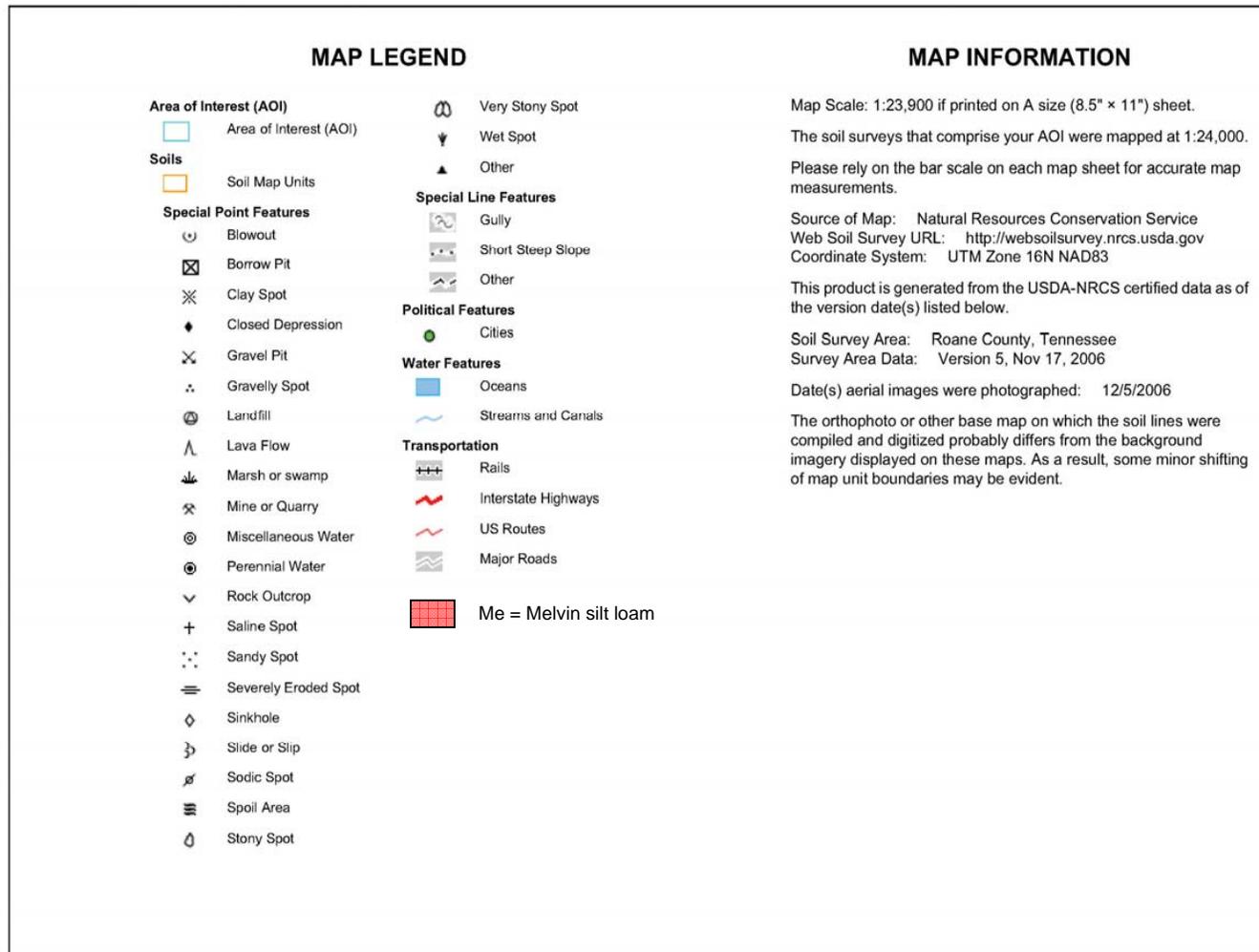
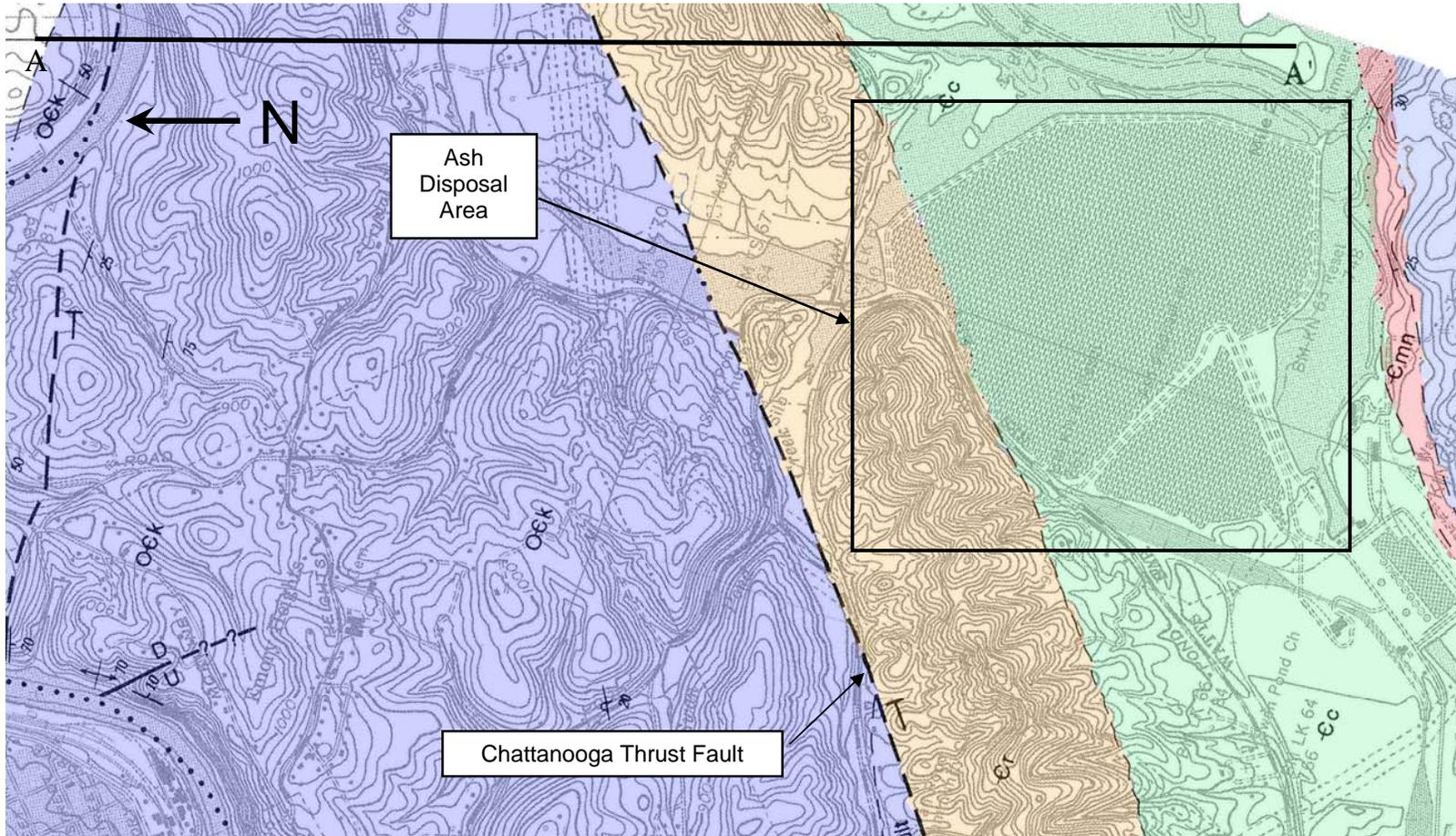


Figure 1.3.3\_2A: Map legend for Figure 1.3.3\_2.

## Map Unit Legend

Roane County, Tennessee (TN145)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AeC	Allen loam, 5 to 12 percent slopes	65.5	2.3%
AeD	Allen loam, 12 to 20 percent slopes	36.5	1.3%
AmC	Armuchee silt loam, 5 to 12 percent slopes	111.6	3.9%
ASD	Ash Disposal Area	377.3	13.1%
DeC	Dewey silt loam, 5 to 12 percent slopes	119.6	4.1%
DeD	Dewey silt loam, 12 to 20 percent slopes	111.2	3.8%
DeE	Dewey silt loam, 20 to 45 percent slopes	95.8	3.3%
EtB	Etowah loam, 2 to 5 percent slopes	70.5	2.4%
EtC	Etowah silt loam, 5 to 12 percent slopes	85.7	3.0%
FuC	Fullerton-Pailo complex, 5 to 12 percent slopes	69.2	2.4%
FuD	Fullerton-Pailo complex, 12 to 20 percent slopes	47.9	1.7%
FuE	Fullerton-Pailo complex, 20 to 35 percent slopes	274.7	9.5%
JeC	Jefferson loam, 5 to 12 percent slopes	162.4	5.6%
LbD	Lily loam, 12 to 20 percent slopes	11.3	0.4%
Me	Melvin silt loam, frequently flooded	105.8	3.7%
MnC	Minvale gravelly silt loam, 5 to 12 percent slopes	13.9	0.5%
MoD	Montevallo channery silt loam, 12 to 20 percent slopes	65.1	2.3%
MoE	Montevallo channery silt loam, 20 to 35 percent slopes	259.1	9.0%
SwB	Swafford loam, 2 to 5 percent slopes	5.9	0.2%
TeD	Townley silt loam, 12 to 20 percent slopes	26.1	0.9%
UrD	Urban land, 5 to 20 percent slopes	219.2	7.6%
W	Water	393.9	13.6%
WaB	Waynesboro loam, 2 to 5 percent slopes	3.9	0.1%
WaC	Waynesboro loam, 5 to 12 percent slopes	116.9	4.0%
WaD	Waynesboro loam, 12 to 20 percent slopes	36.2	1.3%
WhB	Whitwell loam, 1 to 4 percent slopes, occasionally flooded	3.4	0.1%
<b>Totals for Area of Interest</b>		<b>2,888.9</b>	<b>100.0%</b>

Figure 1.3.3\_2B: Summary of map units illustrated on Figure 1.3.3\_2.



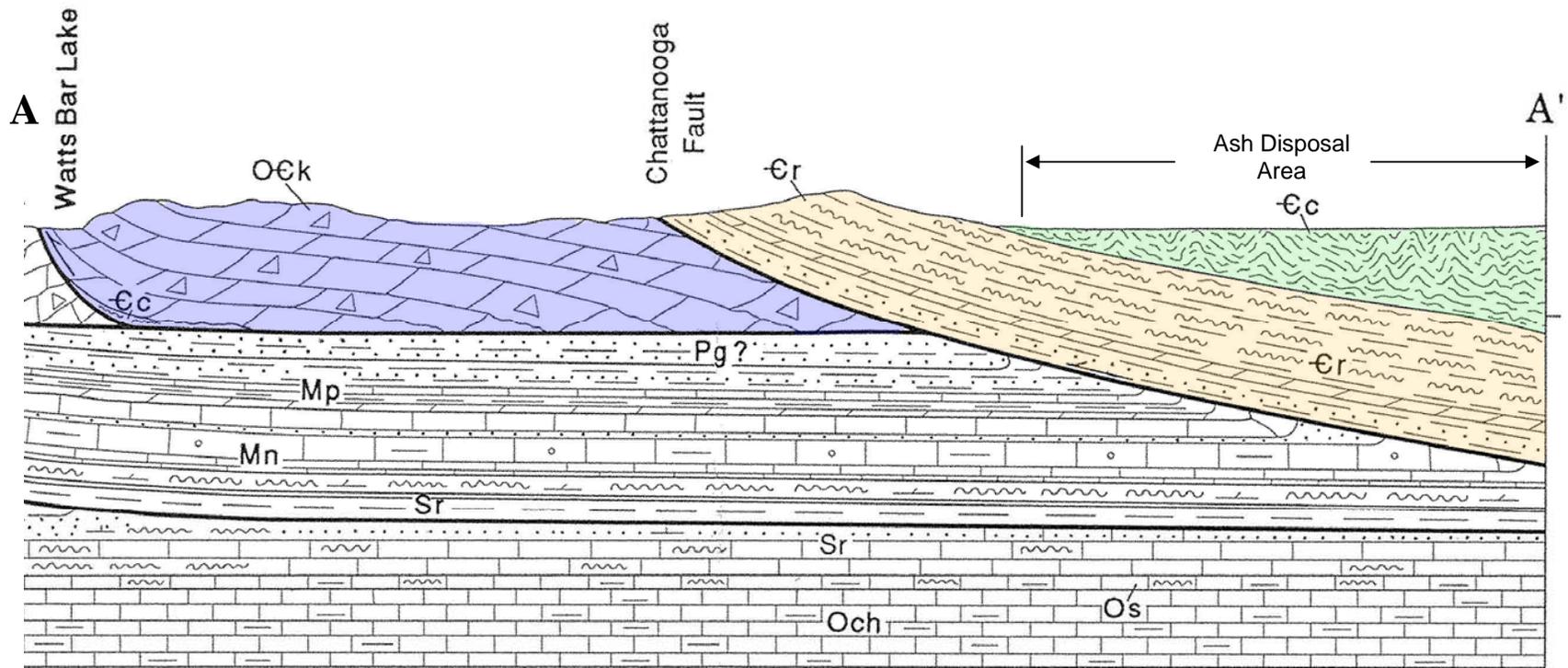
 Ordovician/Cambrian Knox Group

 Cambrian Conasauga Shale

 Cambrian Maynardville Limestone

 Cambrian Rome Formation

Figure 1.3.3\_3: Geologic map of the ash disposal area on a portion of the Geologic Map of the Harriman Quadrangle, Tennessee (Moore, J.L., et. al., 1993).

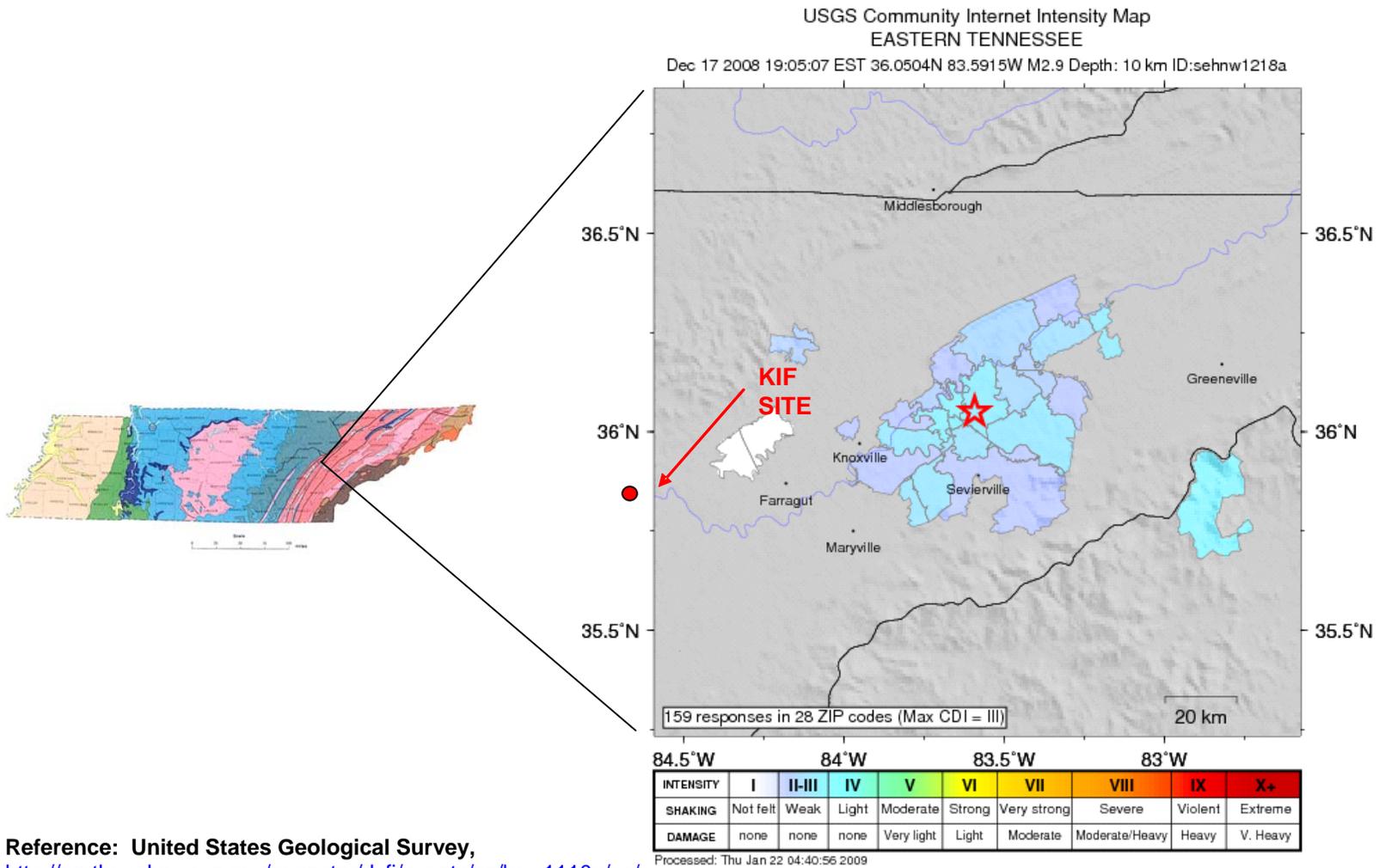


**Oek** Ordovician/Cambrian Knox Group

**Ec** Cambrian Conasauga Shale

**Er** Cambrian Rome Formation

Figure 1.3.3\_4: Geologic cross section beneath the Ash Disposal Area. Cross section modified after the cross section included with the Geologic Map of the Harriman Quadrangle, Tennessee (Moore, J.L., et. al., 1993).

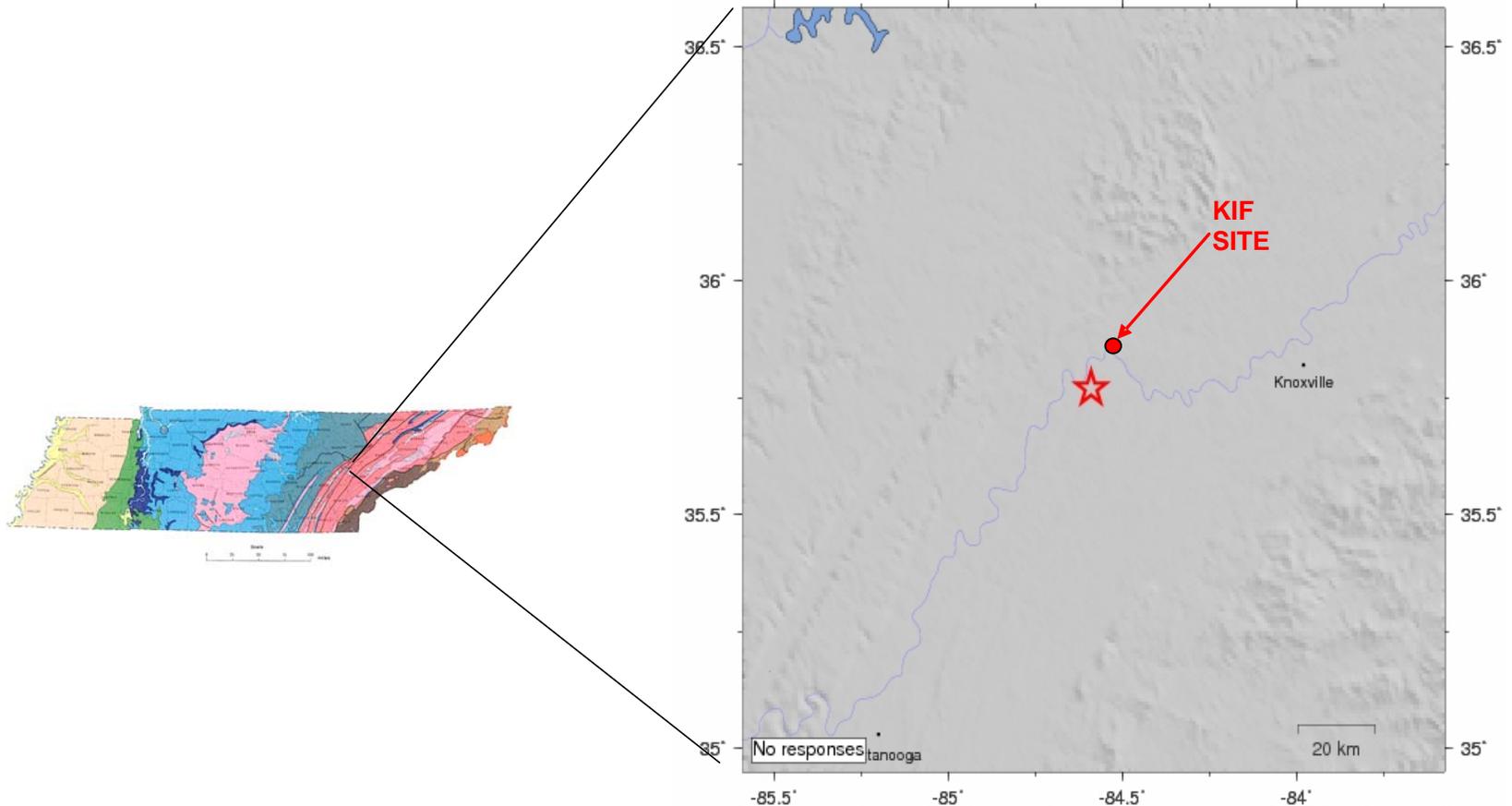


Reference: United States Geological Survey,  
<http://earthquake.usgs.gov/eqcenter/dyfi/events/se/hnw1110a/us/>

Figure 1.3.3\_5: Location of the earthquake of greatest magnitude within 50 miles of the Kingston Fossil Plant within 8 weeks of the failure. The quake was reported at M2.9 at a location approximately 4 miles south-southwest of New Market, Tennessee at a depth of 10 km.

USGS Community Internet Intensity Map  
EASTERN TENNESSEE

Nov 9 2008 21:29:01 EST 35.77N 84.59W M2.5 Depth: 24 km ID:sehnw1110a



Reference: United States Geological Survey,  
<http://earthquake.usgs.gov/eqcenter/dyfi/events/se/hnw1110a/us/>

INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy

Figure 1.3.3\_6: Location of the earthquake in closest proximity to the Kingston Fossil Plant within 8 weeks of the failure. The quake was reported at M2.5 at a location approximately 8 miles southeast of Rockwood, Tennessee (5 miles south of the site) at a depth of 24.9 km.



Photo 17: Outcrop of Conasauga Shale at the intersection of State Highway 70 and Pine Ridge Road. View looking north-northeast.

Table 1.3.3\_T1  
 Seismic Events in Tennessee  
 September 30 through December 17, 2008  
 TVA - Kingston  
 Dredge Cell RCA  
 Kingston, Tennessee

MAG	DATE (y/m/d)	LOCAL-TIME (h:m:s)	LAT (deg)	LON (deg)	DEPTH (km)	LOCATION		Approx. Distance from Kingston (mi)	
						(km)	(mi)		
1.1	9/30/2008	18:46:47	35.540N	84.690W	17.7	10	6	ENE of Decatur, TN	23
1.1	10/1/2008	21:43:00	36.200N	89.480W	6.9	7	4	S of Ridgely, TN	>200
1	10/6/2008	18:46:58	35.520N	84.210W	9.2	8	5	SSE of Vonore, TN	21
1.3	10/11/2008	3:37:22	36.470N	89.560W	7.6	13	8	NW of Tiptonville, TN	>200
1.8	10/13/2008	5:02:09	36.470N	89.550W	9.2	12	8	NW of Tiptonville, TN	>200
2.5	10/25/2008	18:47:17	36.050N	83.600W	15.9	7	5	SW of New Market, TN	51
1.4	10/30/2008	1:54:35	36.450N	89.540W	8.2	10	6	NW of Tiptonville, TN	>200
2.2	11/1/2008	7:18:57	35.770N	84.000W	8.6	3	2	WNW Maryville, TN	24
1.6	11/1/2008	1:47:48	36.420N	89.510W	7.6	6	4	NW of Tiptonville, TN	>200
1.6	11/6/2008	20:30:33	36.470N	89.520W	6.6	11	7	NNW of Tiptonville, TN	>200
2.5	11/9/2008	20:29:01	35.770N	84.590W	24.9	14	8	SE of Rockwood, TN	<5
2.6	11/14/2008	12:20:56	36.400N	89.580W	11.2	10	6	W of Tiptonville, TN	>200
1.6	11/18/2008	5:28:37	36.421N	89.527W	7.9	7	4	NW of Tiptonville, TN	>200
1.6	12/11/2008	3:37:30	36.290N	89.520W	8.4	4	3	NW of Ridgely, TN	>200
1.3	12/17/2008	22:40:21	36.475N	89.485W	4.9	11	7	N of Tiptonville, TN	>200
2.9	12/18/2008	18:05:07	36.050N	83.590W	10	7	4	SSW of New Market, TN	51

- Earthquakes within approximately 50 miles of Kingston.

- Earthquake in closest proximity to Kingston.

**Note: Modified after United States Geological Survey web site: <http://earthquake.usgs.gov/regional/ceus/earthquake/>**