CHAPTER 3

Affected Environment

This Chapter of the Draft EIS contains relevant information about the natural and human environment that could be affected by the Proposed Agency Action.

This information establishes a baseline with which to measure the context and severity of potential impacts.

Increasing detail is provided as the geographic scope decreases. An overview of the regional, or watershed-wide environment is provided as context for discussion of cumulative impacts in Section 4. A more focused overview is provided at the county level, where predominantly nonstructural alternative measures are proposed. The most specific review is for portions of the project study area where structural measures are proposed.

3.0 Affected Environment

3.1 Land Use and Land Cover

The Levisa Fork Basin includes approximately 2,236 square miles of Kentucky and Virginia, and includes all or parts of Pike, Floyd, Johnson, Knott, Magoffin, Morgan, and Lawrence Counties, Kentucky and Dickenson, Wise and Buchanan Counties, Virginia. The basin is primarily a rural landscape interspersed with small to medium-sized communities dotting the river valley. The six major land use categories within the basin are forest, urban, mining, agriculture, residential, and industrial. Forests cover approximately 80 percent of the basin.

Relative to forested land, urban land areas are small and scattered. Approximately ten percent of the land area is suitable for urban development, and most of that area is located within the floodplain. Urban uses include residential, city parks, industrial, commercial, institutional, and other developed areas.

Substantial areas of the Kentucky portion of the basin in Pike, Floyd, and Johnson counties have been mined over the years. Mining and associated reclamation activities have resulted in ongoing pollution of the Levisa Fork and many of its tributaries.

Agricultural uses account for about five percent of the land area, mostly in Floyd, Johnson and Lawrence counties. Little or no commercial crop production occurs, and many farms have been abandoned over the past 30 years. For the 87.9 river miles between Fishtrap Lake and the Tom's Creek in Johnson County, the lower Levisa Fork is designated as a Class 3 River with respect to agricultural lands. This Class 3 designation is the lowest of the three classifications but does indicate that this section of the Levisa Fork has some amounts of prime farmland, farmable land, and/or prime timberland (KY Rivers Assessment, 1992).

Industrial development has been hampered by the limited amount of developable, flood-free land, and is not a major land use category, except for mining and transportation systems. Existing industries include sawmills, mining equipment fabrication and assembly, and small service industries. Commercial use is generally clustered along major roads.

The largest institutional land (land for Federal, state and local government uses) are schools, colleges and county and state transportation facilities. Institutional land use has increased due to new government offices and schools (USACE 1997).

The basin has few restrictions on land use, except for local floodplain management ordinances and floodplain zoning. The Big Sandy Area Development District (BSADD) is responsible for area-wide planning in the eastern portion of Kentucky and includes Floyd, Johnson, Magoffin, Martin and Pike counties.

3.1.1 Pike County

Percentages of land use in Pike County are similar to that in the watershed as a whole, with forest as the predominant land cover (more than 85 percent). Major communities within Pike County include Pikeville, Elkhorn City, Belfry, Phelps, Virgie, Coal Run, Hellier, Huddy, and McCarr-Buskirk. Pike County is the largest county in Kentucky with a land area of 502,182 acres and a water area of 2,624 acres for a total area of 504,806 acres. Most acreage in the county is privately owned or government-held woodland with some large land tracts owned by mining companies. **Pike County is the largest underground bituminous coal-producing county in the United States**. Farming has decreased since the 1950s as farmland is lost to residential and commercial development. In 1985, only 2,000 acres or about 0.4 percent of the total land met the USDA requirements for prime farmland designation. Agriculture represented just 0.2 percent of the labor force of Pike County in 1998. Because of limited flat land, crop cultivation is difficult throughout the county. In 1997, Pike County had a total of 37 farms using 5,851 acres of farmland. Of this, total cropland comprised 1,440 acres. Land in farms decreased five percent from 1992 to 1997. Land cover in Pike County is shown in **Figure 3-1** (BSADD).

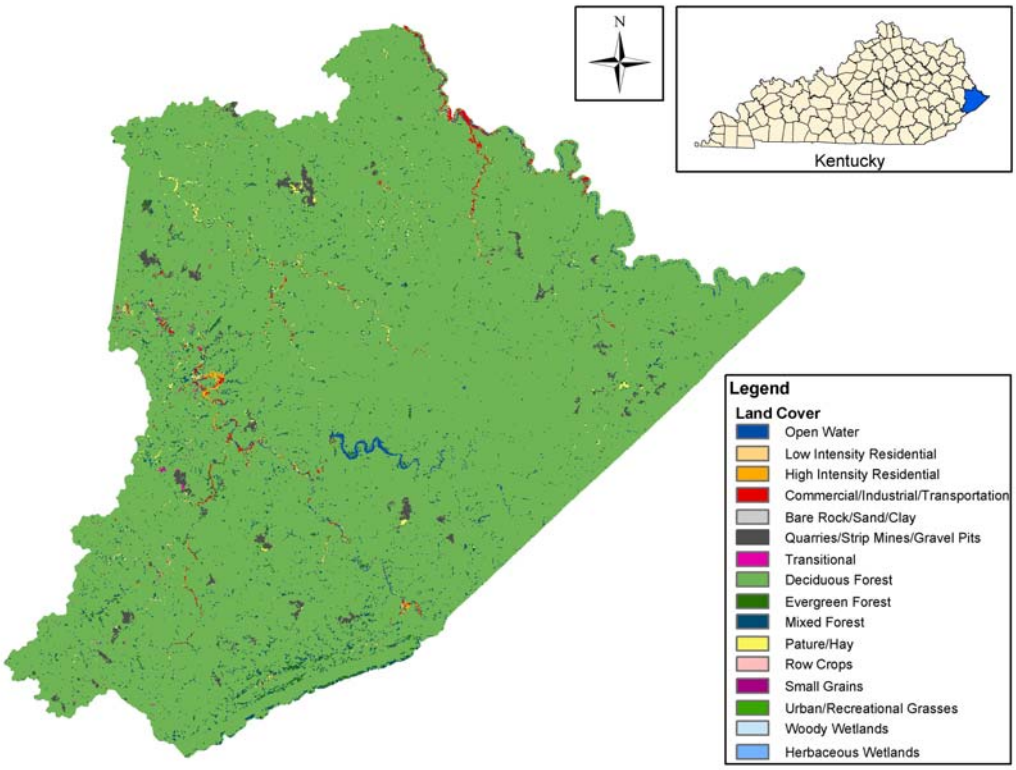


Figure 3-1. Pike County Land Cover

Pikeville is the only municipality within Pike County that has land use zoning. Areas within the North Pikeville LPP area are zoned either R-1 (One-Family Residential District), or C-2 (Highway Commercial District).

3.1.2 Land Use and Land Cover Types

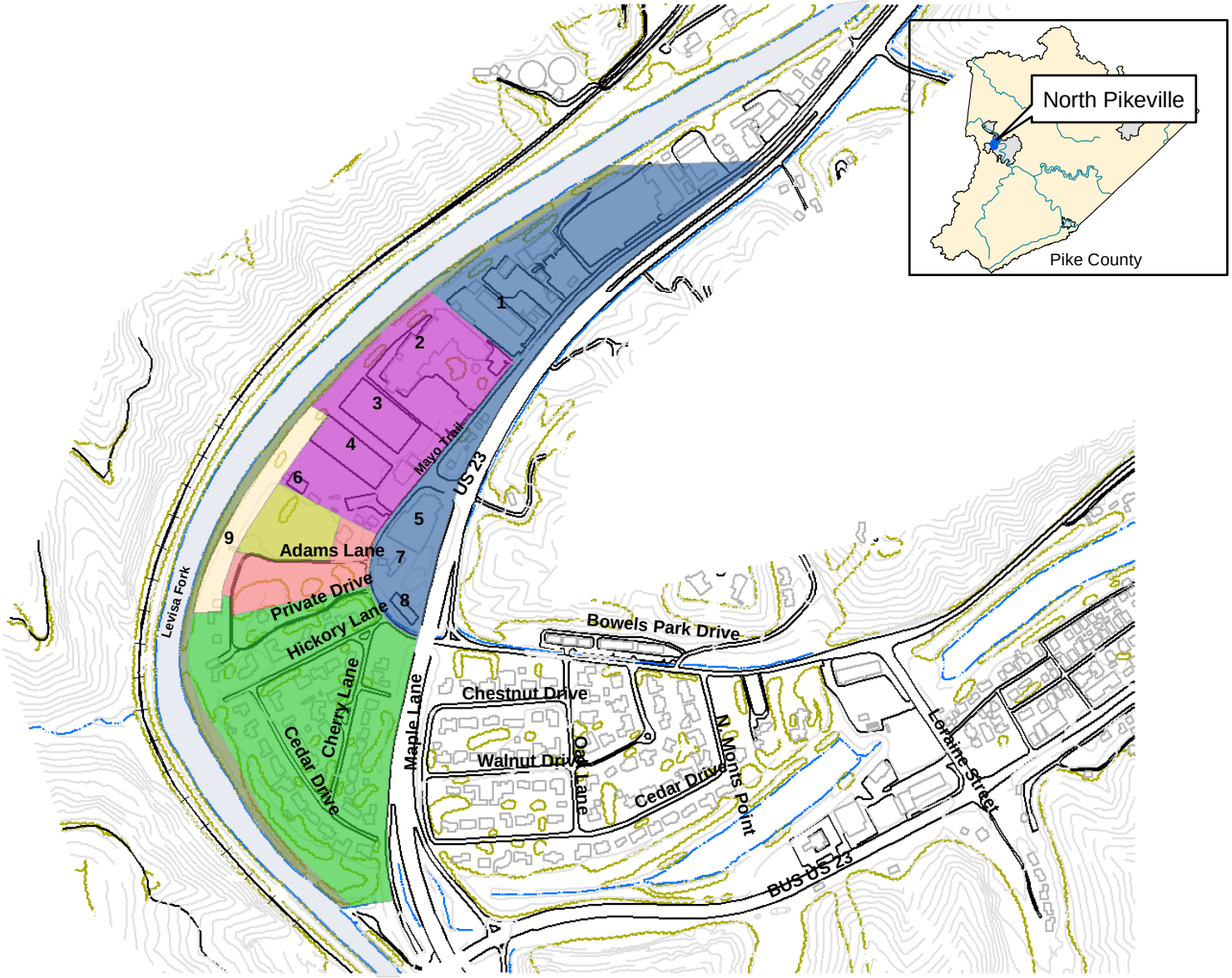
Land use and cover types used in this document include the following:

- *Residential* - includes apparent residential structures, driveways, house gardens, and surrounding maintained landscapes.
- *Commercial* - includes stores, shops, hotels/motels, gas stations, convenience stores and apparent access, parking, loading and delivery areas.
- *Urban/Industrial* - includes manufacturing, handling and storage facilities, and associated parking, circulation, loading and other outdoor work areas.
- *Institutional* - includes public buildings, such as schools and adjacent athletic fields.
- *Old Field* - includes agricultural areas, pasture, hay fields, row crops and all associated residences, barns, feed lots, small ponds and other farm-related features. Also includes early successional areas dominated by a variety of grasses and forbs.
- *Maintained* - includes larger, non-agricultural, routinely mowed areas (typically not roadsides) and public parks.
- *Forested* - includes bottomland hardwood forests, early sere riparian vegetation and mixed hardwoods.
- *Shrub/Scrub Upland* - includes previously cleared areas which have been allowed to revegetate. These early successional areas are dominated by a variety of herbaceous species, shrubs, and seedlings.
- *Water* - includes the open surface waters of the Levisa Fork and Ratliff Branch and sewage lagoons and larger ponds in the study area.

3.1.3 North Pikeville Area

The North Pikeville area portion of the project study area is mostly developed with residential, institutional and commercial uses. Undeveloped land is almost exclusively found within the riparian corridor of the Levisa Fork. The predominate land use is residential, with single-family homes located in approximately the southern half of the area, west of Mayo Trail. Institutional land use includes Pikeville High School, which includes the school structure, athletic fields, and parking areas, and the KTC maintenance garage. Commercial land use occurs west of Mayo Trail, with the Cedar Trail Plaza, a gas station, and the Community Trust Bank. Commercial land use predominates to the immediate north of the KTC garage. Land use and land cover are shown in **Figure 3-2.**

1. KTC Maintenance Center
2. Pikeville High School
3. Athletic Field
4. Football Field
5. Community Trust Bank
6. Playground and Shelter
7. Marathon
8. Cedar Tree Plaza
9. Cell Tower



Legend

Land Use/Land Cover	Surface Features
Commercial	
Forested	Contours
Institutional	Streams
Maintained Lawn	Streets/Roads
Old Field	Structures
Residential	Vegetation
Scrub/Shrub Upland	Rail Line

N

0 500 1,000 Feet

0 100 200 300 Meters

US Army Corps of Engineers
Huntington District

Figure 3-2
North Pikeville Land Use/Land Cover

3.1.4 Coal Run Village Area

The Coal Run Village portion of the project study area includes a mix of residential, commercial, industrial, and institutional land use. Undeveloped land is found within the riparian corridor of the Levisa Fork and the outlets of Ratliff Branch and Weddington Branch, which traverse the study area and discharge into the Levisa Fork. The original Coal Run Village itself (the area between AEP and Big K) has mixed development, with small commercial establishments concentrated closest to US 23 and residential uses mostly between Middle Street and Ratliff Street. Institutional land use includes an outpost of the Kentucky State Police, Coal Run Village Hall, and the Coal Run Volunteer Fire Department. Industrial uses include East Kentucky Beverage and Kentucky Crystal Water. Several professional offices, a church, and a daycare are also located in the original Coal Run Village section. Twelve residences are located in the Scott Addition, a subdivision at the eastern end of the structural alternative area. Twenty-three residences are located in the Combs Drive area. Eight residences are located in the Stanley Addition in the western portion of the study area. Commercial uses outside the original Coal Run Village area include Big K, Big Lots, a mobile home repossession center, a car dealership, an AEP substation, and various smaller establishments. Land use and land cover are shown in **Figure 3-3.**

3.1.5 Borrow Areas

Land use and land cover for borrow areas are shown in **Figure 3-4.** Information was obtained from aerial photos, map review, and site reconnaissance. Borrow Area #1 is located in a rural setting with scattered residences. Borrow Area #2 has been cleared of vegetation except for a few trees and is located within a mixed-use area (rural residential with a small commercial enterprise).

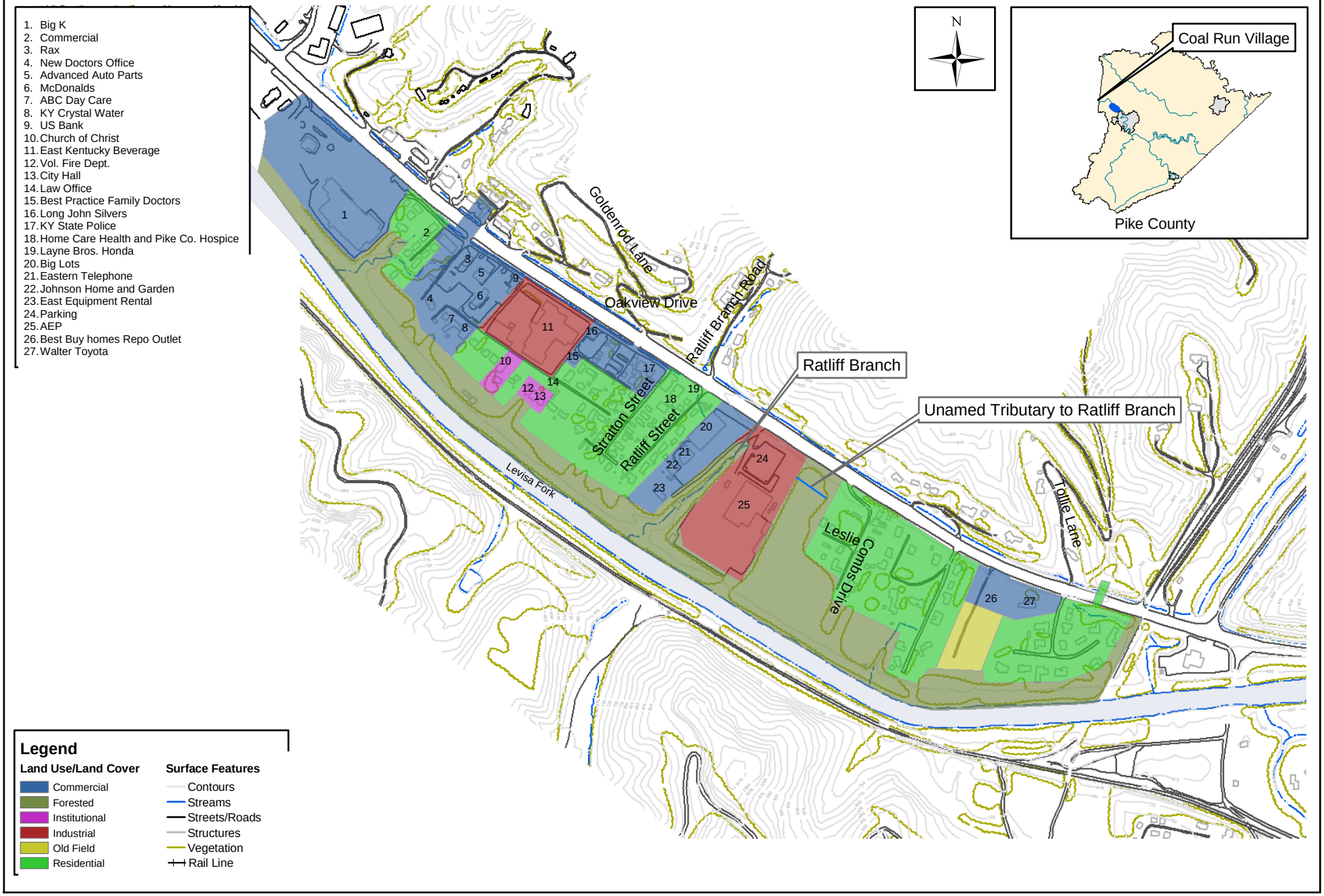


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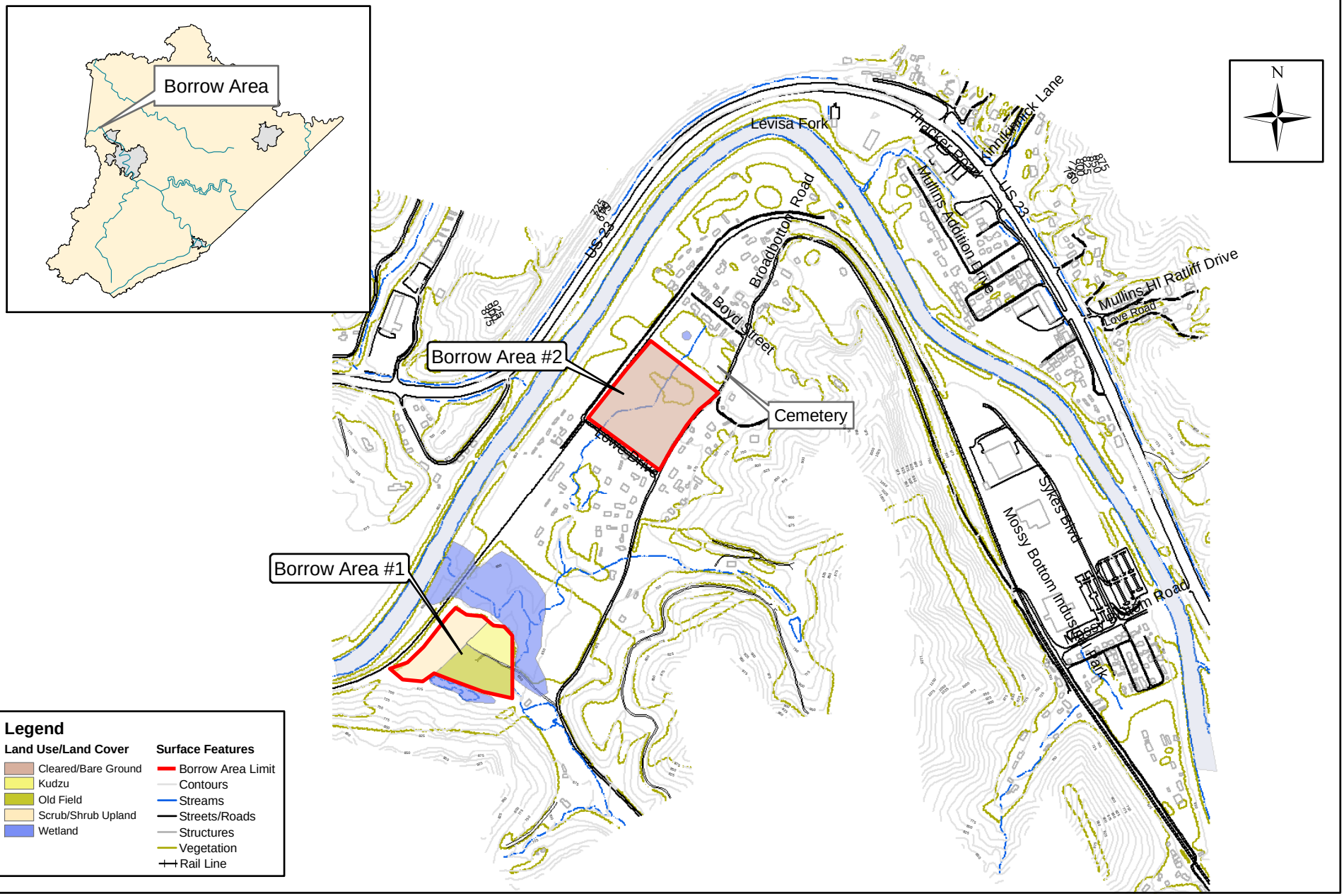
Figure 3-3
Coal Run Village Land Use/Land Cover



US Army Corps of Engineers
Huntington District

Figure 3-4
Proposed Borrow Areas Land Use/Land Cover

3.2 Topography and Drainage

The physiographic provinces of Kentucky are shown in **Figure 3-5**. The Levisa Fork Basin is part of the Eastern Kentucky Coal Fields physiographic region and the Central Appalachians, Dissected Appalachian Plateau ecoregion.

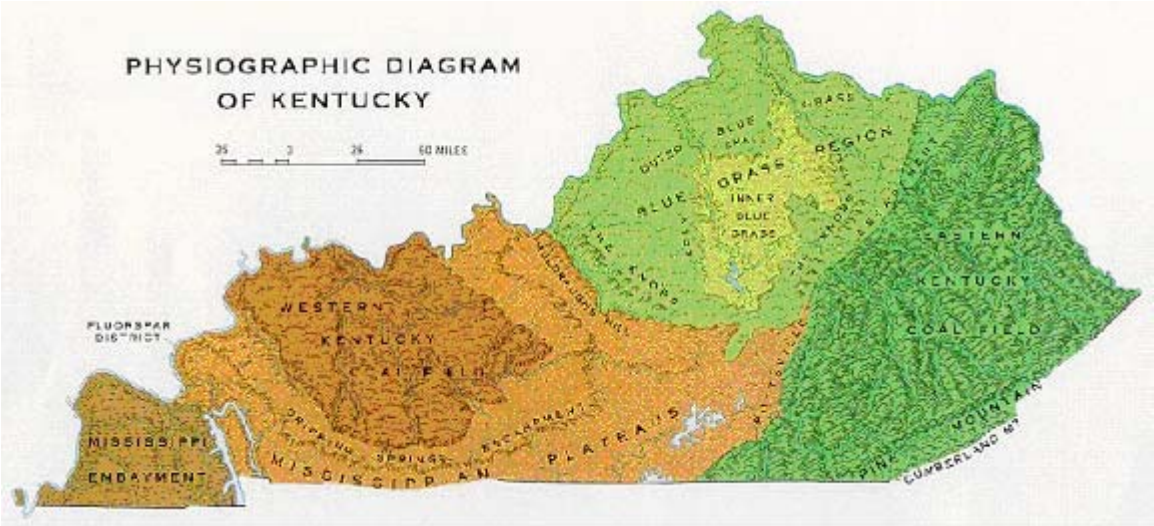


Figure 3-5. Physiographic Regions of Kentucky

The Levisa Fork River system, a tributary of the Big Sandy River, is the major surface water drainage feature in the project study area. The Levisa Fork Basin encompasses approximately 2,326 square miles and is approximately 164 miles long. The Levisa Fork and its tributaries are typical of most Appalachian rivers in that they have frequent, extreme fluctuations in flows due to either large regional weather patterns or short duration thunderstorm activities. The basin, like the Eastern Kentucky Coal Fields physiographic region of which it is a part, is characterized by moderately to steep sided ridges and deep, twisting, narrow valleys. Vertical relief ranges from 100 feet at the mouth of the Levisa Fork near Louisa, Kentucky to 1,600 feet in the Breaks area of the Russell Fork near the Virginia border, approximately 106 miles upstream. Flat and moderately sloped areas are located within or adjacent to river floodplains (USACE, 1998).

Topography within the North Pikeville and Coal Run Village LPP construction work limits and borrow areas is generally flat and typical of a valley bottom floodplain. Most of the Levisa Fork River corridor in these areas has an overbank area which lies between the flat, developed areas and the generally steep bank of the Levisa Fork. The opposite bank of the Levisa Fork in these areas is very steep, with minimal flood storage.

3.3 Geology and Soils

3.3.1 Geology

The eastern portion of Kentucky lies within the Eastern Kentucky Coal Fields region, which is part of the larger Cumberland Plateau region of the eastern United States. Pike County is located in the central easternmost portion of this region. The Eastern Kentucky Coal Field region is characterized by relatively flat-lying layers of alternating sequences of Pennsylvanian Breathitt Group sedimentary rocks. Pike County ranges in elevation from the lowest valley at 650 feet to the crest of Pine Mountain at 3,200 feet above mean sea level (AMSL). The topography is steep and rugged.

Seismic activity in Eastern Kentucky is generally not significant. Most of the significant seismic activity recorded in Kentucky occurred in the western part of the state, near the Mississippi River.

The chief mineral resource in the area is coal. No coal mining is conducted within the North Pikeville and Coal Run Village study areas, or within the potential borrow areas. Oil and gas exploration/production also occurs in the general area. No gas wells are mapped within the North Pikeville Study Area. Three gas wells are shown on the USGS Broad Bottom Geologic Quadrangle Map depicting the Coal Run Village Study Area. Alluvium deposits have potential use for sand and gravel in general construction, and shale is a potential source for clay for use in brick and tile. Sandstone from the Breathitt Group has been used for various construction related materials.

- **North Pikeville and Coal Run Village Local Protection Project (LPP) Areas**
  The geology of the North Pikeville and Coal Run Village areas are detailed on the USGS 7.5 minute Geologic Quadrangle Maps for Pikeville (1965), and Broad Bottom (1965), respectively, as shown in **Figures 3-6 and 3-7**. The principal rock types include sandstones, siltstones, shale, and coal. Quaternary alluvium occurs adjacent to the major surface water streams. The alluvium is composed mainly of sandy silt with some pebbly sand lenses. Both the North Pikeville and Coal Run Village study areas are located principally within the mapped alluvium deposits.

  Two types of rock units were noted in these areas. The first type is Qal - Alluvium (includes Colluvium), Clay, Silt, Sand, and Sandy Gravel. The deposits consist of Quaternary alluvium and colluvium, mostly sandy silt with thickest deposits along the Levisa Fork and Johns Creek flood plains. The alluvium locally includes artificial fill. The second rock unit is Pb - Breathitt Group, Sandstone, Shale, and Coal. The Breathitt Group is composed of lower to middle Pennsylvanian sedimentary rocks. Within the study areas the Breathitt is characterized by fine to medium grained, sandstone and shale units.

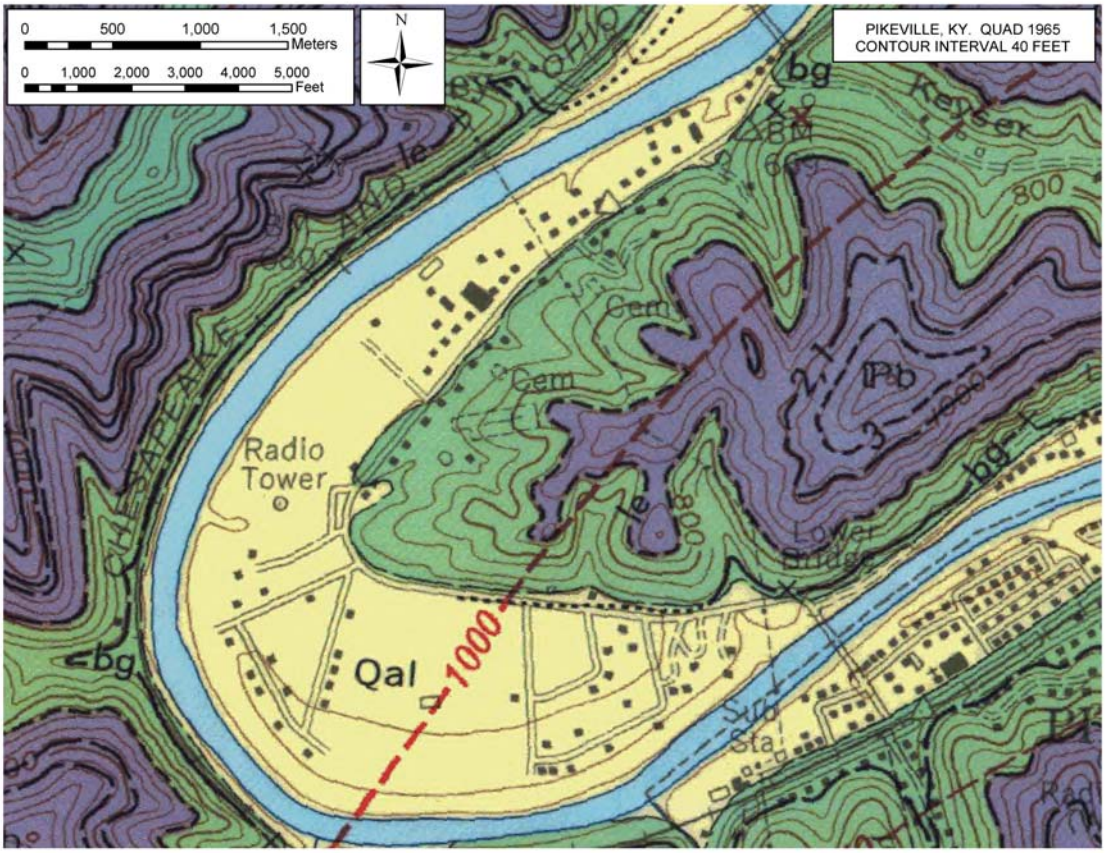


Figure 3-6. Geologic Quadrangle Map for Pikeville

The USACE conducted preliminary investigations, including soil borings, in September 2001 in both the North Pikeville and Coal Run Village study areas. Six soil borings, designated C-01-6 through C-01-11, were completed in the North Pikeville study area. Four borings were advanced near the east side of the Levisa Fork. The borings were completed to approximately 70 to 75 feet below the ground surface (bgs), and terminated on weathered shale or sandstone. Two borings completed near US 23 were completed to depths of approximately 11 and 30 feet bgs and terminated on weathered shale and sandstone, respectively. The soils and unconsolidated deposits consisted of up to 20 to 40 feet of clay to sandy clay and silt overlying sands and gravel deposits. Groundwater was encountered from 35 to 40 feet bgs.

Four soil borings, designated C-01-13, and C-01-15 through C-01-17, were completed in the Coal Run Village study area. Two borings were advanced near the east side of the Levisa Fork. The borings were completed to approximately 27 and 75 feet below the ground surface (bgs), and terminated on sandstone and weathered shale, respectively. Two borings completed near US 23 were completed to depths of approximately 60 feet bgs and terminated on weathered shale and sandstone. The soils and unconsolidated deposits consisted of clay and sands overlying sand and gravel deposits. Groundwater was encountered from 20 to 25 feet bgs.

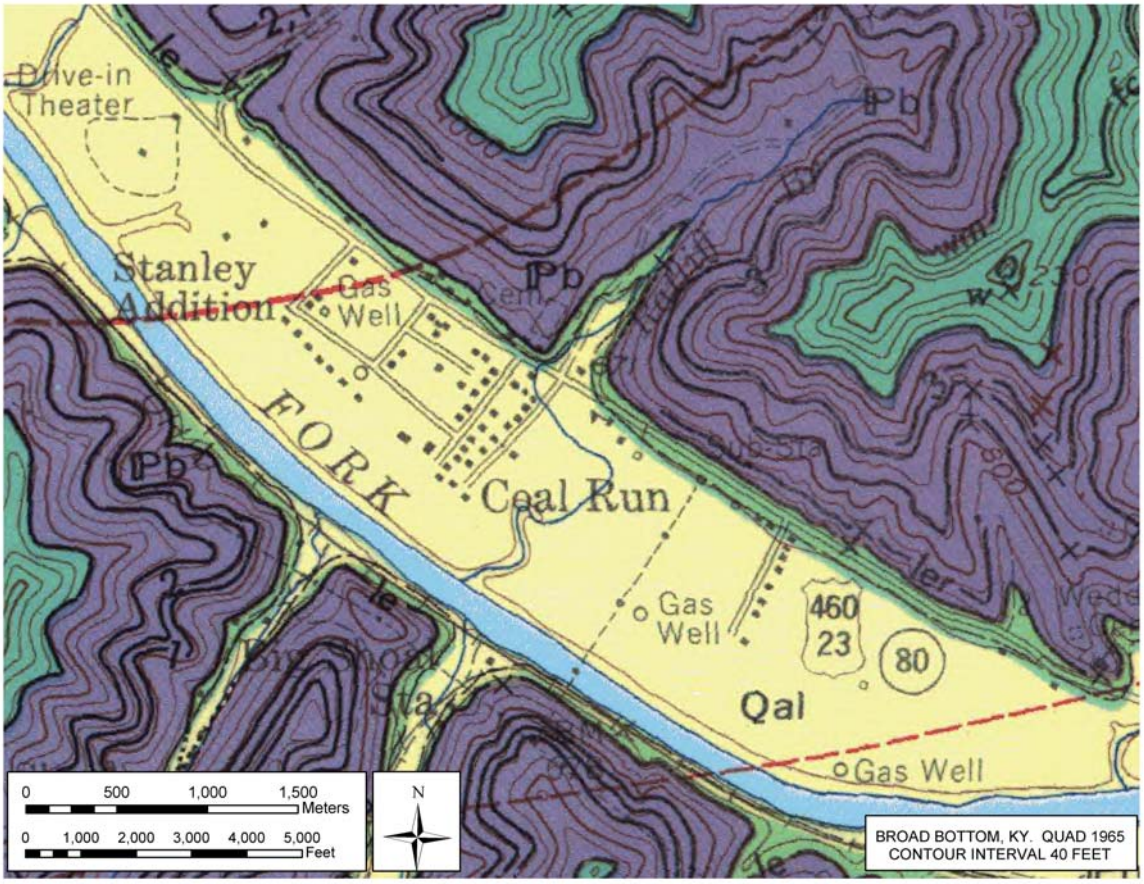


Figure 3-7. Geologic Quadrangle Map for Coal Run Village

- **Borrow Areas:** The two borrow areas lie within Quaternary alluvium deposits and Pennsylvanian sedimentary rock sequences, as shown in **Figure 3-8**.

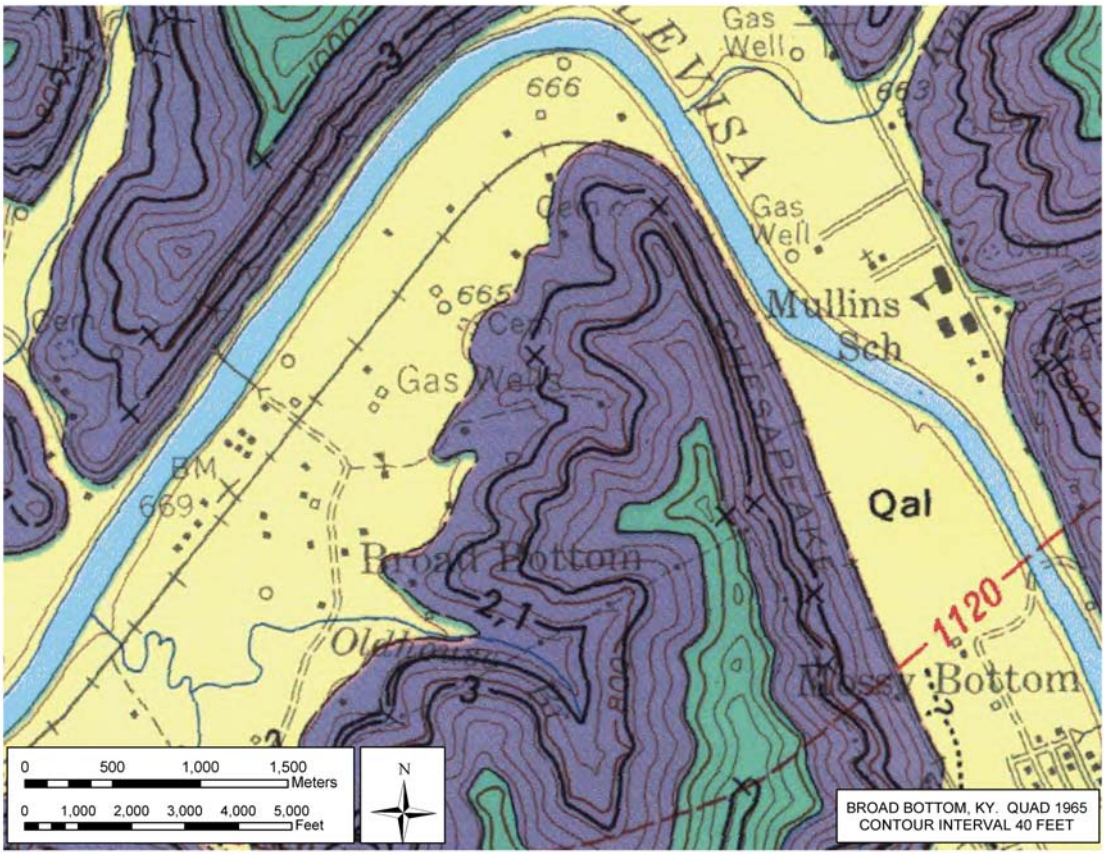


Figure 3-8. Geologic Quadrangle Map for Borrow Areas

3.3.2 Soils

The Soil Survey of Pike County, Kentucky, published by the Natural Resource Conservation Service (NRCS) in 1990 details the soil types found in the area.

- **North Pikeville and Coal Run Village Areas:** The soils in the North Pikeville and Coal Run Village study areas are classified as Nelse-Shelbiana-Udorthents General Soil Map Unit. These soils are deep, nearly level to steep, and well drained with underlying layers of loamy material or loamy subsoil. This series of soils occur on riverbanks, stream terraces, and in reconstructed valleys. Soils maps of the North Pikeville and Coal Run Village Areas are shown on **Figures 3-9 and 3-10**, respectively. Soils Units shown in these figures are presented in **Table 3-1**.

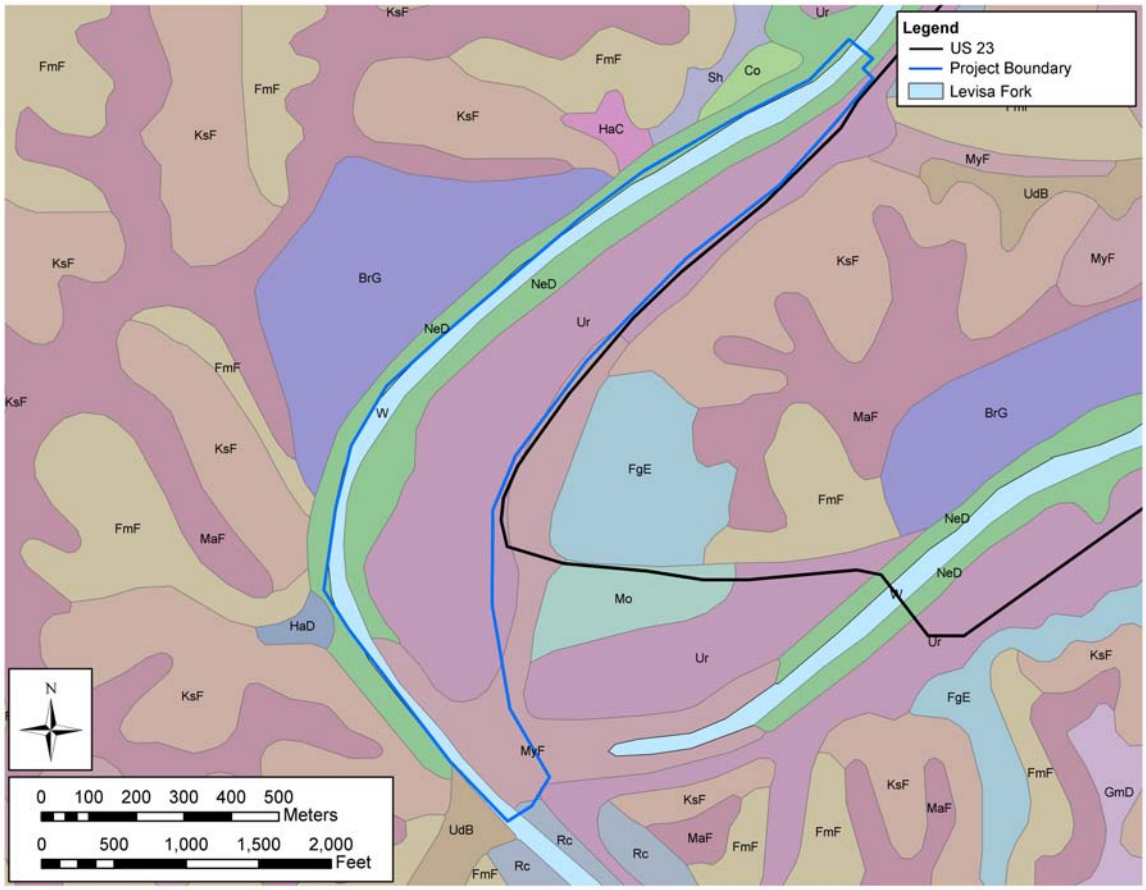


Figure 3-9. Soils Map for North Pikeville

- **Borrow Areas:** Soils within the borrow areas are chiefly Marrowbone-Fedscreek-Kimper-DeKalb General Soil Map Unit. These soils are moderately deep to deep, steep to extremely steep, well drained with a loamy subsoil. These soils are found on ridge crests and mountain side slopes. A soils map of the Borrow Areas is shown on **Figure 3-11**. Soils Units are presented in **Table 3-1**.

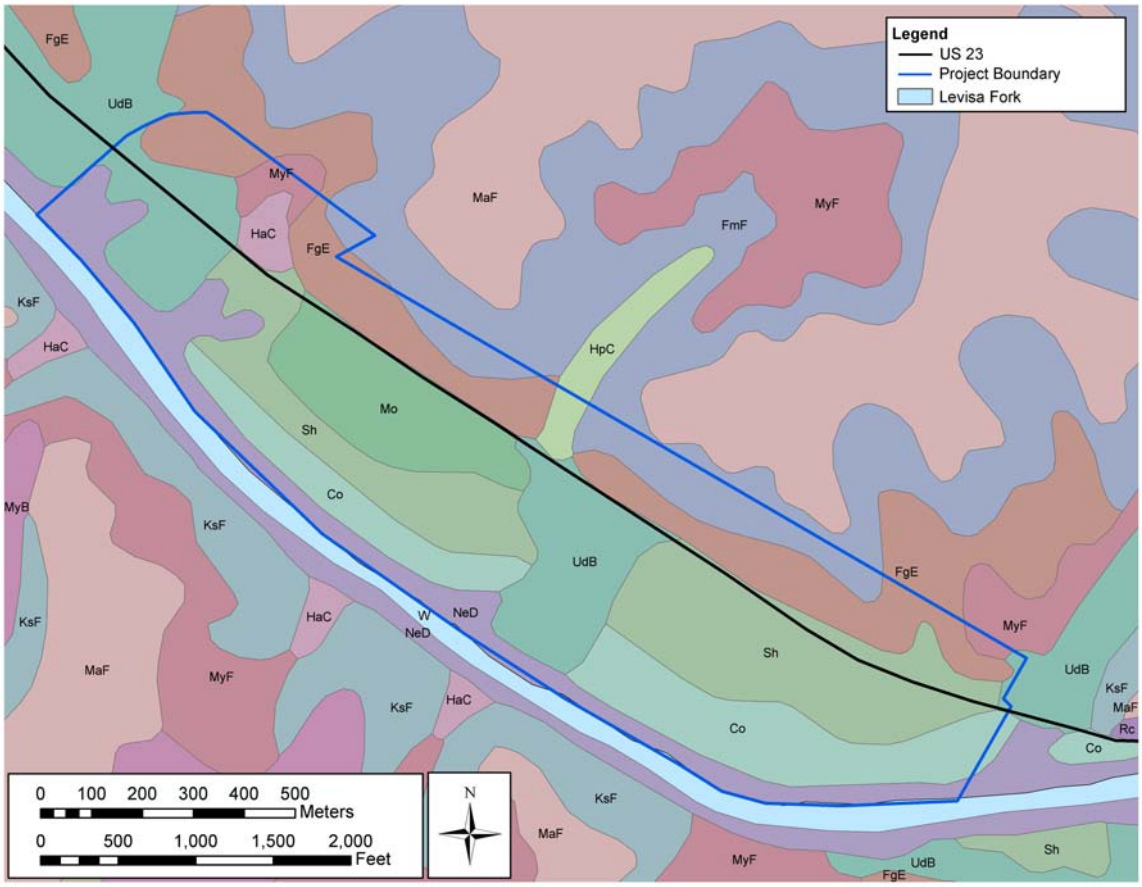


Figure 3-10. Soils Map for Coal Run Village

- **Prime Farmland:** No prime farmland, unique, or State-wide important soils are mapped within the North Pikeville study area. Combs loam (Co) and Shelbiana loam (Sh) are mapped within the construction limits of Coal Run Village study area and within the Borrow areas. These soils are considered well suited for cropland use; however, there has been significant commercial and residential development in the area on which these soils are located, and therefore no commercial crop production occurs in these areas at this time.

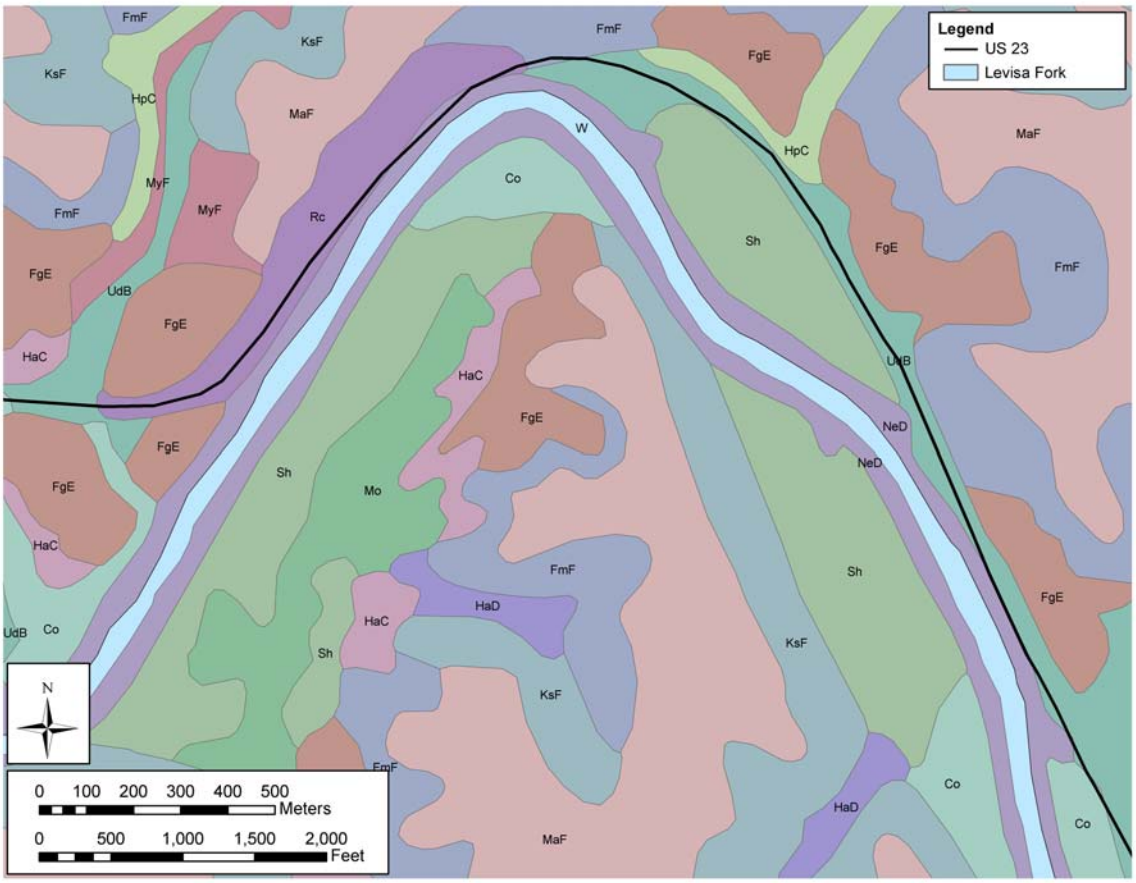


Figure 3-11. Geologic Quadrangle Map for Borrow Areas

Table 3-1. Soil Units in the North Pikeville and Coal Run Village Areas

Co	*Combs fine sandy loam, rarely flooded*	0 - 2 percent	This soil is deep, nearly level, and well drained. It occurs on flood plains and stream terraces of the Levisa Fork. Uniform slopes range from 0 - 2 percent. The natural fertility and moderate organic content make cropland the major use of this soil.	*Prime Farmland*
FgE	*Fedscreek-Gilpin-Marrowbone Complex*	*20 to 50 percent*	This soil is deep and moderately deep, steep and very steep, and well drained. It occurs on foothills and small mountains along major streams. The soil is medium in natural fertility and moderate organic content. These soils are used for woodland and pasture, however, the steepness of the slopes limit the use of modern machinery.	*No*
FmF	*Fedcreek-Marrowbone-Dekalb complex, very stony*	*30 to 80 percent*	This soil is deep and moderately deep, very steep and extremely steep, and well drained. It occurs on mountain side slopes. The soil is medium in natural fertility and moderate in organic content. These soils are used for second growth hardwoods. The steepness of the slopes, erosion hazards, and rocky nature limit the usefulness of these soils for cultivated crops or pasture.	*No*
HaC	*Hayter loam*	*4 to 15 percent*	This soil is deep, gently sloping to moderately steep, and well drained. It occurs on foot slopes and alluvial fans. Uniform slopes range from 0 - 2 percent. The soil is medium in natural fertility and moderate organic content. The soil is used for cultivated crops, producing moderately high yields. Erosion hazard of the soil is severe when cultivated.	*No*
HaD	*Hayter loam*	*15 to 30 percent*	This soil is deep, moderately steep and steep, and well drained. It occurs on foot slopes and alluvial fans. The soil is medium in natural fertility and moderate organic content. The soil is poorly suited for cultivated crops due to the steepness of the slope and severe erosion hazard; however, the soils are used for pasture and hay.	*No*
KsF	*Kimper-Sharondale-Muskingum complex, very stony*	*30 to 80 percent*	This soil is deep and moderately deep, very steep and extremely steep, and well drained. It occurs on mountain side slopes. The soil is medium in natural fertility and high in organic content. These soils are used for second growth hardwoods. The steepness of the slopes, erosion hazards, and rocky nature limit the usefulness of these soils for cultivated crops or pasture.	*No*
Mo	*Melvin silt loam, occasionally flooded*		This soil is deep, nearly level, and well drained. When artificially drained the soil is suitable for cultivated cropland. The soil is suitable for woodlands.	*No*
MyF	*Myra very channery silt loam, stony*	*30 to 70 percent*	This soil is deep, steep and extremely steep, and well drained. This soil is naturally low in fertility and not suited to cultivated crops. The soil is suited for woodland areas. The main concern for this soil is erosion.	*No*
NeD	*Nelse loam, frequently flooded*	*4 to 25 percent*	This soil is deep, gently sloping to steep, and well drained. It occurs on flood plains and stream terraces of the Levisa Fork. Where gently sloping the soil is used for corn, vegetable crops, and pasture. The soil is suited for woodland areas.	*No*
Sh	*Shelbiana loam, rarely flooded*	0 - 2 percent	This soil is deep, nearly level, and well drained. It occurs on terraces along the Levisa Fork. Uniform slopes range from 0 - 2 percent. The natural fertility and moderate organic content make this soil well suited for cropland use.	*Prime Farmland*
UdB	*Udorthents, loamy*	*0 to 6 percent*	This soil is deep, nearly level and gently sloping, and well drained. This soil results from dumping and spreading of fill derived from local roadcuts and mountains. The soil is often used for residential and small commercial developments.	*No*
Ur	*Udorthents-Urban land complex*	*0 to 4 percent*	This soil is deep, nearly level and gently sloping, and well drained. The soil is highly variable due to the mixture of soil types. The soil is used for residential or commercial development.	*No*

3.4 Air Quality and Climate

This section discusses the climate patterns and existing air quality in the vicinity of Pikeville and Pike County.

3.4.1 Climate

The climate for Pike County is typical for the Dissected Appalachian Plateau subregion of the Central Applachian Ecoregion. The subregion has four distinct seasons, with 160-190 mean annual frost-free days. Winters are cold and have a moderate amount of snow, although valley bottoms have intermittent thaws that preclude long-lasting snow cover. Mean temperatures in January are 27°F (minimum) and 47°F (maximum). Summers range from warm on hillsides to very warm in valleys. Mean July minimum temperature in the subregion is 62°F, maximum is 89°F. Spring and fall are typically a smooth transition between the seasons. Normal annual precipitation is adequate for crops. Mean annual inches of precipitation ranges from 42-50 inches in the subregion. (Woods, 2002).

3.4.2 Air Quality

The US Environmental Protection Agency (USEPA) is the primary agency responsible for regulating air emissions to protect air quality throughout the U.S. The primary regulatory authority for air quality in Kentucky is the Department for Natural Resources and Environmental Protection, Bureau of Environmental Protection, Division of Air Pollution.

Air quality control regions are designated by the USEPA pursuant to Section 107 of the Clean Air Act (CAA), as amended. Kentucky is under the jurisdiction of USEPA Region 4 and has ten air quality control regions. Pike County is included in the Appalachian Intrastate Air Quality Control Region, which also includes Bell, Breathitt, Clay, Floyd, Harlan, Jackson, Johnson, Knott, Knox, Laurel, Lee, Leslie, Letcher, Magoffin, Martin, Owsley, Perry, Rockcastle, Whitley, and Wolfe Counties (**Figure 3-12**).

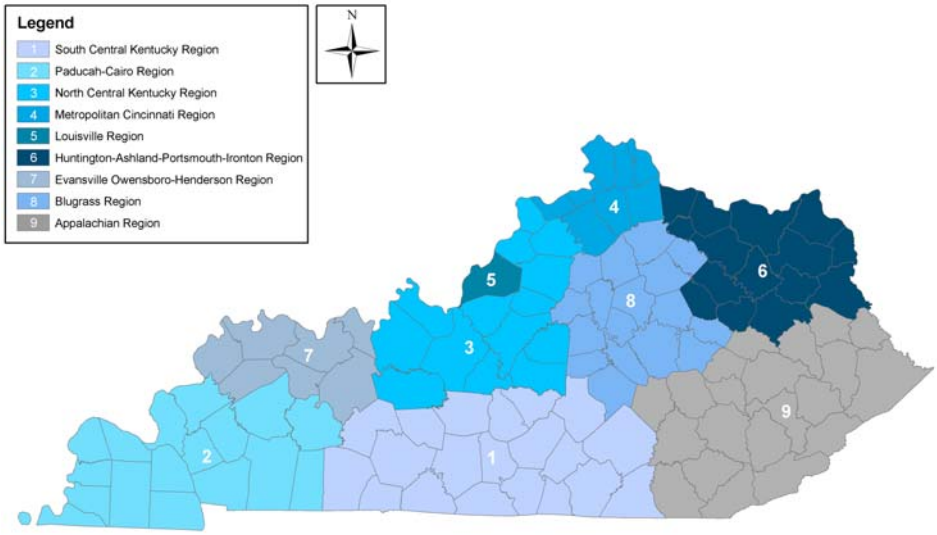


Figure 3-12. Air Quality Control Regions of Kentucky

The ambient air quality in an area can be characterized in terms of whether it complies with the primary and secondary national standards. The USEPA is required to set air quality standards for pollutants considered harmful to public health and welfare. Primary National Ambient Air Quality Standards (NAAQS) set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and prevention of damage to animals, crops, vegetation, and buildings (USEPA 1999a,b). These standards have been established for the following six principal pollutants, called criteria pollutants (as listed under Section 108 of the CAA):

- Carbon monoxide (CO);
- Lead (Pb);
- Nitrogen dioxide (NO_2);
- Ozone (O_3);
- Particulate matter, classified by size as follows:
  - An aerodynamic size less than or equal to 10 micrometers (PM_{10});
  - An aerodynamic size less than or equal to 2.5 micrometers ($PM_{2.5}$); and
- Sulfur dioxide (SO_2).

Criteria pollutants, when they exceed the NAAQS, can be detrimental to public health and the environment and can cause property damage. The NAAQS for each criteria pollutant are shown in Table 3-2 (USEPA 1999b).

Table 3-2. National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Time	Standard	
		Value	Type
National and State Standards			
Carbon monoxide (CO)	1 hour	35 ppm	Primary
	8 hours	9 ppm	Primary
Lead (Pb)	30 days	-	-
	1 quarter	1.5 $\mu g/m^3$	Primary & Secondary
Nitrogen dioxide (NO_2)	1 hour	-	-
	1 year	0.053 ppm	Primary & Secondary
Ozone (O_3)	1 hour	0.12 ppm	Primary & Secondary
	8 hours	0.08 ppm	Primary & Secondary
Particulate matter $\leq$ 10 μm diameter (PM_{10})*	24 hours	150 $\mu g/m^3$	Primary & Secondary
	1 year	50 $\mu g/m^3$	Primary & Secondary
Particulate matter $\leq$ 2.5 μm diameter ($PM_{2.5}$)*	24 hours	65 $\mu g/m^3$	Primary & Secondary
	1 year	15 $\mu g/m^3$	Primary & Secondary
Sulfur dioxide (SO_2)	3 hours	0.5 ppm	Secondary
	24 hours	0.14 ppm	Primary
	1 year	0.03 ppm	Primary

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter
N/A - PAAQS are not assigned a designation of primary or secondary.
Source: USEPA, 1999b

Title 401 of KAR Chapter 63:010 regulates fugitive emissions of particulate matter under Kentucky Regulatory Statute (KRS) 224.10-100. The regulations prohibit the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate. This regulation further prohibits any material to be handled, processed, transported, or stored, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. The regulation also requires reasonable precautions including, but not be limited to:

- Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
- Application and maintenance of asphalt, oil, water, or suitable chemicals on roads, materials stockpiles, and other surfaces which can create airborne dusts;
- Covering, at all times when in motion, open-bodied trucks transporting materials likely to become airborne; and
- The maintenance of paved roadways in a clean condition.

The City of Pikeville Code of Ordinances (CPCO) Chapters 92.10 and 92.11, Environmental Nuisances, prohibits environmental nuisances as defined in said ordinance. Nuisance dust carried across property lines is included in this ordinance. Because of the proximity to residences in the project area, operation of construction machinery will likely create dust which could cross those property lines and be a nuisance to area residents. This ordinance applies only to construction activities in that portion of the project area within the city limits, or the north Pikeville area.

3.4.3 Existing Conditions

Pike County is designated as “In Attainment” for all criteria pollutants with the exception of total suspended particulates, for which Pike County is designated in the “Cannot be Classified” category. Therefore, a written Conformity Determination is not required for this federal action.

The Kentucky Division for Air Quality has issued two draft Title V operating permits in Pike County, both issued under the draft Air Quality General Permit for Natural Gas Transmission Stations and Processing Plants, G-97-001, including:

- Columbia Gas Transmission Company (AFS# 21-195-00250) G-99-001 -- Boldman Station; and,
- Kentucky West Virginia Gas Company (AFS# 21-195-00247) G-99-001 -- Myra Station.

3.5 Noise

3.5.1 Background

Noise is generally defined as unwanted or annoying sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB). The decibel scale is logarithmic and expresses the ratio of the sound pressure unit being measured to a standard reference level. Most sounds heard in the environment do not consist of a single frequency, but

rather a broad band of frequencies differing in sound level. The intensities of each frequency component are additive and make up the overall broadband sound.
Environmental noise directly affects human health by causing hearing loss, generally if exposure levels are above 90 dB. Noise is also suspected of causing or aggravating other health conditions. Environmental noise is also suspected of indirectly affecting human welfare by interfering with sleep, thought, conversation, and other normal activities. Noise can also affect wildlife by disrupting feeding, breeding, and nesting activities.

The USEPA has adopted a system of four "sound descriptors" to summarize how people hear sound and to determine the impact of environmental noise on public health and welfare. These four descriptors are related but each is most useful for a particular type of application. The descriptors and some examples of their uses are described below:

A-weighted Sound Level: A person's ability to hear a sound depends greatly on the frequency composition of the sound. The method commonly used to quantify environmental sounds consists of adjusting the frequency components of a sound according to a weighting system which reflects the fact human hearing is less sensitive at low and extremely high frequencies, than at the mid-range frequencies. This adjustment is called "A" weighting, and the sound level measured is called the A-weighted sound level (dBA). "A" weighting most closely represents the response of the human ear to sound. In practice, the level of a noise source is measured using a sound level meter featuring a filter corresponding to the A-weighted scale and provides results in dBA.

A-weighted Sound Exposure Level: This descriptor helps to account for moment to moment variation encountered when measuring environmental noise. Using this procedure one can measure the total energy of the sound by summing the intensity during the exposure duration. This procedure produces the second measurement descriptor, sound exposure level (Ls), also in the A-weighted scale.

Equivalent Sound Level: The Equivalent Sound Level (L_{eq}) represents a steady-state sound with the same A-weighted sound energy as a variable sound over a time period of specified duration. The L_{eq} is a useful way to discuss sound or noise because it correlates reasonably well with the effects of noise on people, even for wide variations in environmental sound levels and time patterns. It is used when the sound level and duration, but not time of day, is relevant. The minimum and maximum A-weighted sound levels in a given period of time are designated as L_{min} and L_{max}, respectively, and are also expressed in dBA. L_{min} represents the quietest natural ambient noise level, and L_{max} represents the loudest transient noise level occurring during the time period.

Day-Night Sound Level (L_{dn}): The Day-Night Sound Level is the A-weighted equivalent sound level (L_{eq}) for a 24-hour period, but it includes an additional 10 dB "penalty" weighting on the equivalent sound levels occurring during night-time hours (10 p.m. to 7 a.m), to account for night-time sleep disturbance.

Noise levels decrease with distance from the noise source. For a point source, such as construction equipment, noise levels will decrease between 6 and 7.5 dBA for every doubling of the distance from that source. For a line source, such as traffic on a

roadway, noise levels will decrease between 3 and 4.5 dBA for every doubling of the distance from the roadway.

Typical sound pressure levels for common noise sources are presented in **Table 3-3** to provide the reader with a frame of reference when considering the character and volume of noise levels:

Table 3-3. Sound Pressure Levels of Representative Noises

Source	Decibels	Comment
Large rocket engine (nearby)	180	
Jet takeoff (nearby)	150	
Pneumatic riveter	130	
Jet takeoff (200 feet)	120	Pain threshold
Construction noise (10 feet)	110	
Subway train	100	
Heavy truck (50 feet) and Niagara Falls	90	(Constant exposure endangers hearing)
Average factory	80	
Busy traffic	70	
Normal conversation (3 feet)	60	
Quiet office	50	Quiet
Library	40	
Soft whisper (16 feet)	30	Very quiet
Rustling leaves	20	
Normal breathing	10	Barely audible
Hearing threshold	0	

Source: Tipler 1976

Construction activities generate noise by their very nature and are highly variable, depending on the type, number, and operating schedules of equipment. Construction projects are usually executed in stages, each having its own combination of equipment and noise characteristics and magnitudes. Construction activities of the proposed project are expected to be typical of other similar construction projects and will include mobilization, site preparation, excavation, placing foundations, utility development, heavy equipment movement, clearing/grading of right-of-ways, and installation of the flood wall components. The most prevalent noise source at construction sites is the internal combustion engine. General construction equipment using engines includes but is not limited to: heavy, medium, and light equipment such as excavators; roller compactors; front-end loaders; bulldozers; graders; backhoes; dump trucks; water trucks; concrete trucks; pump trucks; utility trucks; cranes; sheet pile drivers; man lifts; forklifts; and lube, oil, and fuel trucks. **Table 3-4** presents typical construction noise levels at a distance of 50 feet.

Table 3-4. Typical Construction Equipment Sound Pressure Levels (Noise Level Ranges (dBA) at 50 feet)

Equipment Description	Range [dBA]
Earth moving compactors, loaders, backhoes, tractors, graders, pavers	73-96
Materials handling, concrete mixers and pumps, cranes, derricks	74-88
Stationary pumps, compressors, generators	69-87
Hauling trucks	83-94
Impact equipment, pile drivers	95-106
Impact tools, jackhammers, rock drills, pneumatic wrenches	81-98

Source: EPA, 1971

Many agencies have adopted the exterior noise standards from the U.S. Department of Housing and Urban Development (HUD) set forth in 24 CFR 51B to evaluate potential noise effects on public residential areas. The HUD regulations were developed for new housing construction assisted or supported by the department, but are useful guidelines to represent many situations. The HUD noise guidelines are expressed as L_{dn} as follows:

- 65 L_{dn} or less - Acceptable
- Exceeding 65 L_{dn} but not exceeding 75 L_{dn} - Normally Unacceptable (To achieve an acceptable status, appropriate sound attenuation measures must be provided)
- Exceeding 75 L_{dn} - Unacceptable

HUD's regulations do not contain standards for interior noise levels. Rather, a goal of 45 db is established and the attenuation requirements are geared toward achieving that goal. It is assumed with standard construction, a building will provide sufficient attenuation so that if the exterior level is 65 L_{dn} or less, the interior noise level will be 45 L_{dn} or less.

The United States Department of Transportation, Federal Highway Administration (FHWA) requires evaluation of traffic noise impacts for federally-funded transportation projects, as set forth in its Governing Document, 23 CFR Part 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise". The regulation establishes the Noise Abatement Criteria (NAC) for various categories of land use. The acceptable exterior NAC for Category B, or residential areas, is 67 dBA Leq (A-weighted equivalent sound level) measured over a period of one hour. The acceptable exterior NAC for Category C, or commercial areas is 72 dBA. Construction traffic for the proposed project is temporary and expected to occur during the day-time hours of 7 a.m. and 6 p.m. Under these conditions, the transient construction traffic is exempt from FHWA regulations.

The CPCO Chapter 92.50, Unreasonable and Loud Noise Prohibited, prohibits noise of such character, intensity, and duration as to be detrimental to the life or health of any individual. Chapter 92.51 expressly prohibits operation of machinery in a residential or business district other than between the hours of 9:00 p.m. and 7:00 a.m., except in case of emergency. Because of the proximity to residences in the project area, operation of construction machinery is therefore prohibited in the project area outside these hours. Creation of excess noise adjacent to any school or institution of learning that unreasonably interferes with the working of such institution is also prohibited. While

operation of construction machinery on weekends is technically allowed by this ordinance, loud noises during the weekend could be considered a nuisance, and therefore an impact, to area residents and churches, particularly in the morning hours. This ordinance applies only to construction activities in that portion of the project area within the city limits, or the north Pikeville area.

A noise impact associated with an action is generally defined as a noise level which approaches (within 1 dBA) or exceeds an appropriate criterion, or which increases significantly above existing noise levels as a result of the action. A significant increase, or doubling of the sound level is typically considered to be 10 dBA.

3.5.2 Existing Conditions

Noise sources in the project area are variable, and are a combination of natural and man-made sounds. Sources of environmental noise may include, but are not limited to: traffic from major roadways, such as US 23, roads, and bridges businesses and industries; trains; athletic events (especially at the Pikeville High School); construction events, such as home-building or repair; roadway repair; and wind, animals (such as barking dogs) and other natural noises. Sensitive noise receptors are considered to be residences, hospitals, churches, schools, and other locations where excessive noise exposure could adversely impact daily activities, health, or welfare.

Limited noise monitoring was conducted in January 2004 to assess the existing environmental noise levels at locations representative of sensitive receivers within the project vicinity likely to experience impacts (AMEC, 2004). The monitoring locations are shown in **Figure 3-13**. Background noise in the project vicinity includes the steady sound of wind, the drone of US 23 traffic, and other nearby random, man-made transient noise sources. Transient noise includes local vehicular traffic, wind gusts, airplanes, animals, trains, and other human-caused disturbances. A description of receivers and results of existing noise levels for day-time measurements are presented in **Table 3-5.**

Existing noise is made up of background sound levels including transient noise, in the areas surrounding the proposed project. Measured noise levels ranged from a low of 39.2 to a high of 85.3 dBA during the day (7 a.m. to 6 p.m.), when construction activities are expected to occur. Differences in existing noise levels depended mainly on the proximity of transient noise sources to the location monitored. The peak transient noise levels are 8 to 22.5 dBA above the equivalent noise level, or L_{eq}. Average night-time ambient noise levels are anticipated to be about 10 dBA (L_{eq}) lower than day-time levels.

Background noise levels are relatively low. Predominant transient sources include local vehicular and/or railroad traffic. The railroad tracks are located across the Levisa Fork to the west/southwest, approximately 500 to 800 feet from each of the receiver locations. As shown in Table 3-5, monitored receivers' existing noise levels are within the HUD guidelines at all monitored locations except Receiver 8, which had a noise level of 67.1 dBA L_{eq}. Applying the distance doubling rule to approximate the façade of the residences, the existing noise levels for the represented receivers would be expected to be no more than 61.1 dBA.

Table 3-5. Noise Monitoring Locations and Results

Location Number	Type and Number of Receivers Represented	Description	Measured Ambient Noise Levels, Day-time [dBA]		
			L_{eq}	L_{min}	L_{max}
1	Residential (1)	House on lot of Yamaha dealer (front porch)	60.4	49.3	75.9
2	Institutional (1)	Pikeville H.S. (NW corner)	54.1	46.7	66.6
3	Institutional (1), Recreational	Pikeville H.S. (Northern athletic field, rear fence.)	53.4	46.3	75.9
4	Institutional (1), Recreational	Pikeville H.S. (Southern athletic field bleachers)	57.8	48.9	76.3
5	Residential (6)	Residences on West Cedar Drive, Hickory Drive, and Adams Lane (façade facing project)	46.7	42.9	55.7
6	Residential (5)	Residences on West Cedar Drive near Cherry Lane (façade facing project)	53.9	46.2	68.7
7	Residential (40)	Residences on Old Wagner Station Road and in vicinity of borrow areas 2 and 3 (façade facing roadway and/or borrow area)	53.7	43.3	75.6
8	Residential (10)	Residences along Mossy Bottom Lane to borrow areas 2 and 3. (façade facing roadway)	67.1	48.2	85.3
9	Day care (1), Residential (5) Medical Plaza (1) Commerical (2)	Day care facility on Church Street (rear fence line)	55.4	42.2	75.2
10	Residential (12) Institutional (3) Church (1)	Coal Run Village City Hall ((façade facing project)	54.8	51.6	62.8
11	Residential (12)	Combs Drive area residences (façade facing project)	49.6	40.3	59.8
12	Residential (8)	Scott Addition Subdivision. Affected by Alternate 2 only. (façade facing project)	51.2	39.2	69.2

(Source: AMEC, 2004)

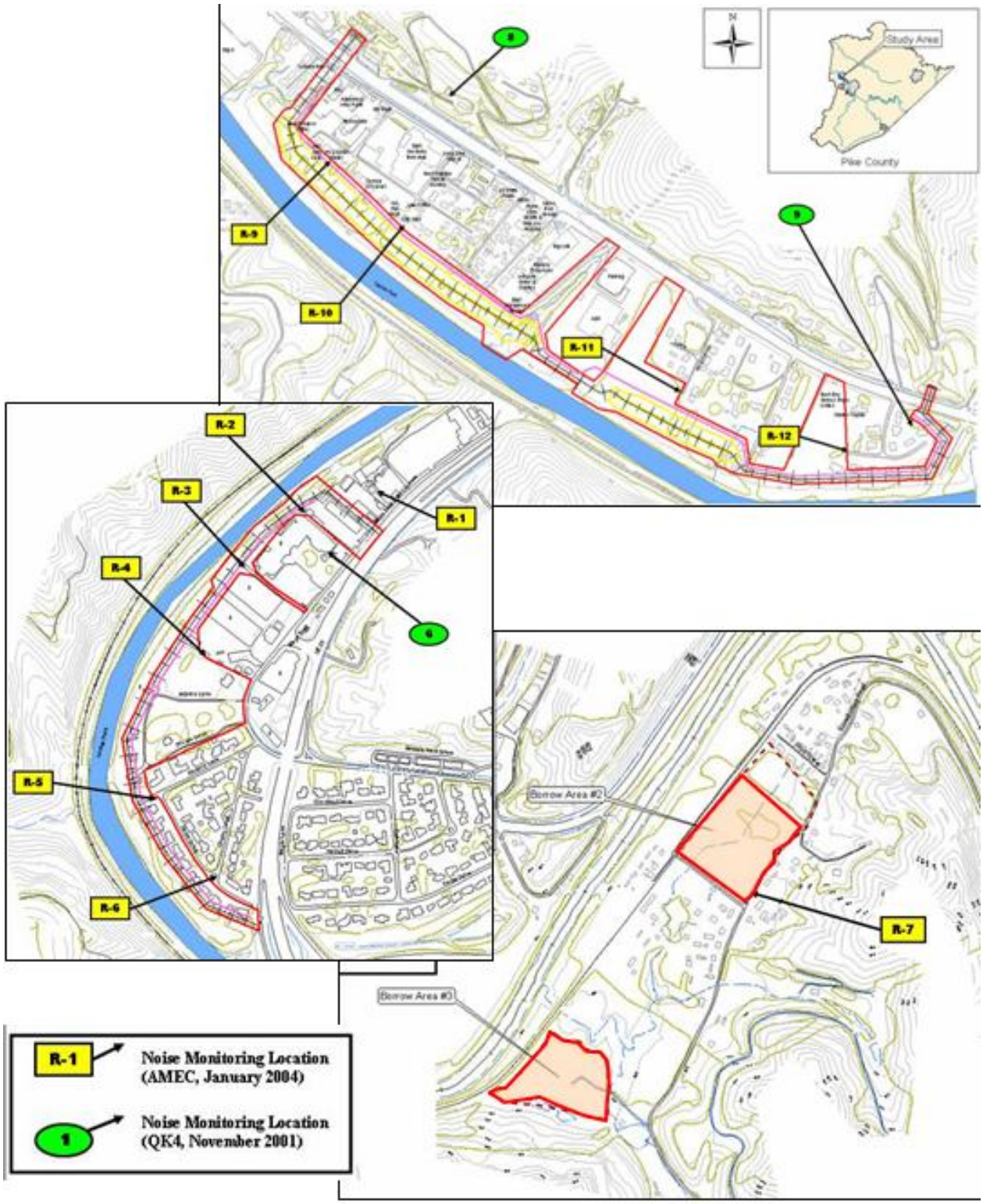


Figure 3-13. Noise Measurement Locations

Ambient noise measurements taken in November 2001 in conjunction with a proposed upgrade of US 23 included measurements near the North Pikeville and Coal Run Village areas. Ten ambient measurements were taken using a Quest M-27 Noise Dosimeter/Datalogger. Figure 3-13 shows measurement locations in the project area, including location numbers 6, 8 and 9. **Table 3-6** presents the ambient noise levels at these locations, along with distance from US 23. Field observations indicated that local traffic was the dominant noise source in the vicinity of the measurement locations, and six of the ten locations along US 23 exceeded the HUD and FHWA guideline noise limits.

Table 3-6. Measured Sound Levels Along US 23

Receptor	Description	Distance from US 23 (ft)	Elevation above or below US 23 (ft)	Measured Noise Level (dBA L_{eq})	Note
1	Front façade of Worldwide Church of God, south of US 23	210	-4	67	Non traffic noises during measurement: train
2	Side façade of single-family residences on Mayo Trail	230	+5	64	Non traffic noises during measurement: train
3	Front façade of Mullins Elementary School	120	-5	67	
4	Front façade of Immanuel Baptist Church	160	-4	68	
5	Front façade of single-family residences on Arrowhead Drive north of US 23	215	+100	63	
6	Front façade of Pike County High School	430	-40	61	Northbound US 23 not in line of sight.
7	Side façade of single-family residences on Dark Hollow Road north of US 23	105	+20	71	Non traffic noises during measurement: siren
8	Side façade of single-family residences on Joe Stanley Road north of US 23	160	+60	70	
9	Rear façade of single-family residences south of US 23 on Scott Addition Court.	115	0	71	Non traffic noises during measurement: train
10	Side façade of single-family residences on Pem Friend Land south of US 23.	200	-10	64	

(Source: QK4, 2001)

3.6 Water Resources

3.6.1 Surface Water and Floodplain Management

- **Levisa Fork Basin.** The **Levisa Fork** originates in Buchanan County, Virginia and flows to Millard, Kentucky where it is joined by its largest tributary, Russell Fork, and continues in a northwesterly direction to Prestonsburg, Kentucky. From Prestonsburg it flows nearly due north to its junction with Tug Fork at Louisa, Kentucky. The confluence of the Tug and Levisa Forks forms the Big Sandy River. The total length of the Levisa Fork is approximately 164 miles, of which 34 miles are in Virginia and the balance in Pike, Floyd, and Johnson Counties, Kentucky. The Levisa Fork drains a total of 2,326 square miles.

- The **upper Levisa Fork** drains portions of Pike County and Buchanan County, Virginia. Fishtrap Reservoir in Pike County serves as flow control for the Levisa Fork upstream of Millard, Kentucky. Fishtrap Dam began operation October 1968. Its purpose is storage for flood control, water quality, and recreation. Seasonal low-flow augmentation capacity is 27,190 acres. (BSADD) Tributaries of the upper Levisa Fork within Pike County include Hockney Creek, Little Hockney Creek, Card Creek, Flood Creek, Little Card Creek, Feds Creek, Big Creek, Island Creek, Lick Creek, Millers Creek, Grapevine Creek, Left Creek, Pompeii Branch and Sloane's Branch.

- **Russell Fork** drains 133 square miles in Pike County, as well as portions of Dickenson, Buchanan, and Wise counties in Virginia. Tributaries of Russell Fork within Pike County include Elkhorn Creek, Beaver Creek, Marrowbone Creek, Honey Fork, Pond Creek, Middle Fork, Jimmie Creek, Road Creek, Hartess Creek, Biggs Creek, and Powell Creek.

  Within Pike County, Russell Fork is designated a Class I River with respect to botanical resources, fish resources, whitewater boating, and geologic features. The Class I designation is the highest of three classes used in assessing Kentucky Rivers. The botanical resource designation indicates that the river is known to support at least one federal or state endangered plant species, or areas registered or eligible for national natural landmark, national park, or other Federal or state conservation area designation, or designated Kentucky Wild River. The fish resource designation means that it may have unique species or habitat. The boating designation indicates high quality water character, flow, scenic quality, and access. The geologic features noted are its faults and gorge (KY Rivers Assessment, 1992).

- The **lower Levisa Fork** drains portions of Pike, Knott, Floyd, Johnson, Magoffin, Morgan, and Lawrence counties in Kentucky. (USACE, 1998).Tributaries of the lower Levisa Fork include Greasy Creek, Peyton Branch, Shelby Creek, (another) Island Creek, Chloe Creek, Ferguson Creek, Buckley Creek, Tollage Creek, Stonecoal Creek, Big Shoal Creek, Cowpen Creek, Ratliff Creek, Hurricane Creek. Johns Creek (with its Raccoon Creek tributary) is a tributary of the Lower Levisa Fork partially located in Pike County, but does not discharge into Levisa Fork within Pike County limits.

  The lower Levisa Fork and its tributary Johns Creek are considered Class 3 Rivers with respect to fish resources. The Class 3 designation means that the rivers have viable, active fisheries but are not considered outstanding, unique, or unusual with

respect to their fish populations. The lower Levisa Fork is also considered a Class 2 River for flatwater boating. The flatwater boating designation indicates medium navigability, depth, water and scenic quality, and access (KY Rivers Assessment, 1992).

- **Pike County.** The Levisa Fork within Pike County is generally flat with slopes averaging 1.3 to 2.3 feet per mile. Stream discharge at the mouth of the Levisa Fork range between 200 cubic feet per second (cfs) and the recorded maximum of 80,000 cfs, with a normal flow of 2,500 cfs. Within Pike County, major tributaries of the Levisa Fork included in the study area are Russell Fork, Johns Creek, Elkhorn Creek, Marrowbone Creek, and Shelby Creek. Tributary streams in Pike County are generally short and steep. This results in a likelihood of flash flooding during heavy runoff period, particularly in spring and early summer. Winter flooding can also occur, generally resulting from less intense but extended storm events when the ground is saturated, frozen, or snow-covered (BSADD, 2003).

- **North Pikeville LPP Area.** Surface water within the North Pikeville LPP CWL includes an unnamed tributary to the Levisa Fork behind the KTC Maintenance facility (See Figure 2-1).

  Most of the area is within the 100-year special flood hazard area, as identified on the Flood Insurance Rate Map (FIRM) 21195C0281 F, effective date September 21, 1998. Areas outside the 100-year special flood hazard area are along Cedar Drive, Cherry Lane near Cedar Drive, and along Mayo Trail between Adams Lane and Pikeville High School.

- **Coal Run Village LPP Area.** Surface water within the Coal Run Village LPP CWLs includes Ratliff Branch and three unnamed drainage outlets that enter the Levisa Fork between Ratliff Branch and the project's southeastern terminus (see Figure 2-2). The unnamed tributaries are not shown on the USGS topographic map and are outlets for drainage routed under US 23. About half of Coal Run Village is within the 100-year special flood hazard area, as identified on the FIRM 21195C0114 F and 21195C0118 F, effective dates September 21, 1998. Some areas within the city limits are within the designated floodway.

  Ratliff Branch is a minor tributary located just north of the American Electric Power (AEP) facility. It begins approximately 650 feet northeast of Coal Run Village on the other side of US 23, at elevation 695 feet. At US 23, Ratliff Branch is routed into an approximate 600-foot culvert which passes under US 23, turns southeast and under the Big Lots building and parking lot. The lower Ratliff Branch propagates at approximate elevation 670 feet from this corrugated metal pipe outfall into a ravine adjacent to the AEP and Big Lots parking lots. The branch flows southwest for 1,130 feet to the confluence with the Levisa Fork.

  Ratliff Branch can be divided into two sections based on the very distinct characteristics. The upper section makes up roughly 440 feet of stream that leads into the lower section of Ratliff Branch. This upper section is high gradient and therefore experiences high velocity flows which can transport cobbles as suspended sediment. The velocity was measured at 0.3 feet per second during field reconnaissance. This upper section is dominated by two velocity regimes, shallow-fast and shallow-slow. It is primarily 3 to 6 inches deep with a few small pools with

maximum depths of two feet. In the upper section of the branch, the Riparian Vegetative Zone and the channel have been altered by both rip-rap and some redirection of the original channel.

The lower section of Ratliff Branch makes up roughly 593 feet of stream that terminates in Levisa Fork. This section is characterized by a strong erosional component and frequent backwater conditions. In general, the water is very slow moving with a large amount of particulate suspension. The average water velocity in the lower section of the branch was measured at 0.05 feet per second. There appeared to be only two velocity regimes, fast-shallow and slow-deep. The banks are eroding with little to no vegetation. The Riparian Vegetative Zone and the channel seem not to have been directly affected by man-made alterations except for a small section near the top of the lower section, which is constrained by possible fill materials.

- **Borrow Areas.** No surface water features were observed within proposed Borrow Area #1. A small pond is located southwest of the area, adjacent to Broadbottom Road. Wetlands are located on either side of the area. Borrow Area #1 is within the 100-year special flood hazard area, as identified on the FIRM 21195C0115 F, effective date September 21, 1998.

- No surface water features were observed within Borrow Area #2, but mapping shows an intermittent stream bisecting the area from northeast to southwest (see Figure 2-4). An emergent wetland is located adjacent to the borrow area to the north. Most of Borrow Area #2 is within the 100-year special flood hazard area, as identified on the FIRM 21195C0115 F, effective date September 21, 1998.

3.6.2 Surface Water Quality

The KDOW regulates and monitors water quality throughout Kentucky by delegation from the USEPA, Region 4. Typical water contaminant sources in Pike County include mineral extraction and acid mine drainage, dumping, litter, and straight pipes (raw sewage). (BSADD, 2003) Levisa Fork water quality has also been impacted by previous channelization and riparian zone clearing. In 2002, the KDOW listed the Levisa Fork within Pike County (RM 116.2 to 124.6) as not supporting aquatic life or swimming. Pollutants of concern included siltation and pathogens. Suspected sources of pollutants were listed as resource extraction and land disposal, including onsite wastewater systems, septic tanks and/or straight pipes.

Water quality parameters were measured at Levisa Fork and three tributary streams sites in the vicinity of the study area in 2001 in conjunction with a proposed upgrade of US 23. The tributaries measured include Tollage Creek, Stonecoal Creek, and Cowpen Creek. Levisa Fork was sampled near the confluence of Buckley Creek. Results showed that all sites had elevated sulfate levels and high specific conductance, both indicators of poor water quality (Eco-Tech, 2001).

3.6.3 Groundwater

Pike County is characterized by relatively flat-lying layers of alternating sequences of Pennsylvanian Breathitt Group sedimentary rocks and alluvial deposits along major streams. Groundwater occurs in alluvium deposited in the flood plain of the Levisa Fork, and from Breathitt Group rocks, principally sandstone with lesser amounts of groundwater occurring in shale and coal.

Wells drilled in valley bottoms generally provide adequate yield for domestic supply, as do nearly 75 percent of hillside wells. A lesser number of ridgetop or hilltop wells provide an adequate water supply. Well yields in the alluvium range from 100 to 500 gallons/day (Kentucky Geological Survey (KGS), 2001). Well yields in Breathitt Group rocks range from 100 gallons/day in wells located along ridges to 500 gallons/day in wells located in valley bottoms and on hillsides (KGS, 2001). Replenishment of groundwater (recharge) is reduced by the reduction of forest cover and by mineral extraction (BSADD) causing more surface water runoff and less opportunity for surface water seepage into the ground.

Most groundwater from wells is moderately hard and contains noticeable iron. Salt can be an issue in the northwestern quarter of the county for wells less than 100 feet deep in valley bottoms. (Water Resources Development Commission 2003) Naturally occurring groundwater contaminants include sulfate, sodium chloride, iron and manganese. Mineral extraction can lead to increases in sulfate and metals concentrations in groundwater (KGS, 2001).

The USACE conducted preliminary investigations, including soil borings, in September 2001 in both the North Pikeville and Coal Run Village study areas. Six soil borings, designated C-01-6 through C-01-11, were completed in the North Pikeville study area. Four borings were advanced near the east side of the Levisa Fork. The borings were completed to approximately 70 to 75 feet bgs, and terminated on weathered shale or sandstone. Two borings completed near US 23 were completed to depths of approximately 11 and 30 feet bgs and terminated on weathered shale and sandstone, respectively. The soils and unconsolidated deposits consisted of up to 20 to 40 feet of clay to sandy clay and silt overlying sands and gravel deposits. Groundwater was encountered from 35 to 40 feet bgs.

Four soil borings, designated C-01-13, and C-01-15 through C-01-17, were completed in the Coal Run Village study area. Two borings were advanced near the east side of the Levisa Fork. The borings were completed to approximately 27 and 75 feet bgs, and terminated on sandstone and weathered shale, respectively. Two borings completed near US 23 were completed to depths of approximately 60 feet bgs and terminated on weathered shale and sandstone. The soils and unconsolidated deposits consisted of clay and sands overlying sand and gravel deposits. Groundwater was encountered from 20 to 25 feet bgs.

3.7 Ecological Resources

3.7.1 Aquatic Resources

- **Fish.** There are approximately 70 species of fish representing 10 families known or presumed to occur in the Levisa Fork drainage (USACE 1998). However, the proposed project area does not include the full diversity of habitats that the wider Levisa Fork drainage encompasses. The portion of the Levisa Fork adjacent to the project areas may be characterized as low water quality and would not be expected to contain a high diversity of fish species.

  Five fish species were collected from Levisa Fork during the surveys associated with the Terrestrial and Aquatic Ecological Assessment for the Proposed US 23 Congestion Relief Build Alternatives. These species would be expected to occur within the project areas. Fish species collected from Levisa Fork include: roseface shiner (*Notropis rubellus*), mimic shiner (*Notropis volucellus*), bluntnose minnow (*Pimephales notatus*), creek chub (*Semotilus atromaculatus*), and grass pickerel (*Esox americanus vermiculatus*) (Libby *et al*. 2002).

- **Freshwater Mussels.** Based on sampling associated with the US 23 Project, mussels are not likely to occur within Levisa Creek or Ratcliff Branch. No mussels were found in Levisa Fork during the surveys associated with the US 23 Project (Libby *et al*. 2002).

- **Benthic Macroinvertebrates.** During macroinvertebrate surveys associated with the US 23 Project, 18 macroinvertebrate species were found in Levisa Fork (see **Table 3-7**). This data was used to assess the quality of the stream reach based on metrics prepared by KDOW. Libby *et al*. concluded that the Levisa Fork sampling site (which is between the North Pikeville and Coal Run Village study areas) is very poor quality.

Table 3-7. Benthic Macroinvertebrate Species Observed in the Levisa Fork

Order	Family	Taxon	Number Observed
Gastropoda	Physidae	*Physella* sp.	2
Ephemeroptera	Ephemerellidae	*Eurylophella* sp.	1
Ephemeroptera	Isonychilidae	*Isonychia* sp.	1
Ephemeroptera	Leptohyphidae	*Tricorythodes* sp.	3
Odonata	Coenagrionidae	*Argia tibialis*	2
Odonata	Coenagrionidae	*Enallagma* sp.	2
Odonata	Aeshnjdae	*Boyeria vinosa*	2
Odonata	Gomphidae	*Stylogomphus albistylus*	1
Odonata	Corduliidae	*Macromia* sp.	1
Hemiptera	Belastomatidae	*Belastoma* sp.	1
Hemiptera	Gerridae	*Gerris* sp.	1
Hemiptera	Ranatridae	*Ranatra* sp.	1
Megaloptera	Sialidae	*Sialis* sp.	1
Coleoptera	Dytiscidae	Unid. Dytiscid	1
Coleoptera	Gyrinidae	*Dineutus discolor*	1
Diptera	Chironomidae	*Parametriocnemus* sp.	1
Diptera	Chironomidae	*Polypedium* sp.	4
Decapoda	Cambaridae	*Orconectes* sp.	5
		Total number of individuals	31
		Taxa richness	18
		Total EPT richness	31
		MBI	31.5
		Narrative Classification	Very Poor

Source: Libby *et al*., 2002

3.7.2 Terrestrial Resources

***Vegetation*.** Pike County lies within the Central Appalachian Ecoregion, specifically the Dissected Appalachian Plateau Ecoregion, which is composed of narrow ridges, deep coves, and narrow valleys. The majority of land cover in Pike County is forest.

Mixed mesophytic forest is the normal climax vegetation type in this region; however, forest communities may vary in species composition based on topography, elevation, slope, aspect, soils, and other variables. Common tree species of mixed mesophytic forests include oaks (*Quercus* spp.), hickories (*Carya* spp.), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), yellow poplar (*Liriodendron tulipifera*), beech (*Fagus americana*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), Eastern hemlock (*Tsuga canadensis*), shagbark hickory (*Caraya Ovata*) and many others.

Vegetation communities in the North Pikeville and Coal Run Village study areas were assessed using site reconnaissance, aerial photography, and existing topographic maps. Land cover within the proposed construction limits include: riparian forest; upland mixed forest; scrub/shrub upland; old field; emergent wetlands; cleared/bare ground; kudzu; and built up/developed areas (including

commercial and residential, maintained lawn, institutional and urban/industrial, and landscaped areas)

- **Riparian forest**. Riparian forests, which are located adjacent to rivers, are often composed of the following species: box elder (*Acer negundo*), silver maple (*Acer saccharinum*), yellow buckeye (*Aesculus octandra*), river birch (*Betula nigra*), American beech (*Fagus grandifolia*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), black willow (*Salix nigra*), and slippery elm (*Ulmus rubra*). Shrubs and vines of riparian forest habitats include brookside alder (*Alnus serrulata*), crossvine (*Bignonia capreolata*), elderberry (*Sambucus canadensis*), wild hydrangea (*Hydrangea arborescens*), privet (*Ligustum vulgare*), spicebush (*Lindera benzoin*), pawpaw (*Asimina triloba*), ironwood (*Carpinus caroliniana*), and poison ivy (*Toxicodendron radicans*). Common herbaceous species include giant ragweed (*Ambrosia trifida*), orange jewelweed (*Impatiens capensis*), yellow jewelweed (*Impatiens pallida*), water willow (*Justicia americana*), common horsetail (*Equisetum arvense*), and Virginia saxifrage (*Saxifraga virginensis*).

  Based on site reconnaissance, the riparian forests within the project area are generally low to medium quality and are dominated by a combination of only a few species including box elder, silver maple, yellow-poplar, and sycamore. Riparian areas adjacent to the river (within approximately 100 feet) generally had little understory, except in disturbed areas where dense seedlings occur. Riparian areas further from the river seem to have a greater diversity of trees, shrubs, and herbaceous vegetation. There are no high quality or old growth bottomland forest communities within the proposed construction limits. The riparian forests within the project areas likely provide good habitat for some species (i.e., various birds), but provide very little habitat for other species (i.e., gray squirrel). There were no hard mast-producing species observed in riparian forests in the project area.

- **Upland mixed forest**. Upland mixed forests within the project area are located in an upland area within the Coal Run Village area (see Figure 3-3). This area contains a mixture of hardwoods (i.e., oaks, hickories) and pines (i.e., shortleaf pine [*Pinus echinata*], Eastern white pine [*Pinus strobus*]). Areas within the construction corridor are adjacent to developed areas and are not extensive in nature.

- **Old field and scrub/shrub upland**. Old field and scrub/shrub uplands primarily include previously disturbed or cleared areas that have been allowed to revegetate and are in various stages of early succession. Old field is used to describe open, non-forested areas dominated by a variety of early successional species, including broomstraw and other grasses and various forbs. Old field areas may have scattered shrubs also. Open, non-forested areas with a significant amount of semi-woody vegetation, shrubs (i.e., blackberry), and seedlings were designated as scrub/shrub uplands. Old field areas and scrub/shrub uplands may provide some habitat for species that require nonforested habitat; however, due to the disturbed nature of these areas, they are considered relatively low quality.

- **Emergent wetland**. Emergent wetlands are discussed in Section 3.3.

- **Cleared/bare ground**. This designation was used to describe areas which have been cleared and little or no vegetation currently exists on the ground surface. Borrow Area #2 was desiganated as cleared/bare ground. There were a few scattered sweetgum (*Liquidambar styraciflua*) trees in this area. However, this area is severely disturbed and presumed to provide poor quality habitat.

- **Kudzu**. A portion of Borrow Area #1 is dominated by kudzu. Areas dominated by kudzu provide little habitat for wildlife species.

- **Built up/developed areas**. These areas include urban and residential developments, including parking lots and adjacent maintained lawns and landscaped areas.

In general, all of the vegetation communities within the project area have been disturbed due to adjacent developed areas and previous clearing. During January 2004 field investigations, four sample locations were selected to represent riparian forest habitats, one location was selected to represent scrub/shrub upland habitat, and two locations were selected to represent old field habitat (see **Table 3-8**). Sample locations were selected subjectively to ensure that representative samples were collected (see **Figure 3-14**). At forest sample locations, 0.1-acre plots were established to collect required data (e.g., diameter at breast height (dbh) and species of trees). At old field and scrub/shrub upland locations, a center point was selected and required data was qualitatively collected. Parameters (e.g., percent cover of various strata) were visually estimated for the general area.

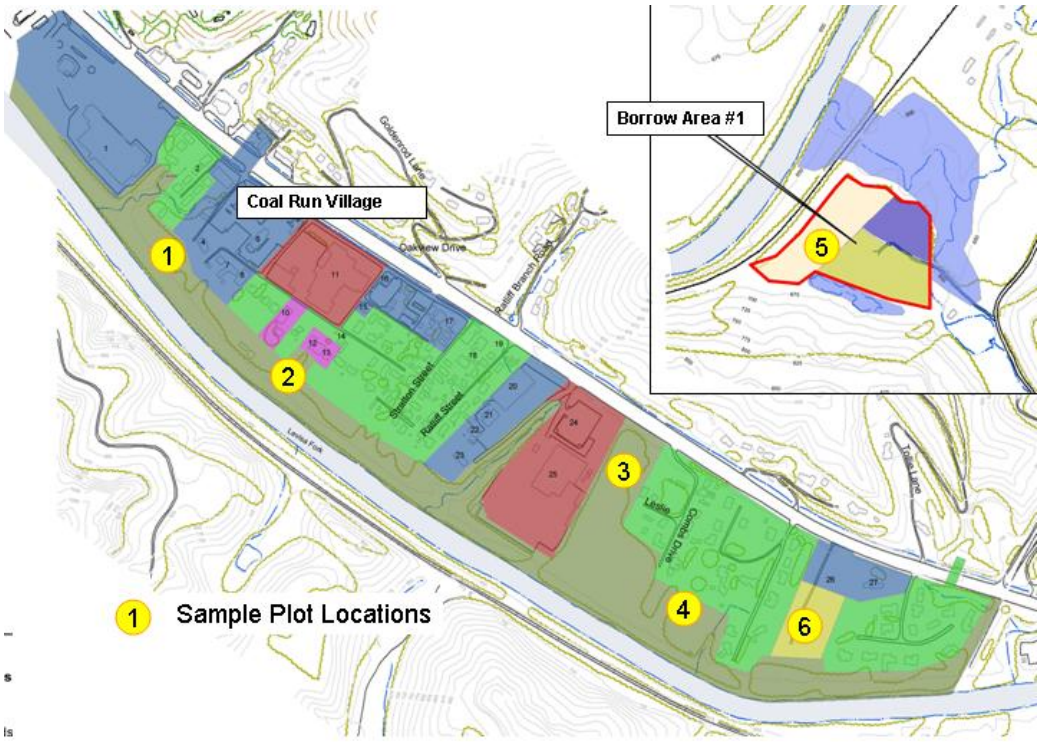


Figure 3-13. Sample Plot Locations for Terrestrial Habitat

Table 3-8. Sample Location Descriptions

Site	Habitat	Location	Site Description
1	Riparian Forest	Coal Run Area	The riparian forest at this location was dominated by box elder. One side of the sample plot was dominated by relatively large trees (dbh ranging from approximately 7-18 inches), while the other side of the plot was dominated by saplings (dbh ranging from approximately 2-6 inches). All trees within the sample plot were box elder except one silver maple. Approximately 25% of the ground was covered by herbaceous ground cover and scattered shrubs (< 5%cover) were present.
2	Riparian Forest	Coal Run Area	The riparian forest at this location was dominated by a combination of silver maple and box elder. Average dbh of canopy trees was 18 inches. There were several large chestnut trees (Castanea sp.) (probably Chinese chestnut) just outside of the plot on the upland side. Elm was also present in this plot. Herbaceous ground cover covered approximately 80% of the ground surface. Canopy closure was approximately 65%.
3	Riparian Forest	Coal Run Area	The riparian forest at this location exhibited more species diversity than other locations along the construction corridor. This site is slightly upland from other riparian forest plot locations. Trees in the plot included box elder, black cherry, yellow-poplar, elm, hackberry, and a variety of seedlings and shrubs including eastern redcedar, American holy, sugar maple, and privet. Vines were also common at this location including honey suckle and poison ivy.
4	Riparian Forest	Coal Run Area	The riparian forest in this area was dominated almost exclusively by box elder and had very little understory. It was mostly an open forest with a few scattered privet shrubs.
5	Scrub/ Shrub Upland	Borrow Area #3	Site #5 was located within Borrow Area #1 within an area designated as scrub/shrub upland. This area was dominated primarily by blackberry bushes (*Rubus* sp.) and sycamore seedlings. Shrub and/or seedling coverage varied from approximately 50% - 80%. Dead and/or dormant herbaceous and semi-woody vegetation (approximately 3.5 feet in height) was also present throughout this area.
6	Old Field	Coal Run Area	Site # 6 was located within the Coal Run Area in an area designated as old field. This area appears to have been cleared and is currently vegetated with various grasses and forbs. A portion of this old field area appears to contain a garden. The ground surface was completely covered by vegetation; although much of it was dormant or dead. Although the site visit was performed in winter, the percent of grass cover was estimated to be approximately 70%. The height of the herbaceous cover varied significantly at this location ranging from approximately 3 to 36 inches. Shrubs covered approximately 15% of the area.
7	Old Field	North Pikeville	Site #7 is was located within the North Pikeville Area in an area designated as old field. This site may be characterized as an early successional area dominated by semi-woody vegetation. Yellow-poplar seedlings and mature trees are scattered throughout the area. During the site visit, the majority of herbaceous species, which were approximately 3-4 feet in height, were dormant or dead. Scattered shrubs provide approximately 15% cover.

Wildlife. Pike County is primarily forested and has a diverse wildlife population. Approximately 143 species of terrestrial wildlife have been recorded in Pike County including 21 mammals, 96 birds, 11 reptiles, and 15 amphibians (Kentucky Department of Fish and Wildlife Resources (KDFWR), 2004).

Terrestrial wildlife species expected to be present within the project areas would be those species typically found in riparian forests, open fields, or disturbed areas. With the exception of surveys associated with the Indiana bat, no wildlife surveys were performed specifically within the project areas. However, wildlife surveys were performed in the same general area in conjunction with the Terrestrial and Aquatic Ecological Assessment for the Proposed US 23 Congestion Relief Build Alternatives. Based on this assessment, site reconnaissance of available habitat within the project area, terrestrial wildlife species likely to occur within the project area are listed in **Table 3-9**.

Wetlands. The presence of wetlands was assessed based on site reconnaissance. However, no on-site wetlands delineations have been performed within the potential limits of construction; therefore, boundaries of wetlands are approximate. No wetlands were identified within construction work limits or borrow areas. However a forested wetland and emergent wetland occur adjacent to Borrow Area # 1 (See Figure 3-4), and an emergent wetland occurs adjacent to Borrow Area #2. No other wetlands were noted within the project areas. An evaluation of habitat provided by wetlands will be performed in association with wetland delineations, if needed, will be performed prior to the FEIS.

Table 3-9. Terrestrial Wildlife Species Likely to Occur Within or Adjacent to Proposed Project Areas

Common Name	Scientific Name	Common Name	Scientific Name
Mammals		**Birds**	
Big brown bat	*Eptesicus fuscus*	American bittern	*Botaurus lentiginosus*
Common mole	*Scalopus aquaticus*	American crow	*Corvus brachyrhynchos*
Eastern chipmunk	*Tamias striatus*	American goldfinch	*Spinus tristis*
Eastern cottontail	*Sylvilagus floridanus*	American kestral	*Falco sparverius*
Eastern pipistrelle	*Pipistrellus subflavus*	American robin	*Turdus migratorius*
Eastern red bat	*Lasiurus borealis*	Barred owl	*Strix varia*
Fox squirrel	*Sciurus niger*	Belted kingfisher	*Megaceryle alcyon*
Indiana bat	*Myotis sodalis*	Canada goose	*Branta canadensis*
Mink	*Mustela vison*	Carolina chickadee	*Parus carolinensis*
Northern long-eared bat	*Myotis septentrionalis*	Carolina wren	*Thryothorus ludovicianus*
Opossum	*Didelphus virginiana*	Common mallard	*Anas platyrhynchos*
Raccoon	*Procyon lotor*	Eastern bluebird	*Sialia sialis*
White-footed deer mouse	*Peromyscus leucopus*	Eastern meadowlark	*Sturnella magna*
White-tailed deer	*Odocoileus virginianus*	Eastern phoebe	*Syornis phoebe*
Woodchuck	*Marmota monax*	Field sparrow	*Spizella pusilla*
Amphibians		Grasshopper sparrow	*Ammodramus savannarum*
Fowler's toad	*Bufo woodhousii fowleri*	Great blue heron	*Ardea herodias*
Green frog	*Rana clamitans melanota*	Least bittern	*Ixobrychus exilis*
Mountain chorus frog	*Pseudacris brachyphona*	Mourning dove	*Zenaida macroura*
Mudpuppy	*Necturus maculosus*	Northern cardinal	*Cardinalis cardinalis*
Northern dusky salamander	*Desmognathus fuscus fuscus*	Northern harrier	*Circus cyaneus*
Red-spotted newt	*Notophthalmus viridescens viridescens*	Northern mockingbird	*Mimus polyglottos*
Southern leopard frog	*Rana utricularia utricularia*	Red-winged blackbird	*Agelaiusphoeniceus*
Southern two-lined salamander	*Eurycea cirrigera*	Rock dove	*Columba livia*
Spring peeper	*Hyla crucifer*	Rufous-sided towhee	*Pipilo erythrophthalmus*
Reptiles		Song sparrow	*Melospiz melodia*
Box turtle	*Terrapene carolina*	Turkey vulture	*Cathartes aura*
Copperhead	*Agkistrodon contortrix*	Wood duck	*Aix sponsa*
Eastern ribbon snake	*Thamnophis sauritus*	Woodcock	*Philohela minor*
Five-lined skink	*Eumeces facsiatus*	Yellow-shafted flicker	*Colaptes auratus*
Northern water snake	*Nerodia sipedon sipedon*		
Snapping turtle	*Chelydra serpentina*		

Sources: Libby *et al*., 2002; Wallace Dean, personal communication, Feb. 2004

- **Threatened and Endangered Species.** The Endangered Species Act of 1973 (ESA; 16 USC §1531 et seq.) is the primary vehicle by which rare species are protected in the United States. Under the ESA, species may be listed as threatened or endangered. Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened means a species is likely to become endangered within the foreseeable future. The ESA is administered by USFWS and National Marine Fisheries Service (NMFS) and requires all federal agencies to protect species and preserve their habitats. Section 7 of the ESA dictates that federal actions should not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. Furthermore, Section 7(a) of the ESA requires formal consultation with the USFWS whenever a federal proponent anticipates taking any action that may affect a listed species or critical habitat.

  Special-status species (i.e., species tracked by the state) known to occur in Pike County, Kentucky are listed in **Table 3-10**. The North Pikeville and Coal Run Village LPP and Borrow Study Areas potentially contain special status species that typically occur in riparian or bottomland forests, open fields, or upland mixed woods.

  The only Federally-listed species that occurs in Pike County is the Indiana bat (*Myotis sodalis*). The Indiana bat was listed as endangered on March 11, 1967 by the USFWS and is protected by the ESA. Indiana bats are found throughout the Eastern United States. Although most of the hibernacula have been protected, this species still appears to be declining in population. Eco-Tech, Inc. completed a field survey for Indiana bat hibernacula in the proposed project areas in December of 2003 (**Appendix C**). Generally, potential hibernacula may include caves or mine portals. No caves or mine portals were found in the proposed project area. During the field survey, concrete culverts and drain pipes were also inspected for bat use, but no evidence of use was found in these structures. The survey concluded that no hibernacula or winter habitat occur within the proposed project areas. However, the proposed project area does provide medium quality potential summer roosting and foraging habitat for the Indiana bat. Roosting habitat within the project area primarily includes living and dead trees including sycamore (*Platanus occidentalis*), shagbark hickory (*Caraya Ovata*), silver maple (*Acer saccharinum*), box elder (*Acer negundo*), river birch (*Betula nigra*), and slippery elm (*Ulmus rubra*).

  The subject areas were not surveyed for state-listed species and it is possible that state-listed species occur within areas to be disturbed.

Table 3-10. Special Status Species Known to Occur in Pike County

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS	HABITAT
Plants				
Adlumia fungosa	Allegheny-Vine	E	N	Well-Drained Sunny Openings, Rocky and Sandy Slopes. Invasive Following Fire and Logging.
Agrimonia gryposepala	Tall Hairy Groovebur	T	N	Rich, Moist Woods, Thickets and Woodland Borders.
Boykinia aconitifolia	Brook Saxifrage	T	N	Wet Rocks, Stream Banks, Rich Woods.
Castanea pumila	Allegheny Chinkapin	T	N	Dry Woods on Sandy Soil.
Chrysosplenium americanum	American Golden-Saxifrage	E	N	Springheads, Open Wooded Seeps, Seepage Banks of Spring-Fed Streams, Seasonally Wet Sandstone Rocks, Rills, Cool Wet Areas.
Corydalis sempervirens	Rock Harlequin	S	N	Dry or Rocky Woods and Sandstone Outcrops.
Disporum maculatum	Nodding Mandarin	S	N	Rich Mountain Woods (Gleason & Cronquist 1991). In Ky, Rare And Local In Rich Mesophytic Forests.
Hexastylis heterophylla	Variable-Leaved Heartleaf	S	N	Rich Coves, Deciduous Forest. Acid Soils of Sandy, Peaty of Rocky Woods.
Liparis loeselii	Loesel's Twayblade	T	N	
Podostemum ceratophyllum	Threadfoot	S	N	Swiftly Flowing Water, Around Rocks in Rapids of Larger Rivers.
Scutellaria saxatilis	Rock Skullcap	T	N	Rocky Mixed Mesophytic Woods, Talus Slopes, and Bluffs, Usually Sandstone Substrate.
Solidago squarrosa	Squarrose Goldenrod	H	N	Rich Dry or Rocky Open Woods, Thickets, and Clearings.
Spiraea alba	Narrow-Leaved Meadow-Sweet	E	N	Wet Meadows, Swamps, and Shores.
Trillium undulatum	Painted Trillium	T	N	Mesic Ravine Forests, Upper Elevaton Mesic Hemlock Forests, Seeps In Mesic Forests And An Oak-Chesnut Forest.
Ulmus serotina	September Elm	S	N	Upland to Bottomland Limestone Woods, Alluvial Terraces.

Table 3-10. Special Status Species Known to Occur in Pike County

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS	HABITAT
Gastropods				
Glyphyalinia rhoadsi	Sculpted Glyph	T	N	Leaf Litter in Upland Woods.
Patera panselenus	Virginia Bladetooth	S	N	Under Rocks and Logs on Wooded Floodplains, Hillsides, and Ravines.
Crustaceans				
Cambarus veteranus	A Crayfish	S	N	Streams.
Insects				
Pseudanophthalmus hypolithos	Ashcamp Cave Beetle	T	N	Under Rocks at Back of Entrance Room of Old Quarry Cave and in Lower of Two Crawlways (Barr 1981). Abundant Cave Rat Debris was Present.
Fish				
Etheostoma maculatum	Spotted Darter	T	N	INHABITS MEDIUM TO LARGE STREAMS WHERE IT OCCURS AMONG COARSE GRAVEL, COBBLE AND BOULDERS IN SWIFT RIFFLES AND SHOALS.
Ichthyomyzon fossor	Northern Brook Lamprey	T	N	SMALL TO MEDIUM-SIZE UPLAND STREAMS WHERE ADULTS LIVE IN SAND-GRAVEL BOTTOMS OF CLEAN RIFFLES AND RACEWAYS (BURR AND WARREN 1986, PAGE AND BURR 1991). AMMOCOETES REQUIRE MIXED SAND, SILT, AND DEBRIS IN QUIET WATER.
Lampetra appendix	American Brook Lamprey	T	N	Raceways, Riffles, and Flowing Margins of Permanently Flowing Streams and Rivers with Gravel, Sand and Sediment Bottoms (Burr and Warren 1986). Ammocoetes Live in Sand and Sediment of Pools and Backwaters.
Noturus stigmosus	Northern Madtom	S	N	Large Streams and Rivers in Moderate to Swift Current Over Gravel and Sand, and Sometimes Debris or Pondweed for Cover (Burr and Warren 1986, Etnier And Starnes 1993).
Percina macrocephala	Longhead Darter	T	N	Clear, Upland Streams and Rivers with Moderate Current, over Clean Substrates, Often Above and Below Riffles (Kuehne And Barbour 1983, Page 1983, Burr and Warren 1986).
Rhinichthys cataractae	Longnose Dace	E	N	Swift Riffles in Streams and Rivers with Boulder, Cobble, Pebble, and Gravel Substrates (Burr and Warren 1986, Etnier And Starnes 1993). Also Known for Wave Swept Lake Shores.
Birds				
Accipiter striatus	Sharp-Shinned Hawk	S	N	Forest and Open Woodland, Coniferous, Mixed, or Deciduous, Primarily in Conif. in More Northern and Mountainous Portion of

Table 3-10. Special Status Species Known to Occur in Pike County

SCIENTIFIC NAME	COMMON NAME	STATE STATUS	FEDERAL STATUS	HABITAT
				Range (B83com01na). Migrates Through Various Habitats, Mainly Along Ridges, Lakeshores, and Coastlines.
Aimophila aestivalis	Bachman's Sparrow	E	N	Open Pine Woods with Scattered Bushes or Understory, Brushy or Overgrown Hillsides, Overgrown Fields with Thickets and Brambles, Grassy Orchards.
Ardea herodias	Great blue heron	S	N	FRESHWATER AND BRACKISH MARSHES, ALONG LAKES, RIVERS, BAYS, LAGOONS, OCEAN BEACHES, MANGROVES, FIELDS, AND MEADOWS.
Pandion haliaetus	Osprey	T	N	PRIMARILY ALONG RIVERS, LAKES, AND SEACOASTS, OCCURRING WIDELY IN MIGRATION, OFTEN CROSSING LAND BETWEEN BODIES OF WATER (B83COM01NA).
Vermivora chrysoptera	Golden-winged warbler	T	N	DECIDUOUS WOODLAND, USUALLY IN AREAS OF THICK UNDERGROWTH IN SWAMPY AREAS, WOODLAND EDGE WITH LOW COVER, HILLSIDE SCRUB, OVERGROWN PASTURES; IN MIGRATION AND WINTER IN VARIOUS OPEN WOODLAND HABITATS, PINE-OAK, AND SCRUB.
Wilsonia canadensis	Canada warbler	S	N	WOODLAND UNDERGROWTH (ESPECIALLY ASPEN-POPLAR), BOGS, TALL SHRUBBERY ALONG STREAMS OR NEAR SWAMPS, AND DECIDUOUS SECOND GROWTH. IN MIGRATION AND WINTER IN VARIOUS FOREST, WOODLAND, SCRUB, AND THICKET HABITATS, MOSTLY IN HUMID AREAS
Mammals				
Myotis sodalis	Indiana Bat	E	LE	Indiana Bats Use Primarily Caves for Hibernacula, Although They are Occasionally Found in Old Mine Portals.
Ursus americanus	American Black Bear	S	N	Mostly Forested Areas.

Source: Kentucky State Nature Preserves Commission 2002, Kentucky Department of Fish and Wildlife Resources, 2004.
KEY:
E State-listed as Endangered
LE Federally-listed as Endangered
N Not listed
S State-listed as Special Concern

3.8 Cultural Resources

The lower Levisa Fork area is considered a Class 1 River with respect to cultural resources. The Class 1 cultural designation is the highest of the three classifications, indicating relatively more historic or prehistoric archaeological sites, or historic architecture reflecting river-related life (KY Rivers Assessment, 1992).

Federal agency responsibilities with regard to cultural resources are addressed by a number of laws, regulations, executive orders, programmatic agreements and other requirements. The principal Federal law addressing cultural resources is the National Historic Preservation Act of 1966, as amended (NHPA, 16 USC 470). Implementing regulations for this law are found in 36 CFR Part 800. The regulations describe the process for identifying and evaluating historic properties and for consulting with the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) regarding potential project effects.

The term “historic properties” refers to cultural resources that are listed on the National Register of Historic Places (NR), that are eligible for listing on the NR, or that may be eligible for listing on the NR. Section 106 of the NHPA requires that Federal agency undertakings take into account effects to these properties and afford the Advisory Council on Historic Preservation an opportunity to comment on those undertakings. Identifying, evaluating, and assessing effects of the Proposed Action will be done in consultation with the SHPO and other concerned parties.

3.8.1 Historic Cultural/Historical Context

The history of human activity in Pike County spans thousands of years. The earliest groups to leave a definitive material record of their presence were early Native American groups who archaeologists have labeled Paleoindians. These peoples entered the region during the Late Pleistocene glacial epoch more than 10,000 years ago. Their descendants, and the descendants of other Native American groups who migrated to the region, lived in the region for the next ten millennia. This long prehistoric era lasted until the arrival of the first European explorers and settlers in the seventeenth and eighteenth centuries, the beginning of the Historic Period.

While cultural change is a slow and continual process, archaeologists and other researchers divide the human history of a region into distinct cultural periods. Archaeologists and historians recognize four broadly defined prehistoric periods. These include the *Paleoindian* (ca 10000-8000 BC), the *Archaic* (8000-1000 BC), the *Woodland*, (1000 BC-AD 900) and *Late Prehistoric Period* (AD 900-ca 1700). The *Historic Period* began with the arrival of the first European explorers and colonists. A total of 221 separate archaeological sites were identified in Pike County. Thirty-three of these sites have no information regarding cultural/temporal affiliation documented in the Office of State Archaeology (OSA) site files. Of the remaining 188 sites, a total of 214 separate cultural/temporal components were recorded including 87 prehistoric components and 127 historic components (**Table 3-11**).

Table 3.11. Cultural Components in Pike County (From OSA Site Data)

Cultural/Temporal Component	Number of Sites
No Component Data Available	33*
Indeterminate Prehistoric	18
Paleoindian	
Paleoindian (Early, Middle, and Late)	2
Archaic Period	(16)
Archaic (Indeterminate)	8
Early Archaic	3
Middle Archaic	1
Late Archaic	4
Woodland Period	(30)
Woodland (Indeterminate)	11
Early Woodland	12
Middle Woodland	6
Late Woodland	1
Late Prehistoric Period	(21)
Late Woodland/Late Prehistoric (Indet.)	11
Late Prehistoric (Fort Ancient)	10
Total Prehistoric Components	87
Historic Components	(127)
Historic (AD 1801-1900)	3
Historic (AD 1801-1850)	2
Historic (AD 1801-1950)	2
Historic (AD 1851-1950)	16
Historic (AD 1871-1900)	2
Historic (AD 1900-2000)	75
Historic (AD 1901-1950)	25
Historic (AD 1950-1951)	2
Total Components	**214**

*OSA site files contained no data regarding cultural affiliation for 33 sites.

3.8.2 Modern Appalachian Culture

Pike County developed within the Appalachian subculture. The seventieth county formed within the state, Pike County would come to represent both the rural Appalachian subculture and the more urban culture associated with the Bluegrass Region and the Ohio Valley Urban Centers.

Pike County was originally explored by the members of Major Andrew Lewis's exploration of the Big Sandy River in 1756 (Kleber 1992:721). Lewis's men originally camped on the Kentucky side of the Tug Fork. Many historians attribute the name of Tug Fork to this expedition, when his men either yelled "Tug, Tug" to get through some rapids or were forced to eat broiled strips of buffalo hide, called "tugs", to survive (Crowell 1971:13). By 1767, Daniel Boone and a companion supposedly traveled through the area in their attempt to locate the Bluegrass Region of the state. Some historians believe that in less than ten years, a horse pen was built by Enoch Smith on Upper Johns Creek, but the real first permanent settlement in the county was built by William Robert Lesley in 1790 on the Upper Johns Creek at the mouth of Sycamore

Creek (Kleber 1992:721). By 1800, a permanent settlement was erected on the Levisa by modern-day Pikeville.

Pike County was formed 19 December 1821 out of Bourbon, Fayette, Floyd, and Mason counties. It was named after Army General Zebulon M. Pike (1779-1813), a New Jersey native known for his exploration of the West from the Louisiana Purchase to Minnesota. Pike received his greatest renown for discovering Pike's Peak in Colorado. By this time, numerous families had established themselves in the county, including the Damarons, Maynards, Justices, Colemans, Mayos, Prestons, Huffmans, and Weddingtons (Crowell 1971).

Pike County is known for being in the heart of coal country and has been one of the principal producers of coal since the early twentieth century. Like the majority of coal-producing counties in the Appalachian Region, the county's resources were well known prior to the Civil War. The major railroads running through the county were the Chesapeake & Ohio (C&O) and the Norfolk and Western (N&W). It was not really until the railroads came into the county that these resources could successfully be exploited. Until the railroad was established, lumber was the county's greatest export, floating down the Big Sandy River to ports in Nashville and Cincinnati.

The coal mining industry was relatively unfettered by government regulations until the 1970s. Strip mining occurred in many counties, causing extensive damage to the area. As technology improved, the use of manual labor declined, and many miners found themselves laid off with no notice and no savings. Because the land was decimated, many could not return to working the land. Despite a huge upswing in population in Pike County in the 1970s due to another coal mining boom, the area is still recognized as having a high poverty level.

The Appalachian subculture slowly dissolved in the face of industry and technology. Although stereotypes created over 100 years ago still remain, the people have changed and acclimated to a society where communication does not necessitate travel. Advancements in the computer industry have greatly altered the façade of Appalachia, and while the historic traits of familial ties, poverty, ties to the land, and even dialect linger, their isolation has ended.

3.8.3 Previous Cultural Resources Surveys

Archaeological Sites and Surveys. A background records check at the OSA revealed 221 recorded archaeological sites in Pike County. None have been recorded within the subject areas, though 12 are located within two kilometers of the study area. These are summarized in **Table 3-12**. A total of eight separate archaeological surveys were conducted within two kilometers of the study area (**Table 3-13**).

Table 3-12. Archaeological Sites within 2 km of the North Pikeville and Coal Run Village LPP Areas and Potential Borrow Areas

Site Number	Cultural Affiliation	Site Type	Surveys/ Reference
15PI2	Late prehistoric	Undetermined	OSA Site Data
15PI4	Unknown prehistoric	Earth mound	OSA Site Data
15PI9	Unknown prehistoric	Open air habitation w/o mounds	OSA Site Data
15PI44	Unknown prehistoric	Isolated burials	OSA Site Data
15PI48	Early Archaic	Undetermined	OSA Site Data
15PI315	Archaic, Fort Ancient	Earthwork/open habitation	OSA Site Data
15PI317	Unknown	Undetermined	OSA Site Data
15PI342	Archaic, Early Woodland, Late Prehistoric, Historic (1871-1900)	Multiple site types	OSA Site Data
15PI346	Unknown	Undetermined	OSA Site Data
15PI348	Unknown	Undetermined	OSA Site Data
15PI349	Historic (20th century)	Undetermined	OSA Site Data
15PI351	Historic (20th century)	Undetermined	OSA Site Data

Site 15PI2 is recorded as a late prehistoric site located on a ridge. OSA reported the site has been vandalized. Because it is one of the earliest sites located in the county, little information is available on this site.

Site 15PI4 is located on the floodplain just north of Pikeville and consists of a prehistoric earthen mound. No other information is available on this site.

Site 15PI9 is a prehistoric lithic scatter identified in 1976 by Jack Schock and Gary Foster during a survey of the proposed Right-of-Way (ROW) for US 23 on the west bank of the Levisa Fork south of Pikeville. This site was later revisited in 1986 by Calvert McIlhany who conducted a survey for the proposed South Mayo sewer line.

Site 15PI44 was identified as a large prehistoric burial site located on the Levisa Fork in Pikeville identified in 1983. No other information is available for this site.

Site 15PI48 was identified in 1987 by Calvert McIlhany as a prehistoric Early Archaic site. No other information is available in the OSA files for this site.

Site 15PI315 is an Archaic and Fort Ancient period prehistoric site located on the Levisa Fork floodplain north of Pikeville. It was initially identified in 1976 by Jack Schock and Gary Foster. This site consists of an Archaic earthwork and a Fort Ancient open-air habitation.

Site 15PI317 was identified by Gary Foster and Jack Schock in 1976. No detailed information on this site is provided in the OSA database.

Site 15PI342 is a multi -omponent prehistoric and historic site located on the Buckley Branch floodplain north of Pikeville. This site includes components from the Archaic, Early Woodland, Late Prehistoric and Historic periods. The site was identified by Gary Foster and Jack Schock in 1976.

Site 15PI346 was identified by Gary Foster and Jack Schock in 1976, but there is little information on the site in the OSA database.

Site 15PI348 was identified by Gary Foster and Jack Schock in 1976, but there is no additional information listed on the OSA database.

Site 15PI349 is a historic 20th century site located on the Buckley Branch uplands north of Pikeville. The site was identified by Gary Foster and Jack Schock in 1976.

Site 15PI351 is a historic 20th century site located on the Buckley Branch north of Pikeville. This site was identified by Gary Foster and Jack Schock in 1976.

Architectural Surveys. The purposes of the planning effort for the proposed Levisa Fork Basin are to address the flood damages incurred during the April 1977 flood; to identify, evaluate and select the most cost-effective and feasible damage reduction measures for implementation in the basin; to address the environmental impacts associated with implementation of those measures; and to successfully negotiate the cost-sharing aspects of the selected plan elements with the local non-federal sponsor(s). As part of this planning effort, an assessment of the historic and architectural resources of the area was undertaken.

In 1995 an architectural survey was made of the structures that would be impacted by the project as part of the Levisa Fork Survey (Amos, 1995). The project area covered under the 1995 reconnaissance included the floodplain along the main stem Levisa Fork from Louisa, Kentucky, to the downstream city limits of Grundy, Virginia, (approximately 100 stream miles excluding Fishtrap Lake) and along the main stem Russell Fork from its confluence with Levisa Fork to and including Haysi, Virginia (approximately 31 stream miles) including those residential and nonresidential units that would be damaged by a recurrence of the April 1977 flood. Amos viewed 5,788 structures within the study area and recommended that 292 structures be evaluated for their potential historic significance.

Table 3-13. Previous Surveys and Investigations within 2 km of the North Pikeville and Coal Run Village LPP Areas and Potential Borrow Areas

Report	Authors	Sites Reported Within 2 km
An Archaeological Survey of Backley Creek US 119 Pike County, Kentucky	Foster, Gary S. and Jack M. Schock (1976)	15PI317, 15PI342, 15PI348, 15PI348, 15PI349, and 15PI351
An Archaeological Survey of the Proposed Relocation of US 23 and 119, Dorton to Pikeville, Pike County, Kentucky	Schock, Jack M. and Gary S. Foster	15PI9, 15PI315
A Phase I Investigation of Archaeological Resources and Evaluation of Project Impact to Prehistoric Sites 15PI9, 15PI313A, 15PI313B for the South Mayo Sewer Project in Pike County, Kentucky	McIlhany, Calvert W. (1986)	15PI9
A Phase I Investigation of Archaeological Resources within the Proposed Pike County Mall Tract and Associated Off-Site Improvements in Pike County, Kentucky	McIlhany, Calvert W. (1987)	15PI48
A Cultural Resource Survey in Mossy Bottom, Pike County, Kentucky	Hand, Robert B. (1990)	None
A Report of the Archaeological Reconnaissance of the Pauley Bridge Relocation Pike County, Kentucky	Fiegel, Kurt H. (1985)	None
A Phase I Cultural Resource Survey of a 1 ½ Acre Borrow Site Located Near Joes Creek, Pike County, Kentucky	Stallings, Richard and Nancy Ross-Stallings (1993)	None
Phase I Archaeological Survey of the US 23 Congestion relief Project in Pike County, Kentucky	Nohalty, Thomas J. (2002)	None

In 2003, a cultural resources survey along a portion of US 23 proposed for upgrading considered some structures within the Levisa Basin Flood Control Project's Coal Run and North Pikeville areas of potential Effect (Powell 2003). One NR-listed property, the Pauley Bridge (Powell Site 10) is located 2,200 feet north of the proposed project. At this distance and because of a curve in the river, the Pauley Bridge will not have viewshed effects from the study area.

In North Pikeville, Powell found that two sites, the KTC maintenance building (NP-54, Powell Site 5) and a brick bungalow (NP-55, Powell Site 6) did not meet NR eligibility criteria. Dependency structures for the KTC maintenance building (NP-54C, NP54D, NP-54E, and NP-54H, as well as an unmapped small structure) and the brick bungalow (NP-55A) also failed to meet NR criteria. No other structures near the proposed project in North Pikeville were considered potentially eligible for NR listing.

Powell's survey in Coal Run Village resulted in the identification of one structure near the CWL that she recommended as NR eligible (Parcel 5-10, Powell Site 15). This 1 ½ -story brick bungalow is outside of the CWL but could have project related viewshed effects if it is NR-eligible.

In North Pikeville, two structures within the CWL are more than 50 years old and will be evaluated for their eligibility for listing in the NR. In the Coal Run Village, five structures within or near the project CWL are more than 50 years old and will be evaluated for NR eligibility.

Based on these previous studies and ongoing consultation with the SHPO, two parcels in North Pikeville and four in Coal Run Village will be evaluated for NR eligibility prior to the FEIS. These structures are: Parcels NP-21, garage NP-21A, and NP-44 with an unnumbered garage in North Pikeville, and Parcels CR 5-10, CR 5-12, 5-22, and CR-58.

3.9 Socioeconomic Resources and Environmental Justice

Pike County, with a population of 68,736 is home to approximately 26,148 households and 1,504 businesses. The portion of Pike County within the project study area lies predominantly within the floodplain of the Levisa and Russell Forks of the Big Sandy River. An approximate 1,500 residences and 500 businesses are located within the project study area. ((U.S. Census Bureau, 2000 Dicennial Census and County Business Patterns 1998-2001)

3.9.1 Population and Housing

Historically, Pike County's population has mirrored the success and decline of coal mining and timber industries. Population growth occurred between 1900 and 1950 at varying rates and peaked in 1980 at 81,823. This was primarily due to increases in coal mining caused by increasing energy prices. Since 1980, however, population has declined as technological advances have reduced the demand for workers. Population is forecast to continue declining through the year 2030. Population projections for Pike County are shown in **Table 3-14**.

Table 3-14. Population Projections for Pike County, Kentucky

Year	Population	Change (%)
1990	72,583	
1995	72,345	- 0.3 %
2000	68,736	- 5.0 %
2005	66,864	- 2.7 %
2010	64,391	- 3.7 %
2015	61,368	- 4.7 %
2020	58,035	- 5.4 %
2025	54,544	- 6.0 %
2030	50,823	- 6.8 %

US Census Bureau, 1990 and 2000 Decennial Censuses and 1995 Estimate. Kentucky State Data Center 2005-2030 Population Projections (Middle Series), August 5, 2003. (from PB, 2003)

Within Pike County, Pikeville's population decreased slightly between 1990 and 2000, while both Coal Run Village and Elkhorn City had population increases. Increases

reflect both migration from rural areas and annexation policies. Population changes for Pikeville, Coal Run Village and Pikeville are shown in **Table 3-15**.

Table 3-15. Population Change 1990-2000 for Pike County and Census-Designated Places

Place	Population		Change (%)
	1990	2000	
Pike County	72,583	68,736	- 5.3 %
Coal Run Village	262	577	120.2 %
Elkhorn City	813	1,060	30.4 %
Pikeville	6,324	6,295	- 0.5 %
Rest of County	65,184	60.804	- 6.7 %

US Census Bureau, 1990 and 2000 Decennial Censuses (from PB, 2003)

While Pike County's median age in 2000 of 37.1 years is comparable to surrounding counties, it is higher than the state average of 35.9 years. Outmigration of young people and low natural population increases have contributed to the nearly five-year increase in median age between 1990 and 2000, from 32.4 to 37.1 years. The median age in Elkhorn City (44.7 years) and Coal Run Village (43.5 years) is higher than the county as a whole. The number of households with members over 65 years of age increased nine percent in the period 1990 - 2000.

With respect to race, Pike County is a relatively homogenous area. More than 99 percent of the population is recorded as White in both 1990 and 2000 censuses. Population characteristics for the county are shown in **Table 3-16** below.

Table 3-16. 1990 and 2000 Population Characteristics, Pike County

Characteristic	1990	2000
Population	72,583	68,736
Age		
Under 18 years	27.9 %	23.7 %
65 years and older	10.6 %	12.3 %
Median Age	32.4	37.1
Sex		
Male	48.9 %	48.8 %
Female	51.1 %	51.2 %
Race		
One Race	---	99.4 %
White	99.2 %	98.3 %
Black or African American	0.3 %	0.5 %
American Indian or Alaska Native	0.1 %	0.1 %
Asian	0.3 %	0.4 %
Native Hawaiian or Other Pacific Islander	---	0.0 %
Other	0.0 %	0.1 %
Two or More Races	---	0.6 %
Hispanic or Latino Origin		
Hispanic or Latino of Any Race	0.3 %	0.7 %
Not Hispanic or Latino	99.7 %	99.3 %

US Census Bureau, 1990 and 2000 Decennial Censuses (from PB, 2003)

The U.S. Census Bureau defines a "household" as all the people who occupy a housing unit. A housing unit is a house, apartment, mobile home or trailer, group of rooms, or a single room that is occupied. A household includes the related family members and all the unrelated people, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A family household is defined as a household where persons related by birth, marriage, and adoption reside. A non-family household can consist of individuals living alone or two or more persons living together who are not related by birth, marriage or adoption (U.S. Census Bureau, 2002).

Pike County had a total of 27,612 households in 2002. The average household size is 2.46 people, and the average family size is 2.9 people. More than 36 percent of households in 2000 included individuals under 18 years of age, while nearly 23 percent of households included individuals 65 years and older. Nearly ten percent of total households are represented by a householder 65 years and over living alone. Family households comprise 73.8 percent of total households. Of the total family households, 58.8 percent are married-couple families and 15 percent are single-parent households. Within Pike County, unincorporated areas have higher percentages of family households than incorporated areas.

In 2000, Pike County had a total of 30, 923 housing units. Housing stock in Pike County is growing slightly older. In 1990, 61.2 percent of structures were 20 years old or newer (built since 1970). In 2000, that percentage declined to 44.7 percent (built since 1980). The increase of 6,977 housing units in Pike County between 1990 and 2000 is partially counterbalanced by the demolition or destruction of 4,814 older residences. The overall population decline during the same period resulted in an increase in vacancy rates, from 9.1 percent to 10.7 percent. Median housing value in Pike County rose from $40,100 to $65,900 during the period 1990-2000. Single-family detached homes comprise 55.1 percent of the total units, and mobile homes comprise 27.3 percent. Multi-unit structures make up just 7.4 percent of total housing units.

Home ownership was higher in Coal Run Village at 75.4 percent than the countywide average of 70.3 percent. Elkhorn City (61.9 percent) and Pikeville (43.0 percent) were lower than the countywide average.

Low-income housing providers in Pike County include the Housing Authority of Pikeville and the Pike County Housing Authority. Six developments - three in Pikeville - have a total of 583 units ranging from efficiencies to five-bedrooms. (BSADD, 2003).

3.9.2 Education

Public education is provided by the Pike County School District and the Pikeville Independent School District. Considered together, the two systems include eight high schools, two middle schools, ten middle/elementary schools, and nine elementary schools. Three alternative schools include the Kentucky Youth Academy and two day treatment centers. Total enrollment during the 2001-2002 school year was 13,851 students. Pikeville College is located in downtown Pikeville and offers associate and baccalaureate programs as well as a post-graduate program for osteopathic medicine.

In 2000, 61.9 percent of the Pike County population over 25 years old had obtained a high school diploma, while 9.9 percent had graduated college with at least a Bachelor's degree. While educational rates are less than the statewide average, they represent

increases over 1990 high school and college graduation rates of 50.2 percent and 7.7 percent, respectively. In Pikeville, 69.4 percent of the population over 25 years of age completed high school and 26.2 percent complete a Bachelor's degree or more. Coal Run Village residents had a 77 percent high school graduation rate and 26.5 percent had at least a Bachelor's degree. In Elkhorn City, rates were closer to the county average, with 57.7 percent completing high school and 12 percent having at least a Bachelor's degree (PB, 2003).

3.9.3 Local Economy, Employment and Labor Force

Pike County's local employment base has historically focused on natural resource extraction, including coal mining and timbering. While mining and forestry companies are still significant employers, the economy has diversified and resource extraction is no longer the largest employment sector. Educational, Health and Social Services employed 5,200 persons, or 23.4 percent of the labor force, making it the largest employment sector. Retail trade is second with 14.8 percent of workers. The combination of agricultural support, fishing, forestry, hunting and mining was the third largest sector, with 3,267 workers (14.7 percent of employment in the county). Major employers in Pike County in 2002 are listed in **Table 3-17**.

Table 3-17. Major Employers Pike County 2002

Employer	City	No. of Employees
Pike County Board of Education	Pikeville	1,952
Methodist Hospital of Kentucky	Pikeville	1,083
Sidney Coal Company Inc.	Pikeville	834
Wal-Mart Associates Inc.	Pikeville	504
Sykes Enterprises Inc.	Pikeville	495
Appalachian Regional Healthcare Inc.	Pikeville	399
Mountaintop Baking Inc.	Pikeville	393
Branham & Baker Underground Corp.	Pikeville	263
NPC International Inc.	Pikeville	243
Addington Mining Company	Toler	236

Source: BSADD, 2003

The U.S. Census Bureau defines an establishment as a single physical location at which business is conducted or services or industrial operations are performed; an establishment is not necessarily a company or enterprise, which may consist of one or more establishments. In 2001, 99 mining industry establishments operated in Pike County, compared with 322 retail trade establishments and 169 health care and social assistance establishments. Other significant industries include transportation and warehousing (179 establishments); professional, scientific and technical services (118 establishments); other services (125 establishments); and construction (92 establishments) (PB 2003).

The mining industry represented 30.5 percent of all total annual payrolls for the county in 2001, with $164 million paid to employees in salaries, wages, bonuses, benefits, and other forms of compensation. Payrolls for health care and social assistance represented 17.9 percent of total annual payroll, while retail trade was third with 13.0 percent of Pike County's nearly $539 annual payroll (PB 2003).

Approximately 45 percent of Pike County's total population over 16 years of age is considered part of the county's labor force. This is slightly higher than the rate for adjacent counties (43 percent) but lower than the statewide rate of 60.9 percent.

A county's labor market area is defined by the adjacent counties and all other major commuting counties. **Figure 3-15** shows the labor market area for Pike County. In 2000, Pike County drew 2,791 employees from other counties within the labor market area, and had a positive net work flow. **Table 3-18** shows Pike County and the Labor Market Area civilian labor force and unemployment rates for 2002 and for September 2003. (ThinkKentucky, 2003).

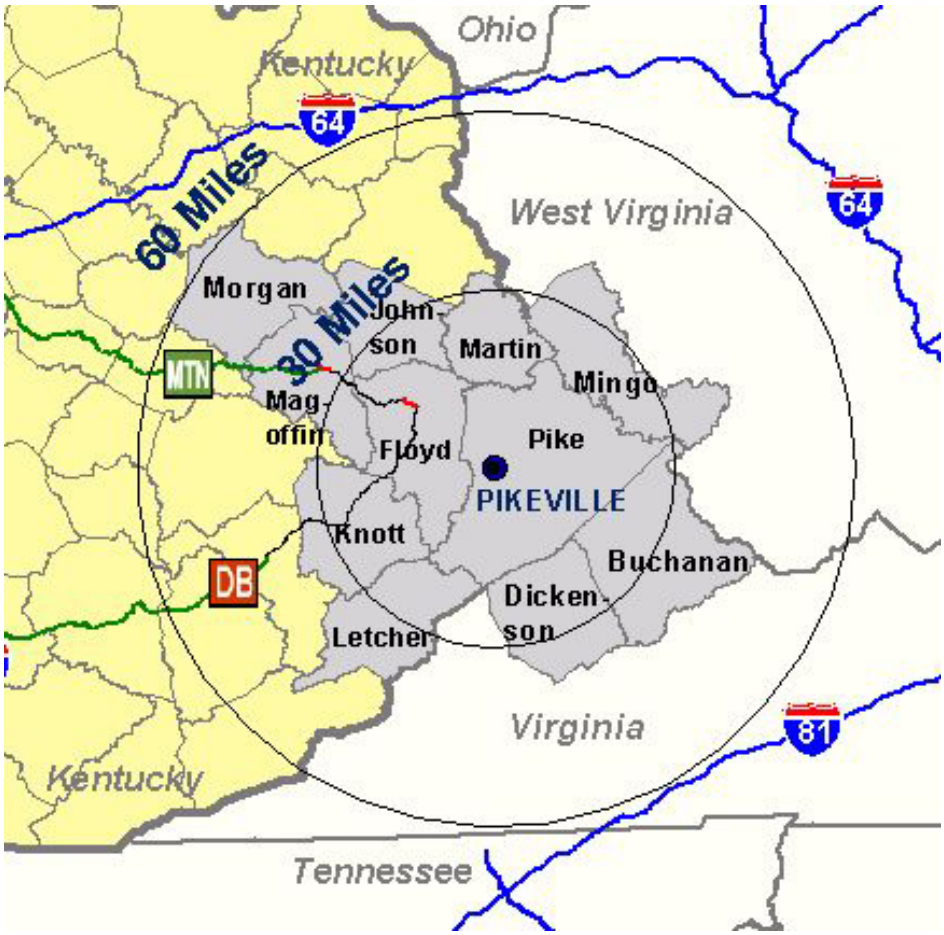


Figure 3-15. Labor Market Area

Table 3-18. Civilian Labor Force

	Pike County		Labor Market Area	
	2002	Sep. 2003	2002	Sep. 2003
Civilian Labor Force	26,859	26,699	99,288	98,134
Employed	25,350	25,246	91,564	91,030
Unemployed	1,509	1,453	7,724	7,104
Unemployment Rate (%)	5.6	5.4	7.8	7.2

Source: U.S. Department of Labor, Bureau of Labor Statistics, from ThinkKentucky 2003.

3.9.4 Income and Earning

As part of the Appalachian Region, Pike County and its Labor Market Area have historically had more economic challenges than other parts of Kentucky and the nation. Although Pike County's median household and per capita incomes increased between 1990 and 2000, they are still lower than statewide levels. In 2000, Pike County had a per capita income of $14,005 compared with $18,093 for Kentucky. Median household income in 2000 was $23,930 in Pike County, compared with $33,672 statewide (PB 2003). Within Pike County, median household and per capita income in Pikeville and Elkhorn City are comparable to county levels. In Coal Run Village, median income ($34,375) and per capita income ($27,469) were higher than county levels.

Poverty rates in Pike County decreased slightly from 1990 to 2000, but are still above statewide rates. In 2000, 23.4 percent of individuals had income below poverty levels, and 20.6 percent of families were considered below the poverty level (PB 2003).

3.9.5 Community Services

Pike County has 12 child care centers with a total capacity of 1082, including after school and Head Start programs. Of these, 748 spaces are in the Pikeville area. One daycare (ABC Daycare) is adjacent to the proposed Coal Run floodwall/levee structure (both alternatives). The YMCA branch in North Pikeville also has daycare services.

The Pike County Public Library has five branch locations, including Belfry, Elkhorn City, Phelps, Pikeville, and Virgie. The library can also be accessed online at www.pikelibrary.org. Additional library resources can be found at Pikeville College (Frank M. Allara Library), Pikeville Methodist Hospital (medical library) and at individual schools.

Pike County has seven senior citizen centers offering programs for area seniors. Centers are located in Belfry, Elkhorn City, Lookout/Marrowbone, Phelps, and two in Pikeville. Pikeville also participates in the newly-established Kentucky Homecare Program to provide in-home respite services. The program plans to provide caregiver respite services for Alzhiemers and other chronic conditions. Senior nutrition services are also provided through the seven centers. The BSADD is the designated Area Agency on Aging (BSADD, 2003).

The Pike County Health Department provides services throughout the county. Pike County has five nursing homes, two in Pikeville.

3.9.6 Community Cohesion

Community Cohesion is defined as a sense of shared values and purpose, and a tolerance and acceptance of other residents. How cohesive a particular community is can be assessed from learning about the education, religion, land tenure, organization membership status, family distribution, income/wealth, and social behavior of residents.

Numerous small neighborhoods or villages are located outside of the incorporated municipalities of Pikeville, Coal Run Village, and Elkhorn City. They generally occur in the floodplains of the major waterways where there is enough flat land to build multiple homes. The neighborhoods tend to be linear, found along secondary and side roads in hollows throughout the county. Cohesion between these linear communities can be limited by topography.

A survey of structures was conducted to evaluate community cohesion and social impacts of the identified flood protection alternatives in Pike County. The project area includes structures along tributaries of the Levisa Fork and Russell Fork Rivers in Pike County; however, surveys were primarily conducted along the Levisa Fork and Russell Fork Rivers and not along the many tributaries. Residential (single-family homes, apartments, etc.) and nonresidential (commercial, stores, offices, etc.) surveys were completed in Pikeville, Elkhorn City, Coal Run, Shelbiana, and Millard. Additional residential surveys were completed in the communities of Beaver Bottom, Draffin, Garden Village, Justiceville, Mossy Bottom, and Regina. Additional Detail can be found in the study, included as Appendix E.

Measurement of community cohesion is relatively difficult to ascertain and not very precise because it is an intangible concept. However, several factors which are measurable lend themselves to the evaluation of a community's cohesiveness. These factors are measurable based upon survey results or socio-economic data. Among nonresidential areas, these factors are term of occupancy of structure; rate of owner-occupancy; relocation preferences; and special characteristics of the neighborhood. For residential areas, these factors are:

- **Term of occupancy of structure.** Longer terms of occupancy tend to increase community cohesion - neighborhoods and commercial areas are more stable.
- **Frequency of visits with friends and family**. The more connections and contacts residents have in an area, the more likely they are to remain even if required to relocate. They may also have some effect on participation in floodproofing programs.
- **Number of families with children**. The presence of children in the household typically promotes community cohesion through the involvement of parents in school activities, church and community groups.
- **Rate of owner-occupancy.** Ownership typically indicates that residents and owner/operators are engaged in their community and value the area enough to purchase property. This connection to the area also confirms a high level of community cohesion.
- **Employment status.** Employment status is important in considering community cohesion because community ties are typically stronger when a person is

employed in the area. The workplace can be a place of socializing as well as lead to other social activities. Retirees also tend to socialize more with other retirees and often with other retirees of the same industry or employer because they have common bonds.

- **Relocation preferences**. Residents and owner/operators want to stay close to friends and family, whom they visit frequently, want to maintain schools for their children, want to remain in a safe and peaceful neighborhood, and want to maintain their businesses.
- **Special characteristics of the neighborhood** (as defined by the person taking the survey).

Existing community cohesion was evaluated for the Pike County study area, the North Pikeville LPP area and the Coal Run Village LPP areas. Additional Detail can be found in the study, included as Appendix D.

- **Pike County Study Area.** The study survey found that although geographically dispersed along the Levisa and Russell Fork Rivers, community cohesion of the nonstructural areas is moderately high. The study area has high average terms of occupancy, as well as a high (4.7 times-per-week) average number of visits to friends and family per week. The majority of respondents currently own the structure where they reside or operate their business. Owner-occupancy among the nonresidential respondents is 61.5 percent and among the residential respondents it was even higher at a rate of 87.0 percent. Survey results show that 83.5 percent of respondents are employed, retired, or disabled. If required to relocate, 88.7 percent of residential survey respondents indicated they would prefer to stay in their current community/neighborhood or within Pike County. Nonresidential survey respondents were also interested in staying in their current community/neighborhood or within Pike County (86.7 percent). Residents and owner/operators want to stay close to friends and family, whom they visit frequently, want to maintain schools for their children, want to remain in a safe and peaceful neighborhood, and want to maintain their businesses. Special characteristics of the neighborhood noted were that friends, family or customers made the neighborhood or location special, that their home or heritage was special, and that a sense of community made the neighborhood special.

- **North Pikeville LPP Area.** Overall community cohesion of the North Pikeville area is moderate to high. The average term of occupancy for all North Pikeville respondents is 12.8 years. The high average term of occupancy indicates a high level of community cohesion. Residential survey respondents reported visiting 7.0 times per week, which equates to visiting once every day. Community cohesion based upon number of families with children is considered to be moderate. The majority of respondents currently own the structure where they reside or operate their business. Owner-occupancy among the nonresidential respondents is 75.0 percent and among the residential respondents it was even higher at a rate of 100.0 percent. This connection to the area also confirms a high level of community cohesion. Consideration of the employment criterion indicates a high level of community cohesion. If required to relocate, 80.0 percent of North Pikeville survey respondents indicated they would prefer to stay in their current community/neighborhood or within Pike

County. This high rate indicates a very high level of community cohesion. Special characteristics of the neighborhood noted were that people (friends, family or customers) made the neighborhood or location special.

- **Coal Run Village LPP Area**. The study survey found that overall existing community cohesion of the Coal Run area is high. The average term of occupancy for all Coal Run respondents is 13.2 years. The high average term of occupancy among nonstructural survey respondents indicates a high level of community cohesion. Reported visiting rates are 3.6 time per week, which is considered high. Community cohesion as measured by the number of children appears to be low to moderate. The majority of respondents currently own the structure where they reside or operate their business. Owner-occupancy among the nonresidential respondents in Coal Run was 44.8 percent and among the residential respondents it was even higher at a rate of 93.3 percent. Survey results show that 80.0 percent of respondents are employed, retired, or disabled. No respondents in Coal Run were unemployed. Respondents also reported traveling an average of 10.4 miles to work compared to an average of between 25.0 and 28.9 miles for Pike County in 2000. Consideration of the employment criterion indicates a high level of community cohesion. If required to relocate, 95.2 percent of Coal Run survey respondents indicated they would prefer to stay in their current community/neighborhood or within Pike County. This high rate indicates a very high level of community cohesion. Special characteristics of the neighborhood noted were that friends, family or customers made the neighborhood or location special and that their home or heritage was special.

3.10 Recreation and Scenic Resources

Recreational opportunities available for Pike County residents include both local and regional resources. Ten county parks and the Pikeville City Park offer a variety of recreation facilities throughout the county, including children's playgrounds, baseball fields, walking tracks, basketball and tennis courts, horseshoe pits, picnic areas, swimming pools, and river access points. Pike County residents can access regional recreational opportunities in West Virginia and Virginia as well as Kentucky. Regional recreation areas within 50 miles include Fishtrap Lake and Wildlife Management Area, Jenny Wiley State Resort Park, Pine Mountain Trail State Park, Breaks Interstate Park, Jefferson National Forest and Laurel Lake Wildlife Management Area. Overall, hunting, fishing, camping, hiking, boating, golf, and lodging are offered.

Within Pike County, Russell Fork is designated a Class I River with respect to botanical resources, fish resources, whitewater boating, and geologic features. The Class I designation is the highest of three classes used in assessing Kentucky Rivers. The botanical resource designation indicates that the river is known to support at least one federal or state endangered plant species, or areas registered or eligible for national natural landmark, national park, or other Federal or state conservation area designation, or designated Kentucky Wild River. The fish resource designation means that it may have unique species or habitat. The boating designation indicates high quality water character, flow, scenic quality, and access. The geologic features noted are its faults and gorge (KY Rivers Assessment, 1992).

The lower Levisa Fork and its tributary Johns Creek are considered Class 3 Rivers with respect to fish resources. The Class 3 designation means that the rivers have viable, active fisheries but are not considered outstanding, unique, or unusual with respect to their fish populations. The lower Levisa Fork is also considered a Class 2 River for flatwater boating. The flatwater boating designation indicates medium navigability, depth, water and scenic quality, and access (KY Rivers Assessment, 1992).

As is common in Eastern Kentucky, Pike County has numerous scenic viewsheds, wildlife habitat, and natural forestland. The Jefferson National Forest is located at the southern portion of the county, generally following the County Line east of Elkhorn City.

Then entire length of US 23 within Pike County is part of the Kentucky Scenic Highway and National Scenic Byways Program and is designated as the Country Music Highway. The National Scenic Byways Program, established by Congress in 1991, is administered by the U.S. Department of Transportation's FHWA.

Parks or recreation areas located within the proposed North Pikeville and Coal Run Village LPP areas include:

- Athletic fields adjacent to Pikeville High School (North Pikeville)
- River access with maintained lawn and picnic tables (North Pikeville)
- Children's play area adjacent to the athletic fields (North Pikeville)
- YMCA with outdoor swimming pool adjacent to the athletic fields (North Pikeville)
- Church of Christ recreation area consisting of open space, picnic tables and shelter, river access, and outdoor basketball hoops (Coal Run Village)

In addition, a children's playground is associated with the ABC Daycare in Coal Run Village. No recreation facilities were noted at the three proposed borrow areas.

3.11 Hazardous, Toxic, and Radioactive Waste

Hazardous, Toxic, and Radioactive Waste (HTRW) investigations are performed to identify potentially contaminated properties. The Phase I HTRW investigation utilizes existing information in conjunction with visual assessment of the properties to determine whether additional investigations area needed. Phase II(a) HTRW investigations are performed on those properties identified for further evaluation in the Phase I. The Phase II(a) HTRW investigation consists of physical sampling and analysis techniques for hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Any confirmed HTRW contamination discovered on a subject property is the responsibility of the local sponsor and/or landowner. Additionally, contaminated properties subject to remediation activities must be remediated before construction activities commence.

3.11.1 Pike County

Pike County is not known as a major manufacturing area. A reconnaissance of the readily accessible (highway) areas of the project study area outside the North Pikeville and Coal Run Village areas, yielded no apparent significant accumulation of potential hazardous, toxic, or radioactive wastes. The land area adjacent to the streams was mostly undeveloped land with limited residential and commercial development present.

Commercial properties include automotive fuel and service businesses, grocery stores, hardware stores, and other small businesses. A summary of the major industry in the Pikeville/Pike County, Kentucky area is provided in **Table 3-19**.

Table 3-19. Major Manufacturers in the Pikeville/Pike County, Kentucky Area

Firm	Product(s)	Employment	Year Established
Pikeville			
Appalachian News-Express	Newspaper publishing & offset printing	39	1920
Busy Bee Septic Systems Ltd	Sewage treatment septic tanks, wet wells & holding tanks	10	1975
C & R Office Supply & Printing Co	Offset printing, office supplies	7	N/A
Executive Printing & Office Supplies	Offset printing, typesetting, spiral & staple binding	2	1977
Fain's Welding	Sheet metal fabricating; arc, gas, MIG, TIG & heliarc welding	7	1983
Industrial Rubber Products Co	Rubber - assembly line, industrial supply hydraulic hose conveyor belt	6	N/A
Johnson Industries Inc	Mining machinery & equipment, conveyor tail pieces, personnel carriers & laser systems	22	1981
Kris Electrical Manufacturing	Electrical mining equipment	6	1985
Natural Products	Medicinal roots, barks, leaves & berries	2	2000
NJN Machine Tool Inc	Machine shop: precision machining	9	1997
Pikeville Auto & Truck Recyclers	Automobile recycling	2	1996
Southern Mine Hydraulic Service	Hydraulic mine component rebuilding	8	1972
Sports Outfitters Supply	Specialty & textile screen printing; embroidering	3	1990
Webco Conveyor Manufacturing	Conveyor equipment & rollers	1	1985
Elkhorn City			
Kendrick's Machine Shop	Machine shop: drilling, boring, lathe & Mill work, MIG & TIG welding	1	1975
Kemper			
May Brothers Lumber Co Inc	Sawmill: hardwood & softwood lumber	13	1980
Mountaintop Baking Co	Convenience foods: breakfast & snack bars	450	1990

Source: Kentucky Cabinet for Economic Development (12/11/2003)

3.11.2 North Pikeville Study Area

A Phase I HTRW Investigation was performed for the North Pikeville and Coal Run Village LPP areas (*WasteTron, Inc*., January 2002) for 101 tracts of land. Nine of the tracts were recommended for Phase II HTRW investigations, and five tracts were recommended for removal actions only (Phase II(a) not recommended).

The sites identified in the Phase I HTRW within the North Pikeville study area are shown on **Figure 3-16**. Additionally, two state hazardous waste sites (SHWS) were identified in the North Pikeville Study Area: *Trimble Service* at 838 N. Mayo Trail; and *Power Service Manufacturing Co*. at 192 S. Mayo Trail. Phase II Investigations were recommended for the following locations:

- ***P01-00-05-002.00 - Adams Construction/B & B Customs, Inc., McCoy Motor Sports, Hi-tech Engine Builders (Parcel No. 23)*** The property was previously utilized by a glass and electrical supply business. The property is used for automotive engine building and body shop operations, including painting processes, and two former USTs (closed in place). A Phase II(a) HTRW investigation is recommended to identify potential issues related to historical operations conducted on the property.

- ***P01-00-05-018.00 - Equitable Production, Inc.-formerly Eastern States (Parcel No. 149)*** A pile of solid waste (empty drums, scrap metal) and stained soil near the aluminum building near the Levisa Fork were identified on the property. Drummed products were observed adjacent to the building.

- ***P01-00-05-010.00 - Fletcher & Halls (Parcel No. 140)*** The concerns associated with this property are the former UST removed in 1988, and the use of the property by transport companies. A Phase II(a) HTRW investigation is recommended to identify potential issues related to UST(s) located or previously located on the property.

- ***P01-00-05-004.00 - E & D Specialties/One Stop Carwash (Parcel No. 146)*** The property was previously utilized by a glass and electrical supply business. A gasoline service station is located south and potentially upgradient from the property. A Phase II(a) HTRW investigation is recommended to identify potential issues related to historical operations conducted on the property.

- ***P01-00-05-021.00 - Kentucky Department of Transportation, District 12, Garage 16 (Parcel No. 142)*** Stained soil, gravel, and pavement, as well as, debris piles, hazardous materials stored/used on the property, and drums and ASTs located on the property are the areas of concern. A Phase II(a) HTRW investigation is recommended to identify potential soil contamination issues related to the stained areas.

- ***P01-00-05-003.00 - B & B Customs, Inc. (Parcel No. 24)*** The property was previously utilized by a glass and electrical supply business. The property is used for automotive body shop operations, including painting processes. A Phase II(a) HTRW investigation is recommended to identify potential issues related to historical operations conducted on the property.

Removal Actions, were recommended at P01-00-05-015.00, Structure P01-00-05-015.00-2 (Parcel No. 148), where new and used oil containers were noted on the property. No staining was reported. Recommendations included identifying and removing materials from the property prior to property acquisition.

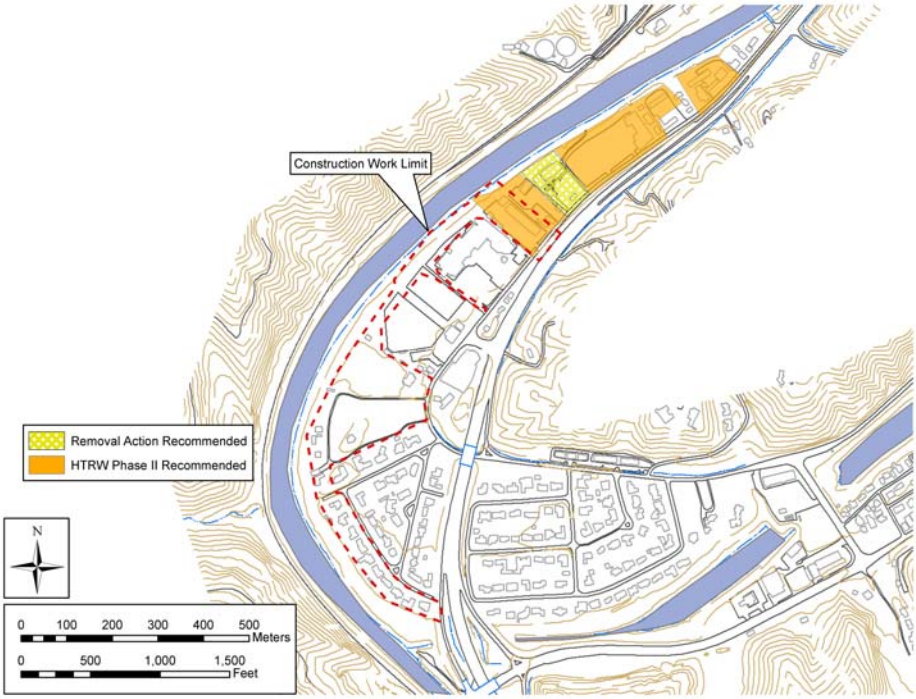


Figure 3-16. North Pikeville HTRW Investigation Locations

3.11.3 Coal Run Village Study Area

A Phase I HTRW Investigation was performed for the North Pikeville and Coal Run Village LPP areas (*WasteTron, Inc*., January 2002) for 101 tracts of land. Nine of the tracts were recommended for Phase II HTRW investigations, and five tracts were recommended for removal actions only (Phase II(a) not recommended). The sites identified in the Phase I HTRW within the Coal Run Village study area are shown on **Figure 3-17**. Phase II Investigations were recommended for the following locations:

- ***049-00-00-039.01, Structure 049-00-00-039.01-4 - East Equipment Rental (Parcel No. 12)*** Three areas of stained soils were observed southwest of the building. Several drums, ASTs, and used USTs are present on the property. A Phase II(a) HTRW investigation is recommended to identify potential issues related to the stained areas.

- ***049-20-03-054.00 Tract II - Viola Daniels, Tire 1 (Parcel No. 37)*** Used oil drums and a drain are located along the east side of the building. Staining on concrete and cardboard was observed near the drums. Liquids with a sheen were observed entering the drain. A Phase II(a) HTRW investigation is recommended to identify potential issues related to the drain area.

- ***AEP (Parcel 12)*** A sewage treatment plant discharges at the Levisa Fork and new and used oil drums and ASTs are located on the property. A Phase II(a) HTRW investigation is recommended to identify potential issues related to the sewage discharge point.

Removal actions were recommended at the following locations:

- ***049-20-03-050.00. Structure 049-20-03-050.00-2 (Parcel No. 49)*** Several non-operable vehicles are located on the property. The vehicles should be removed from the property prior to property acquisition.

- ***049-00-00-042.00 (Parcel No. 67)*** A lift station is located on the north side of the property. Prior to property acquisition, the lift station should be removed. If contamination is encountered during removal activities, measures should be taken to address the contamination and confirmation sampling conducted to verify cleanup activities.

- ***049-00-00-041.01 (Parcel No. 60)*** One AST is located on the south side of the property. Prior to property acquisition, the AST should be removed. If contamination is encountered during removal activities, measures should be taken to address the contamination and confirmation sampling conducted to verify cleanup activities.

- ***049-00-00-039.01, Structure 049-00-00-039.01-1 (Parcel No. 12)*** Waste fryer oil is located in a mini-dumpster on a paved area behind the structure. The waste fryer oil and dumpster should be removed from the property prior to property acquisition.

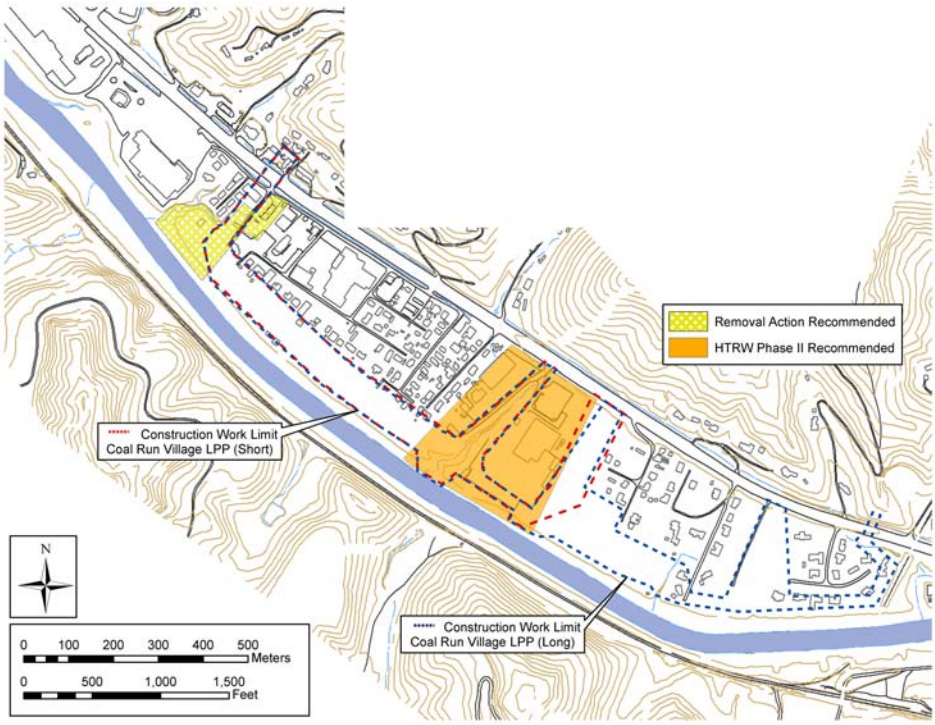


Figure 3-17. Coal Run Village HTRW Investigation Locations

3.12 Health and Safety

Health care facilities in Pike County include three local public health clinics and four health service centers operated by the Pike County Health Department, as well as six private health care clinics, five nursing facilities with 500 beds, and two major hospitals - Pikeville Methodist and Williamson Appalachian Regional Hospital. In 2003, Pike County was served by 165 licensed doctors and 37 dentists (PB 2003). A new doctor's service center is under construction on Church Street in Coal Run Village.

Fire services in Pike County are provided by at least 20 municipal or volunteer departments. Coverage for the North Pikeville and Coal Run Village areas is provided by the Pikeville Fire Department and the Coal Run Volunteer Fire Department, respectively. In addition to the fire departments, seven emergency medical service (EMS) providers are located in Pike County (BSADD, 2003).

The Coal Run Volunteer Fire Department is located on Church Street in Coal Run Village, within the area that would be protected by either of the two Structural Alternatives. The department's service area includes approximately 25 square miles and 4,500 people. Services provided include firefighting, EMS, vehicle rescue/extrication, and search and rescue. (Coal Run Volunteer Fire Department website).

3.13 Infrastructure

3.13.1 Telecommunications

Telephone services in Pike County are provided by Bellsouth Telecommunications, Inc. and Gearheart Communications Company, Inc. A variety of long-distance and cellular providers offer services within the county. Pike County is within the 606 area code. Cellular coverage is often poor or nonexistent due to the mountainous terrain. (BSADD 2002).

Broadband connections are available in some areas of Pike County. Public access to technology and internet services is provided by four public library locations as well as the Community Action Program, the Pikeville "Job Site", the Big Sandy Community College, the Department of Employment Services, the Pikeville Housing Authority, and the Pikeville College Community Technical Center.

Television cable services are provided by Tele Media Company in Pikeville.

3.13.2 Electricity

Electricity in Pike County is provided by AEP with an average residential billing of $50/month. (BSADD 2002)

3.13.3 Natural Gas

Pike County has several natural gas providers, including Belfry Gas, Inc., Columbia Gas of Kentucky, Inc., Eastern American Energy Corporation, Equitable Gas Company, Mike Little Gas Company, Inc., Pikeville Gas System, and the Zebulon Gas Association.

3.13.4 Water

Drinking water in Pike County is generally provided by surface water from the Levisa, Russell and Tug Forks. Approximately 47 percent of Pike County households, or about 13,000, are served by public water systems. The three major public water systems in Pike County are the Elkhorn Water Department, the Pikeville Water Department, and the Mountain Water District. Big Sandy Water District also provides services with water purchased from the Pikeville Water Department and others. Pike County had a total of 600 miles of water lines as of 2001. In addition to these major water systems, Pike County also has four community systems and ten non-community systems. Public water systems in Pike County are shown in **Table 3-20**. The remainder of Pike County's 27,800 households rely primarily on wells for drinking water. Approximately 26,000 people use wells and 2,000 use cisterns, hauled water, or other sources. (WRDC)

Water management projections provided by the BSADD indicate that water supply from the three major water suppliers will rise to 9.988 million gallons per day (mgd) by 2015, a 79 percent rise from the 5.85 mgd used in 2000. The majority of the increase will be used to provide water service to existing residents. An estimated 79 percent of Pike County's project 2020 population will have public water supply access. Additional treatment plants and an additional 440 miles of service lines are planned.

Table 3-20. Pike County Public Water Systems

System/ Service Area	Service Connections	Water Source	Treatment Plant Capacity (gallons per day)	Daily Average Production (% of capacity)	Storage Plant Capacity (gallons)
Elkhorn Water Department / Elkhorn City	655	Russell Fork	360,000	60	200,000
Pikeville Water Department / Pikeville	2,950	Levisa Fork	6,000,000	58	2,660,000
Mountain Water District / Countywide	10,300	Russell Fork, Levisa Fork	1,000,000	74	7,700,000
Sandy Valley Water District	n/a	Purchase from Pikeville Water Department and others	n/a	n/a	n/a
White Acres Mobile Home Park	8	Groundwater from wells	5,000	n/a	n/a
Lin-Corb Mobile Home Park	23	Groundwater from wells	n/a	n/a	n/a
Roadfork Dev/Calloway Mine	1	Groundwater from wells	7,000	n/a	n/a
Griffey Trailer Park	8	Groundwater from wells	5,000	n/a	n/a
Johnson Mobile Home Park	20	Groundwater from wells	1,100	n/a	n/a
Slones Trailer Park	13	Groundwater from wells	8,000	n/a	n/a
Upper Levisa Health Clinic	1	Groundwater from wells	7,200	n/a	n/a
Jackson Rowe Elementary School	1	Groundwater from wells	30,000	n/a	n/a
Pikeville Coal Co-Chisholm Mine	1	Groundwater from wells	40,000	n/a	n/a
Lodestar Energy	2	Groundwater from wells	6,000	n/a	n/a
L & J Coal Mart	1	Groundwater from wells	7,000	n/a	n/a
Family Fun Bowling Inc	2	Groundwater from wells	5,000	n/a	n/a
Costain Coal Inc.	1	Groundwater from wells	8,000	n/a	n/a
Roadfork Dev/Burnwells	1	Groundwater from wells	n/a	n/a	n/a

Source: WRDC, 2003
n/a not available

3.13.5 Wastewater

Sewer service in Pike County is much less extensive than water service and is provided by three major entities: The Elkhorn City Water Department, the Pikeville Water Department, and the Mountain Water District. The BSADD estimated in 2001 that Pike County has an estimated 6,650 failing septic systems and 1,715 straight pipes.

The Elkhorn City Water Department has 479 service connections serving approximately 6,000 people. A 0.50 mgd secondary level wastewater treatment plant discharges into Russell Fork at river mile 11.45.

The Pikeville Water Department serves Pikeville and adjacent areas. Approximately 2,400 service connections serve nearly 6,000 people with a 2.0 mgd secondary level wastewater treatment plant that includes an extended aeration facility.

The Mountain Water District in Pike County has 419 service connections serving 5,000 persons. Mountain Water treatment plants include Mossy Bottom Wastewater Treatment Plant serving Mossy Bottom and Coal Run Village, a system in South Williamston WV (with a collection system in Phelps), and small package treatment plants located throughout Pike County. The Mossy Bottom Plant has a capacity of 0.2 mgd, with an average daily flow of 0.16 mgd providing secondary treatment with extended aeration. The Mossy Bottom plant discharges into the Levisa Fork at river mile marker 106.8, downstream of the potential borrow areas.

3.13.6 Solid Waste

Pike County meets all requirements for the certified clean counties program, including a mandatory collection program and agreements to clean up identified open dumps. The Pike County Solid Waste Department operates the Ford Branch Landfill near Meta, Kentucky, which has an average 95,000 tons annual disposal. Ford Branch landfill is permitted for an additional 4 years. Adequate landfill capacity is present within the region, with seven landfills within the BSADD. Pike County also has a recycling program (BSADD 2002).

3.14 Transportation

3.14.1 Roadway

Pike County is served by US and state routes, as well as county and local roads. The current roadway system within Pike County consists mainly of two-lane or single-lane, paved, gravel or dirt roads. Local roads are characterized by sharp curves and steep grades. Major roadways have developed in a north-south direction due to the area topography. No continuous four-lane highway provides east-west access. A new interstate connection, the Southern Kentucky Corridor (I-66) is in the design process. The interstate would connect Pikeville to the proposed King Coal Highway to the northeast and to Somerset, Kentucky to the west.

The coal and timbering industries generally place high demand on roadways within Pike County and the region. Although coal production has declined somewhat over previous levels, the percentage of coal moving out of the area by truck (rather than rail) has

increased approximately 11 percent between 1990 and 2000. Trucks carry more than 50 percent of all coal mined in the area.

3.14.2 Rail

Freight services in Pike County are provided by CSX Transportation (CSTX) and the Norfolk Southern Railway. CSXT rail lines parallel the Levisa Fork within the area where structural measures are under consideration. In both North Pikeville and in Coal Run Village, the CSXT rail lines are on the opposite side of the river from proposed floodwall/levee components. No passenger rail service is available in Pike County. The CSXT rail lines are close enough to the Levisa Fork to hinder consideration of channel modification as an alternative for flood damage reduction.

3.14.3 Airports

The Pike County Airport-Hatcher field is a two-runway facility located approximately six miles northwest of Pikeville. This airport is accessed by US 460/23/80. A heliport is located atop Pikeville Methodist Hospital in Pikeville and is restricted to medical emergency use. The closest commercial airport is in Bristol, Tennessee to the southeast. The closest cargo airport is Big Sandy Regional Airport in West Virginia, approximately 75 miles from Pikeville.

3.14.4 Public Transportation

No formal rural public transportation system operates county-wide. Sandy Valley Transportation provides senior citizen transportation services, as well as paid non-emergency medical transportation services (BSADD, 2002).

3.14.5 Bicycle Trails

One state-recognized bicycle trail crosses Pike County, following SR 122 and 1469 to the east, US 23 and 199 south to Shelby Gap, and SR 197 through Elkhorn City north to the Breaks Interstate Park.

3.15 Future Without Conditions

The without project condition assumes no action by the Federal government to implement any type of comprehensive flood damage reduction program in the Levisa Fork basin in Pike County. It reflects the continuation of existing economic, social, and environmental conditions and trends in the project area. Inherent with this condition would be federally subsidized flood insurance for eligible property owners through the National Flood Insurance Program and continued enforcement of the local floodplain management ordinances. This condition would result in no expenditure of federal funds to implement a flood damage reduction plan for Pike County. However, federal expenditures to subsidize the flood insurance program and to assist in flood emergency and recovery operations would continue.

The potential for future growth and economic development in Pike County would be somewhat limited, especially in the North Pikeville and Coal Run Village areas without the means to reduce damages from major floods. It can be expected that Pike County

residents would continue to be subjected to floods and flood damages similar to what has occurred in previous years. The residential and business district would continue to deteriorate and business owners would be left to cover continually increasing flood losses on an individual basis. Flood insurance now available for floodplain occupants, while providing some economic protection, does not necessarily guarantee a decent, safe, and sanitary community environment.