CHAPTER 4

Environmental Consequences

This Chapter discusses the potential environmental effects of the alternatives considered, including adverse environmental effects that cannot be avoided, the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, and irreversible and irretrievable commitments of resources. In addition, measures to mitigate adverse environmental impacts are also discussed.

4.1 Land Use and Land Cover

This section discusses the potential effects of the Levisa Fork flood damage reduction alternatives on the land use and land cover of the implementation area. The methodology for determining impacts is presented, along with a description of the impacts for each alternative.

The land use/land cover resource impact analysis consists of an evaluation of the effects caused by the construction and operation of potential project alternatives on specific land within the CWL. These impacts are evaluated based on the classification of land use types defined in Section 3.1.

To determine if an action may cause a significant impact, both the context of the proposed action and the intensity of the impact are considered. The context for a Levisa Fork flood damage reduction project is Levisa Fork Basin within Pike County. The intensity of the impact is considered in terms of the area's special characteristics and the degree to which an alternative may impact these resources. The land use evaluation includes both temporary land use impacts during construction and permanent changes to land use resources resulting from the project.

4.1.1 No Federal Action Alternative

No direct change in land use would result from the No Federal Action Alternative. However, periodic flooding may influence land use changes by discouraging investment, resulting in deterioration of structures and loss of property value for flood-prone areas.

4.1.2 Alternative 1

Alternative 1, as described in Chapter 2, includes the North Pikeville LPP and Coal Run Village LPP "A", and voluntary nonstructural measures throughout the balance of the Pike County implementation area.

Direct Impacts:

- North Pikeville Area: The North Pikeville LPP would disturb 27.3 acres of land. Nearly all of this land has been previously disturbed, with 9.0 acres currently vegetated (including maintained areas). Of the total disturbed amount, 19.7 acres would be used temporarily for construction staging and access areas (see **Table 4-1**).

Table 4-1. Land Use and Land Cover Impacts – Alternative 1

Land Use/ Land Cover	North Pikeville Area (acres) *	Coal Run Village Area (acres) **	CWL (acres)			Structural Footprint (acres)		
			North Pikeville	Coal Run Village "A"	Total	North Pikeville	Coal Run Village "A"	Total
Commercial	46	37	6.9	4.5	11.4	2.5	2.2	4.7
Forested	5	50	0.4	16.3	16.7	0	7.5	7.5
Institutional	17	2	3.6	0.5	4.1	1.5	0.2	1.7
Maintained	5	0	4.5	0.0	4.5	0.1		0.1
Residential	29	53	7.8	4.4	12.2	2.4	2.2	4.6
Urban/ Industrial	0	18	0	2.0	2.0	0	0.4	0.4
Old Field	4	3	3.2	0.0	3.2	0.3	0	0.3
Scrub/Shrub Upland	3	0	0.9	0.0	0.9	0.8	0	0.8
Wetland	0	0	0	0	0	0	0	0
TOTAL	**108**	**163**	**27.3**	**27.7**	**55.0**	**7.6**	**12.5**	**20.1**

* as shown in Figure 3-2
** as shown in Figure 3-3

Staging and access areas would return to open land after construction, with areas riverward of the LPP revegetated with native plant species. Permanent loss for the North Pikeville LPP would be approximately 7.6 acres. Land use and land cover within the CWL and structural footprint for North Pikeville LPP are shown in **Figure 4-1** and **Figure 4-2**. This land use change is not considered to be a significant impact. Relocation impacts are discussed in Section 4.9.

- Coal Run Village Area: The Coal Run Village LPP "A" would disturb 27.7 acres of land. Approximately 16 acres is currently forested (excluding maintained lawns and landscaped areas). Of the total disturbed amount, 15.2 acres would be used temporarily for construction staging and access areas (see **Table 4-1**). Staging and access areas would return to open land after construction, with areas riverward of the LPP revegetated with native plant species. Permanent loss for the Coal Run Village LPP would require approximately 12.5 acres (15.0 acres forested). Land use and land cover within the CWL and structural footprint for the Coal Run Village LPP are shown in **Figure 4-3** and **Figure 4-4**. This land use change is not considered to be a significant impact. Relocation impacts are discussed in Section 4.9.

- Borrow Areas: Direct impacts to one or both borrow areas would include clearing of trees and vegetation, and removal of up to five feet of soil. Land cover as defined in Section 3.1 within the two alternative borrow areas are shown in **Table 4-2**. This land use change is not considered to be a significant impact. Wetland impacts are discussed in Section 4.7.

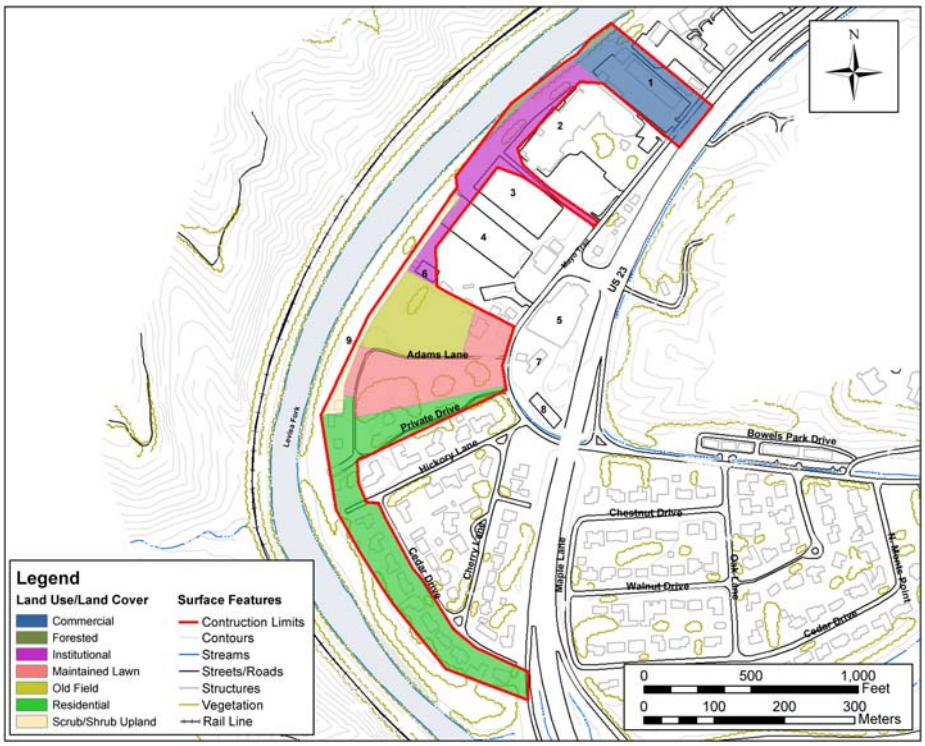

Figure 4-1. Land Use and Land Cover within North Pikeville LPP CWL

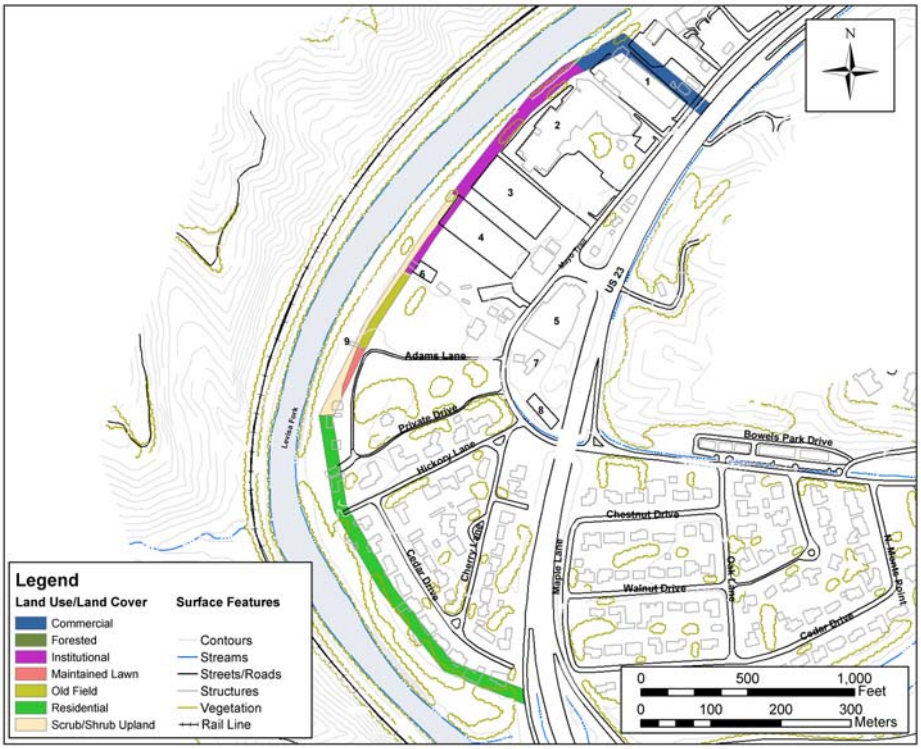

Figure 4-2. Land Use and Land Cover within North Pikeville LPP Permanent Footprint

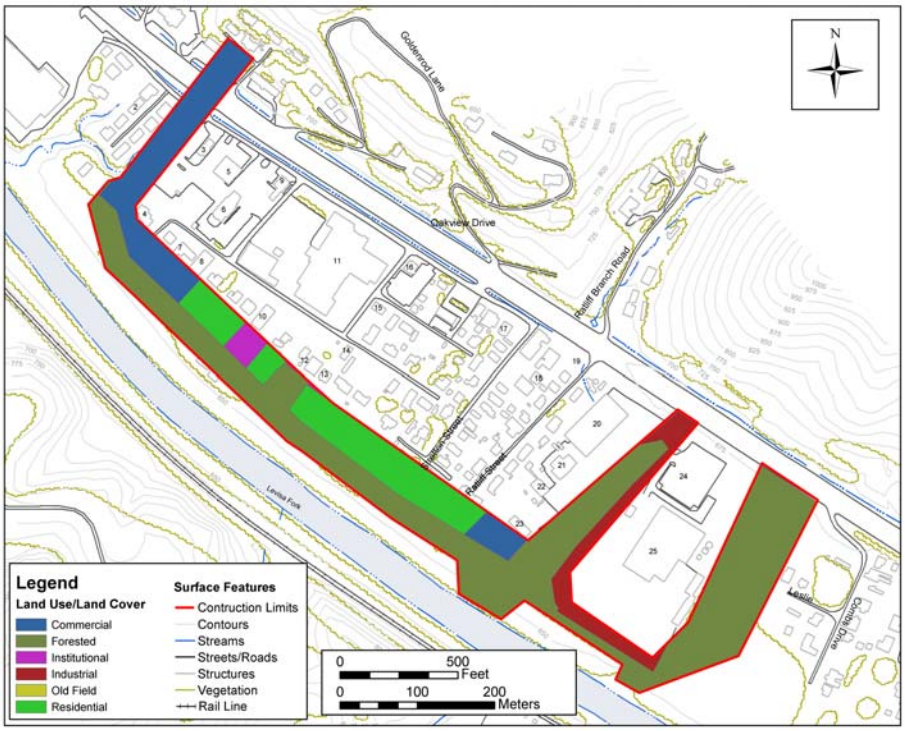

Figure 4-3. Land Use and Land Cover within the Coal Run Village LPP "A" CWL

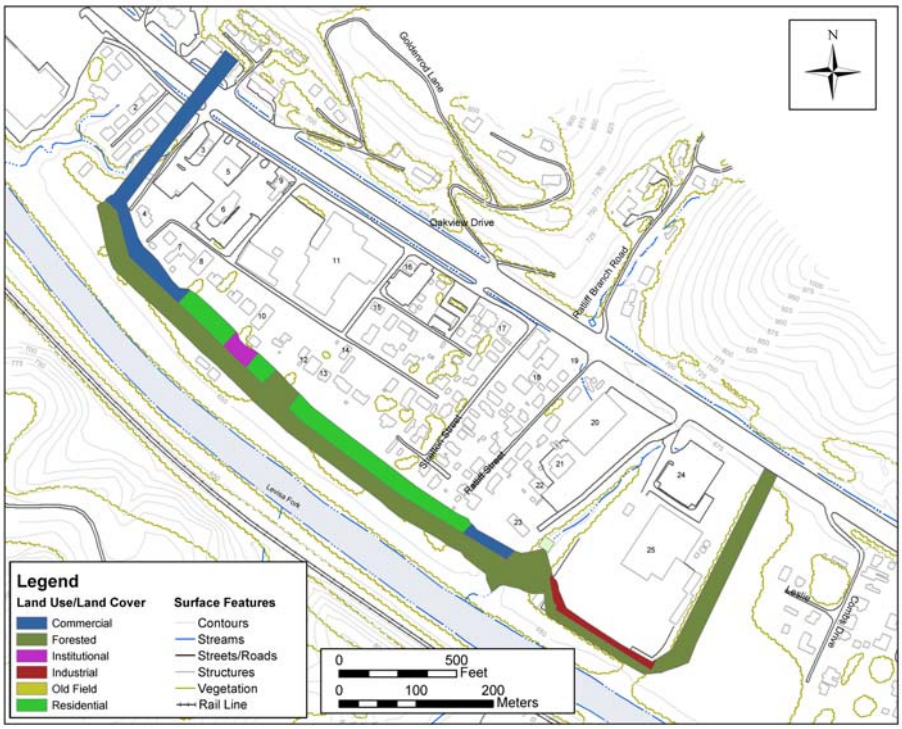

Figure 4-4. Land Use and Land Cover within the Coal Run Village LPP "A" Permanent Footprint

Table 4-2 Land Use and Land Cover Impacts – Proposed Borrow Areas

Land Use/ Land Cover	Borrow Area #1		Borrow Area #2	
	Acres	Percent	Acres	Percent
Old Field	3.4	37%		0%
Scrub/Shrub Upland	3.9	42%		0%
Cleared/Bare Ground	0	0%	9.2	100%
Kudzu	1.9	21%		0%
TOTAL	9.2	100%	9.2	100%

- Nonstructural Area: Outside the LPP areas, relocation of residences and businesses to flood safe locations could change land use along the Levisa Fork floodplain. Long term beneficial impacts would likely result as future human habitation of the floodway would be permanently prohibited and the land allowed to revert to its natural condition. Evacuated land within the floodplain could be used for such things as passive recreation or wildlife habitat. However, it is possible that some of the land outside the floodway but within the project area could be filled and redeveloped. The amount of land use change within the floodplain would depend on the participation rate for this voluntary program.

  The amount of clearing and grading upland areas for resettlement is difficult to quantify because it is dependent on participation rates and on individual decisions made by relocated persons. The exact number of structures eligible for relocation compared to those eligible for flood proofing is not known at this time. A portion of the displaced population would relocate to existing vacant structures or leave the area. However, community cohesion in the area is moderately high (see Section 3.9.6), and most of the displaced population would be expected to remain in the area. Conversion of forest to accommodate sufficient additional housing would not be considered a significant impact since approximately 85 percent of Pike County's 504,806 acres are forested.

Indirect Impacts: Unoccupied land newly protected from flooding by the LPPs would be available for development. Land values would likely rise as a result of the flood protection. Indirect impacts to borrow areas could include changes in land use and drainage, including wetland hydrology, since both alternative borrow areas are adjacent to wetlands (See Sections 4.2 and 4.7)

Mitigation: Land within the CWL but outside the floodwall would either be returned to its pre-construction condition or be revegetated with native plant species. In the larger nonstructural area, land within the floodway would be protected and allowed to return to its natural condition. Coordination is ongoing with appropriate Federal and State agencies and would continue throughout the completion of the project. Impacts to terrestrial resources and wetlands are discussed in Section 4.7. Socioeconomic impacts and community cohesion are discussed in Section 4.9.

4.1.3 Alternative 2

Alternative 2, as described in Chapter 2, includes the North Pikeville LPP, the longer Coal Run Village LPP, and voluntary nonstructural measures throughout the balance of the Pike County implementation area.

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.

- Coal Run Village Area: The Coal Run Village LPP "B" would disturb 44.7 acres of land. Approximately 27 acres is currently vegetated, with 24.7 acres of the vegetation forest. Of the total disturbed amount, 26.9 acres would be used temporarily for construction staging and access areas (see **Table 4-3**). Staging and access areas would return to open land after construction, with areas riverward of the LPP revegetated with native plant species. Permanent loss for the Coal Run Village LPP "B" would require approximately 17.8 acres (10.8 acres currently forested). Land use and land cover within the CWL and structural footprint for the Coal Run Village LPP are shown in **Figure 4-5** and **Figure 4-6**. Relocation impacts are discussed in Section 4.9.

Table 4-3. Land Use and Land Cover Impacts – Alternative 2

Land Use/ Land Cover	North Pikeville Area* (acres)	Coal Run Village Area** (acres)	Within CWL (acres)			Within Structural Footprint (acres)		
			North Pikeville	Coal Run Village "B"	Total	North Pikeville	Coal Run Village "B"	Total
Commercial	46	37	6.9	6.1	13.0	2.5	2.2	4.7
Forested	5	50	0.4	24.7	25.1	0	10.8	10.8
Institutional	17	2	3.6	0.5	4.1	1.5	0.2	1.7
Maintained	5	0	4.5	0.0	4.5	0.1		0.1
Residential	29	53	7.8	9.0	16.8	2.4	4.2	6.6
Urban/Industrial	0	18	0.0	2.1	2.1	0	0.4	0.4
Old Field	4	3	3.2	2.3	5.5	0.34	0	0.34
Scrub/Shrub Upland	3	0	0.9	0.0	0.9	0.8	0	0.8
Wetland	0	0	0	0	0	0	0	0
TOTAL	**108**	**163**	**27.3**	**44.7**	**72.0**	**7.6**	**17.8**	**25.4**

* as shown in Figure 3-2
** as shown in Figure 3-3

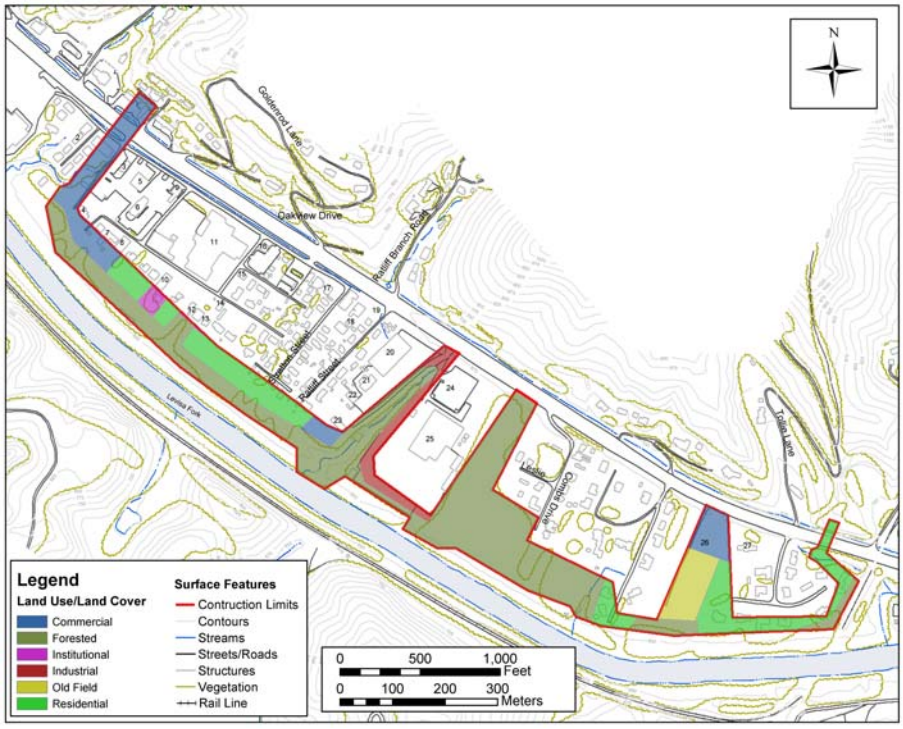

Figure 4-5. Land Use and Land Cover within the Coal Run Village LPP "B" CWL

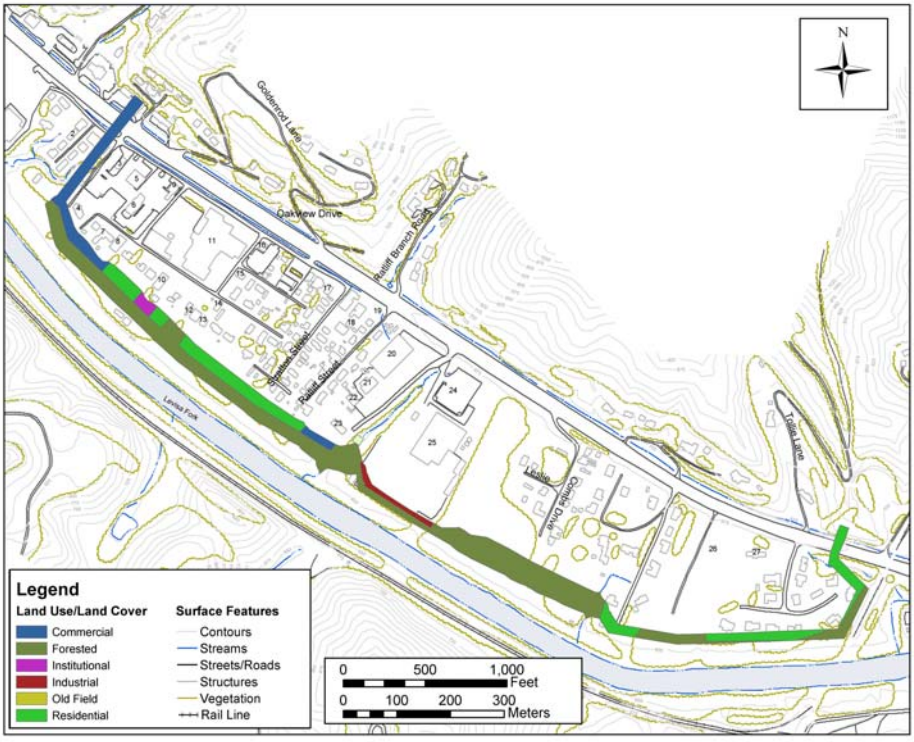

Figure 4-6. Land Use and Land Cover within the Coal Run Village LPP "B" Permanent Footprint

- Nonstructural Area: Same as Alternative 1.

- Borrow Areas: Same as Alternative 1, except the amount of borrow soil would be larger. The two borrow areas have sufficient soil to accommodate either alternative.

Indirect Impacts. Same as Alternative 1.

Mitigation. Same as Alternative 1.

4.1.4 Alternative 3

Alternative 3, as described in Chapter 2, includes voluntary nonstructural measures throughout the entire the Pike County implementation area, including the North Pikeville and Coal Run Village areas, as shown in Figure 1-1.

Direct Impacts:

- North Pikeville Area: The North Pikeville areas would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Impacts to land use in these areas would be similar to the rest of the implementation area, as open land would replace acquired residences and businesses that elected to participate in the voluntary relocation program. The pattern of land use could change depending on the relocation participation rate.

- Coal Run Village Area: The Coal Run Village LPP "A" would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Impacts to land use in these areas would be similar to the rest of the implementation area, as open land would replace acquired residences and businesses that elected to participate in the voluntary relocation program. The pattern of land use could change depending on the relocation participation rate.

- Borrow Areas: No impacts to borrow areas would occur, as no levee construction would take place.

- Nonstructural Area: Impacts from Alternative 3 would be similar to the nonstructural portion of Alternative 1.

Indirect Impacts: Depending on the number of structures eligible for relocation, and the participation rate, the character of the North Pikeville and Coal Run Village communities could change. Socioeconomic impacts and community cohesion are discussed in Section 4.9.

Mitigation: Same as Alternative 1.

4.2 Topography/Drainage

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on the topography and drainage in the implementation area. Impact to the large surface water bodies in the area are discussed in Section 4.6, Water Resources. The methodology for determining impacts is presented, followed by a description of the impacts for each alternative

The topography/drainage impacts analysis considers a region of influence that includes the areas that would be affected by construction and operation of each alternative. Areas that sustain direct and indirect effects are limited to the floodwall/levee footprint; stream and riverbanks along the floodwall/levee; the soil borrow areas; and the staging areas. Impacts were determined by assessing potential changes in existing topography and drainage patterns that could result from construction activities and operations under each alternative.

4.2.1 No Federal Action Alternative

No direct or indirect impacts to topography would occur from the No Federal Action Alternative. Future development in floodplain areas could continue to add stormwater drainage to the Levisa Fork and its tributaries.

4.2.2 Alternative 1

Direct Impacts:

- North Pikeville Area: Direct impacts to topography and drainage would be minor and localized. The floodwall would be a prominent topographical feature. Drainage patterns would change in that all drainage from the interior of the North Pikeville LPP would be routed through interceptors to the pump station and then to the Levisa Fork. During high water events (approximately a 3 year-event or 33% chance flood) on the Levisa Fork, interior drainage would be temporarily held at the pump station ponding area at the current KTC maintenance facility. When the water reaches a specified storage elevation in the ponding area, the pump station would actively pump drainage over the floodwall in order to maintain the elevation.

- Coal Run Village Area: Direct impacts to topography and drainage would be minor and localized. In Coal Run Village, an earthen levee/floodwall would be constructed with a short wall section along its peak. This floodwall/levee would be a prominent topographical feature. Part of Ratliff Branch would be used for placement of a pump station. Drainage patterns would change in that all drainage from the interior of the Coal Run LPP would be routed through interceptors to the pump station and then to the Levisa Fork. Similarly to the North Pikeville pump station, during high water events, interior drainage would be held temporarily at the pump station ponding area.

- Borrow Areas: Direct impacts to topography and drainage include removal of up to five feet of soil from one or more of the alternative borrow areas. Borrow Area #1 elevation is approximately 15 feet higher from the adjacent wetlands and no impacts to local drainage patterns or the adjacent wetlands would be anticipated. Borrow

Area #2 is level with adjacent areas, including an emergent wetland to the north. Use of Borrow Area #2 could affect localized drainage and wetland hydrology (Section 4.7).

- Nonstructural Area: Impacts would be localized and minor, limited to grading of individual parcels following structure removal.

Indirect Impacts: Indirect minor impacts to topography and drainage could include some filling of lower areas once they area protected by floodwall/levee structures in North Pikeville and Coal Run Village. In addition, some upland areas would be cleared and graded for construction of replacement housing. The amount of clearing and grading upland areas for resettlement is difficult to quantify because it is dependent on participation rates and on individual decisions made by relocated persons. The exact number of structures eligible for relocation compared to those eligible for floodproofing is not known at this time. A portion of the displaced population would relocate to existing vacant structures or leave the area. However, community cohesion in the area is moderately high (see Section 3.9.6), and most of the displaced population would be expected to remain in the area.

Mitigation: Best management practices would be implemented to minimize the effects of erosion during construction activities. Localized drainage issues arising from soil removal in borrow areas would be addressed during the design process. Should use of Borrow Area #2 be necessary, the design would include provision to prevent impacts to the adjacent emergent wetland. Viewshed impacts from LPPs are discussed in Section 4.9. Wetland impacts are discussed in Section 4.7.

4.2.3 Alternative 2

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.
- Coal Run Village Area: Same as Alternative 1, except the LPP would be longer.
- Borrow Areas: Same as Alternative 1.
- Nonstructural Area: Same as Alternative 1.

***Indirect Impacts*:** Since the Coal Run LPP "B" extends further to the southeast, more land could be filled for development within the floodwall than under Alternative 1

Mitigation: Same as Alternative 1.

4.2.4 Alternative 3

Direct Impacts:

- North Pikeville Area: The North Pikeville areas would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or

floodproofing. Direct impacts to topography would be limited to grading of individual parcels following structure demolition or floodproofing and is not considered to be a significant impact.

- Coal Run Village Area: The Coal Run Village LPP "A" would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing.

- Borrow Areas: No impacts to borrow areas would occur, as no levee construction would take place.

- Nonstructural Area: Impacts from Alternative 3 would be similar to the nonstructural portion of Alternative 1.

Indirect Impacts: Same as Alternative 1.

Mitigation: Same as Alternative 1.

4.3 Geology and Soils

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on the geology and soils in the implementation area. The methodology for determining impacts is presented, followed by a description of the impacts for each alternative.

Potential impacts to geology and soils are evaluated by assessing anticipated changes to existing conditions during the construction and operation of the alternatives. The region of influence evaluated includes the overall Pike County implementation area, the alternative structural floodwall and levee footprints, the riverbanks, and the borrow areas identified in Section 2, Alternatives.

4.3.1 No Federal Action Alternative

The No Federal Action Alternative would result in no direct impacts to the existing geology and soils in the areas. Erosion and sedimentation associated with periodic flooding would continue.

4.3.2 Alternative 1

Direct impacts:

- North Pikeville Area: Minor direct impacts to geology and soils would include localized soil disturbance during the construction of the North Pikeville floodwall. Soil disruption in the construction areas, borrow areas, and access roads would temporarily increase erosion in these areas. Disturbance would occur principally at the site of construction activities, access roads, and staging areas. No impact to mineral resources is anticipated in the North Pikeville area. No prime farmland, unique, or State-wide important soils are mapped within the North Pikeville implementation area, and therefore no impacts would occur.

- Coal Run Village LPP Area: Minor direct impacts to geology and soils would include localized soil disturbance during the construction of the Coal Run "A" floodwall/levee. Disturbance would occur principally at the site of construction activities, access roads, and staging areas. Soil disruption in the construction areas and access roads would temporarily increase erosion in these areas.

  Three gas wells identified in the Coal Run Village Implementation area (USGS Broad Bottom Geologic Quadrangle Map, 1965) could be affected. The disposition of these wells and associated pipelines would be evaluated prior to construction activities.

  Combs loam and Shelbiana loam are mapped within the Coal Run Village implementation area. These soils are considered suitable for cropland use. However, there has been significant urban development in the area on which these soils are located and none of the land area within the CWL or the protected area is actively farmed. Therefore, no impacts would occur.

- Borrow Areas: Direct impacts to geology and soils would include up to five feet of soil removal from one ore more of the alternative borrow sites during the construction of the Coal Run "A" levee. Disturbance would occur principally at the site of construction activities, access roads, and staging areas. Soil disruption in the borrow areas and access roads would temporarily increase erosion in these areas.

  Gas wells are identified in the vicinity of both borrow areas (USGS Broad Bottom Geologic Quadrangle Map, 1965). The disposition of these wells and associated pipelines would be evaluated prior to construction activities.

  Borrow Areas #1 (9.2 acres) and Borrow Area #2 (12 acres) are mapped as having Shelbiana loam soil, considered suitable for cropland use and making the borrow areas potentially prime farmland. Neither of the areas is actively farmed, and Borrow Area #2 has been extensively disturbed with previous construction and natural gas extraction. Coordination with the Natural Resources Conservation Service (NRCS) was initially conducted during preparation of the 1998 FEIS and is included as part of Appendix A. The project was evaluated by NCRS on a countywide basis and found to have no significant impact on prime farmland. The proposed borrow areas are within the Pike County implementation area.

  Nonstructural Area: Minimal impact to the geology and soils in the Pike County implementation area are anticipated. Direct impacts would be limited to relatively small areas where some of the nonstructural measures (raise-in-place, single-facility ringwalls, etc.) would occur.

Indirect impacts. Due to scarcity of flood safe developable land, indirect impacts to geology and soils could result from clearing and grading activities associated with the relocation of residences and businesses to flood safe locations. Because individual contractors are required to obtain permits and use best management practices to control erosion during construction, this is not considered to be a significant impact.

Mitigation. Good engineering practice and standard erosion control procedures would be implemented to minimize the effects of erosion during construction activities.

4.3.3 Alternative 2

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.
- Coal Run Village Area: The extended Coal Run Village LPP would result in slightly larger impacts due to the larger construction area. One garden is located adjacent to the proposed Staging Area #2, but no commercial farming was noted in the Coal Run Village area.
- Borrow Areas: Same as Alternative 1.
- Nonstructural Area: Same as Alternative 1.

Indirect Impacts: Same as Alternative 1.

Mitigation: Same as Alternative 1.

4.3.4 Alternative 3

Alternative 3 would result in minimal impact to the geology and soils in the Pike County implementation area. Direct impacts would be limited to relatively small areas where some of the nonstructural measures (raise-in-place, single-facility ringwalls, etc.) would occur. However, due to scarcity of flood safe developable land, indirect impacts to geology and soils could result from clearing and grading activities associated with the relocation of residences and businesses to flood safe locations.

Direct Impacts:

- North Pikeville Area: The North Pikeville area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minimal impact to the geology and soils are anticipated. Direct impacts would be limited to individual parcels where nonstructural measures would occur.
- Coal Run Village Area: The Coal Run Village area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Direct impacts would be limited to individual parcels where nonstructural measures would occur.
- Borrow Areas: No impacts to borrow areas would occur, as no construction would take place.
- Nonstructural Area: Impacts from Alternative 3 would be similar to the nonstructural portion of Alternative 1.

Indirect Impacts: Same as Alternative 1.

Mitigation. Same as Alternative 1.

4.4 Air Quality and Climate

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on the air quality and climate of the implementation area and other potentially affected areas. The methodology for assessing impacts is presented, followed by a description of the impacts for each alternative.

No impact to overall climate is expected because activities are localized and temporary. The duration of construction for Alternative 1 is projected to last three to four years. The nonstructural component of Alternative 1 is projected to last between ten and fifteen years.

The air quality impacts discussion focuses on the construction phase of the project because it is the primary activity with impact potential. Air emissions, for the most part, would be from construction vehicle exhaust and fugitive dust from soil disturbance. The evaluation is qualitative and is based on construction activity types, equipment type and use, and local climate and soil conditions. Mitigation measures to avoid and minimize potential nuisance dust conditions and construction equipment impacts to nearby residents are also discussed.

4.4.1 No Federal Action Alternative

Under the No Federal Action Alternative, potential air quality impacts associated with the construction and operation of the Levisa Fork flood damage reduction project in Pike County would not occur. The air quality and climate impacts of the No Action Alternative would be the same as the existing environment discussed in Section 3.4

4.4.2 Alternative 1

Direct impacts:

Direct short-term impacts would include increased localized air emissions from construction activities. Construction activities have the potential to cause localized temporary, nuisance air quality impacts, such as diesel exhaust and fuel odors associated with operation of heavy equipment, and off-site fugitive dust emissions associated with excavation, earth-moving, and construction activities. Demolition of existing structures has the potential for asbestos fibers to be come airborne. The amount of dust emissions from a construction or demolition site depend on the size of the site, soil type and conditions, the intensity of activity, wind speed, and dust suppression activities used. Visible particulate emissions crossing the property boundary, in this case the construction limits boundary, would be considered a violation of 401 KAR Chapter 63:010 and City of Pikeville Ordinances 92.10 and 92.11.

Minor direct long-term impacts would occur from ongoing operation and maintenance of the LPP components. The diesel engines of the pump stations would run only during flood event and emissions would be minor and temporary. Emissions from occasional maintenance vehicles would also be minor and temporary.

Receivers adjacent to the construction boundary, staging areas, and access roads are susceptible to construction-related air emission impacts, particularly if atmospheric and site conditions result in off-site particulate or dust emissions. Elderly persons, and persons with respiratory disabilities, may also be impacted by air emissions from the proposed project. Residents may also experience inconveniences associated with dust accumulation on vehicles, homes, and other items. The proposed construction areas are generally situated such that prevailing winds (from the southwest) are likely to carry engine exhaust and dust towards sensitive receivers.

- North Pikeville Area: Residences and establishments immediately adjacent to the construction boundaries, including residents on Adams Lane and Hickory Drive, may be affected by dust and/or exhaust fumes in outdoor areas.

- Coal Run Village Area: Residences and establishments immediately adjacent to the construction boundaries, including residents and the medical plaza on the west side of Church Street, and residents adjacent to the proposed staging areas on Combs Lane may be affected by dust and/or exhaust fumes in outdoor areas.

- Borrow Areas: Residents adjacent to either of the proposed borrow areas, and residents along the transport route may be affected by dust and/or exhaust fumes in outdoor areas.

- Nonstructural Area: The same types of air emissions (equipment exhaust, fugitive dust, and demolition-related asbestos dust) are expected from any of the three types of non-structural activities: acquisition and demolition of residents and businesses; raising residences in place for a higher first-floor elevation; and constructing ring-walls around individual businesses or institutional structures. Because each eligible structure would be evaluated and addressed individually, the scope of each individual activity would be smaller and shorter in duration compared to the LPP components. For the proposed ringwall at Millard Elementary School, air quality impacts and mitigation would be similar to those at Pikeville High School.

Indirect impacts. No indirect impacts would occur.

Mitigation: Construction would be performed in accordance with the State Implementation Plan (SIP), and in compliance with applicable Kentucky Division for Air Quality and local requirements.

The following actions would be used to minimize off-site air emissions and air quality impacts associated with construction activities:

- Cover dump trucks when hauling soil on main highways;
- Maintain trucks to prevent excess emissions;
- Shut down heavy equipment when not needed;
- Use a water or approved chemical spray to suppress dust on roads, materials stockpiles, demolition areas, and other surfaces as required;
- Utilize silt fences to contain soil in the construction zone;
- Clean excess soil from heavy equipment and trucks leaving the construction zone to prevent off-site transport;
- Conduct asbestos inspections of each structure identified for demolition; and

- Special handling and removal of asbestos-containing materials to prevent release of asbestos fibers;

4.4.3 Alternative 2

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.

- Coal Run Village Area: Because the Coal Run Village LPP "B" component extends further downstream along the Levisa Fork, residents in the Scott Addition Drive area may be impacted by fugitive dust and exhaust fumes in addition to residents and businesses discussed previously for Alternative 1.

- Borrow Areas: Same as Alternative 1.

- Nonstructural Area: Same as Alternative 1.

Indirect impacts. No indirect impacts would occur.

Mitigation: Same as Alternative 1

4.4.3 Alternative 3

Direct Impacts: The same types of short-term air emissions (equipment exhaust, fuel odors, fugitive dust, and asbestos fibers) are to be expected for the three types of non-structural activities: acquisition and demolition of residents and businesses; raising residences in place for a higher first-floor elevation; and constructing ring-walls around individual businesses or institutional structures. Because each eligible structure would be evaluated and addressed individually, the scope of each individual activity would be smaller and shorter in duration compared to the LPP components. No long-term impacts are anticipated.

- North Pikeville Area: The North Pikeville area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minor, short-term impacts would be limited to individual parcels where nonstructural measures would occur.

- Coal Run Village Area: The Coal Run Village area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minor, short-term impacts would be limited to individual parcels where nonstructural measures would occur.

- Borrow Areas: No impacts to borrow areas would occur, as no construction would take place.

- Nonstructural Area: Impacts from Alternative 3 would be similar to the nonstructural portion of Alternative 1.

Indirect Impacts: No indirect effects would occur.

Mitigation: Same as Alternative 1.

4.5 Noise

This section discusses the potential impacts of the Levisa Fork flood damage reduction project from construction activities and operation in potentially affected areas. The methodology for determining impacts is presented, followed by a description of the impacts for each alternative.

The evaluation of noise impacts focuses on the potential effects of noise from construction and operation of the proposed action on existing noise levels in the area. The evaluation includes some quantification of projected noise levels during construction. Post-construction noise impacts are also identified.

4.5.1 No Federal Action Alternative

No noise impacts would occur from the No Federal Action Alternative. Local noise conditions would continue as described in Section 3.5.

4.5.2 Alternative 1

Direct impacts. Sensitive receivers along the construction boundary would be directly impacted by general construction noise, based on the existing noise levels and anticipated use of construction equipment. Peak noise levels would be variable and intermittent because each piece of equipment is only operated when needed. Peak construction noise levels would be considerably higher than existing noise levels in all construction areas.

Actual peak noise levels would vary at a given location based on line of sight, topography, vegetation, and atmospheric conditions. Relatively high peak noise levels in the range of 93-108 dBA would occur on the active construction sites, decreasing with distance from the construction areas. Construction workers who would be subjected to the highest noise levels would follow standard USACE and Federal Occupational Safety and Health Administration (OSHA) requirements to prevent hearing damage. **Table 4-4** presents peak noise levels that could be expected from a range of construction equipment during proposed construction activities.

Table 4-4. Peak Noise Levels (dBA, attenuated) Expected from Typical Construction Equipment

Source	Peak Noise Level (dBA)							
	Distance from Source (feet)							
	0	**50**	**100**	**200**	**400**	**1,000**	**1,700**	**2,500**
Heavy Truck	95	84-89	78-93	72-77	66-71	58-63	54-59	50-55
Dump Truck	108	88	82	76	70	62	58	54
Concrete Mixer	108	85	79	73	67	59	55	51
Jack-hammer	108	88	82	76	70	62	58	54
Scraper	93	80-89	74-82	68-77	60-71	54-63	50-59	46-55
Bulldozer	107	87-102	81-96	75-90	69-84	61-76	57-72	53-68
Generator	96	76	70	64	58	50	46	42
Crane	104	75-88	69-82	63-76	55-70	49-62	45-48	41-54
Loader	104	73-86	67-80	61-74	55-68	47-60	43-56	39-52
Grader	108	88-91	82-85	76-79	70-73	62-65	58-61	54-57
Pile driver	105	95	89	83	77	69	65	61
Forklift	100	95	89	83	77	69	65	61

Worst-Case Combined Peak Noise Level (Bulldozer, Jackhammer, Scraper)					
	Distance from Source (feet)				
	50	100	200	¼ Mile	½ Mile
Combined Peak Noise Level	103	97	91	74	68

Source: USACE, 2003

Generally speaking, peak noise levels within 50 feet of active construction areas and material transportation routes would most likely be considered "striking" or "very loud", comparable to peak crowd noise at an indoor sports arena (USACE 2003). At approximately 200 feet, peak noise levels would be loud, approximately comparable to a garbage disposal or vacuum cleaner at 10 feet. At ¼ mile, construction noise levels would generally be quiet enough so as to be considered insignificant, although transient noise levels may be noticeable at times.

Combined peak noise levels, or worst-case noise levels when several loud pieces of equipment are used in a small area at the same time (as described in Table 4-4), are expected to occur rarely, if ever, during the project. Under these circumstances, peak noise levels could exceed levels which have the potential to damage a person's hearing, or over 90 dBA, could occur within 200 feet of the construction area, depending on equipment being used.

Although noise levels would be quite loud, and transient noise levels would be above 90 dB, no hearing damage would be expected for area residents and others within the North Pikeville area. The intermittent nature of peak construction noise levels would not create the steady noise level conditions for an extended duration that could lead to hearing damage. In addition, indoor noise levels would be expected to be 15-25 decibels lower than outdoor levels. In evaluating the potential for hearing damage (both Temporary Threshold Shift, or TSS and Noise-Induced Permanent Threshold Shift , or NIPTS), the noise level and duration of exposure are considered. For example, NIPTS would be produced by unprotected exposures of 8 hours per day for several years to

noise above 105 dBA. Similarly, TSS would be based on exposure to a steady noise level of 80 to 130 dBA, increasing with duration of exposure (Canter 1977).

Other direct impacts from construction noise may include effects on wildlife. Construction impacts on wildlife are addressed in Section 4.7 of this EIS.

- North Pikeville Area: Short-term impacts in this area would include construction and traffic noise increases for residences and establishments immediately adjacent to the construction boundaries and access roads, including Pikeville High School and associated recreational complexes, and residents on West Cedar Drive and connecting streets off Mayo Trail. Several receivers may experience additional noise associated with site staging activities, including the Pike County athletic fields on Mayo Trail, residents on Hickory Drive and Adams Lane.

  Also, the floodwall and sheet pile retaining wall would be constructed within 50 feet of school classrooms at Pikeville High School and its athletic fields. Intermittent construction-related peak noise levels within the interior of the school building may reach over 100 dBA. The estimated duration of construction adjacent to Pikeville High School is three months. Transportation of materials past the school would occur throughout the construction period and would also increase noise levels at the school.

  Once construction is complete, the floodwall structure would be expected to permanently change the characteristics of the ambient noise environment. Ambient background and transient noise sources generated on the inland side of the floodwall, such as traffic noise associated with US 23, would likely be reflected to receivers near the floodwall to some extent. Conversely, receivers located near the floodwall may see reductions in transient noise created by railroad traffic just across the Levisa Fork, as well a reduction of natural sounds from the Levisa Fork, i.e. water and wildlife sounds.

  Long-term direct impacts would occur from noise generated by the proposed pump station. However, the pump station would operate only during flood conditions and would occur during heavy rain events that contribute to background noise levels. Operation of the pumps would not be expected to cause significant impacts (USACE 2003).

- Coal Run Village Area: Short-term impacts would include construction noise increases for residences and establishments immediately adjacent to the construction boundaries, including residents, the Church of Christ, the medical plaza on the west side of Church Street, and businesses. Impacts would be similar to those in North Pikeville and would be below conditions associated with hearing damage. The ABC Daycare would be relocated prior to construction and would not be affected by construction noise.

- Borrow Areas: Short-term impacts would include noise from soil excavation and transport. Residents along Mossy Bottom Road, Old Wagner Station Road, and Broadbottom Road, which would be used to transport fill material from borrow areas to the project area, would be subjected to heavy truck traffic at a close distance.

Residents adjacent to Borrow Areas 1 and 2 are likely to experience noise impacts related to excavation of the borrow material. The increased noise levels, while temporary and not at levels to cause harm, would likely be disruptive since existing noise levels on Broadbottom Road are low.

- Nonstructural Area: The same types of noise sources (construction equipment and haul trucks) would be expected for the three types of non-structural activities: acquisition and demolition of residents and businesses; raising residences in place for a higher first-floor elevation; and constructing ring-walls around individual businesses or institutional structures. Because each eligible structure would be evaluated and addressed individually, the scope of each individual activity would be smaller and shorter in duration compared to the LPP components. For the proposed ringwall at Millard Elementary School, noise impacts and mitigation would be similar to those at Pikeville High School.

Indirect impacts. Indirect impacts include noise from worker commuting and material transport. Area traffic volumes and noise levels would increase as construction employees commute to and from work at the project areas, and delivery and service vehicles (including trucks of various sizes) transit to and from the site. Because trucks are present during most phases of construction and leave and enter the site via local thoroughfares, truck noises tend to impact more people over a wider area. For this project, persons living in residential areas near truck traffic routes to and from the project areas would experience temporary increases in traffic noise during day-time hours. Truck and delivery traffic is further discussed in Section 4.15, Traffic and Transportation.

Mitigation: Construction would be performed in accordance with and in compliance with applicable USACE and local requirements. The following actions would be used to minimize noise impacts to sensitive receivers in the implementation area:

- Limit, to the extent possible, construction and associated heavy truck traffic between 9 p.m. to 7 a.m. This measure would be in compliance with the Pikeville noise ordinance and would reduce noise impacts during sensitive night-time hours (If construction must occur outside of these hours, the Corps would formally request a waiver from Pikeville and Coal Run)
- Shield noisy stationary equipment such as generators and compressors with acoustic barriers to reduce noise levels from such equipment;
- Locate stationary equipment as far away from sensitive receivers as possible;
- Select material transportation routes as far away from sensitive receivers as possible;
- Equip construction equipment engines with adequate mufflers, intake silencers, and/or engine enclosures would reduce their noise levels by 5 to 10 dBA;
- Shut down noise-generating heavy equipment when it is not needed;
- Maintain noisy equipment per manufacturer's recommendations;
- Require construction personnel to operate equipment in the quietest manner possible (e.g., speed restrictions, retarder brake restrictions, engine speed restrictions, etc.);
- Complete as much as possible of the North Pikeville LPP near Pikeville High School and the ringwall at Millard Elementary School during the school summer recess to avoid impacts to school function; (the Corps, in this instance, may

request a formal waiver from the Pikeville noise ordinance to expedite complete of construction in this area)
- Perform construction activities off-site to the maximum extent feasible (e.g., fabricate concrete forms, etc.);
- Route heavy truck traffic away from sensitive receivers to the maximum extent possible;

4.5.3 Alternative 2

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.

- Coal Run Village Area: For Alternative 2, potential sources of noise impacts would be the same as those for Alternative 1. Because the Coal Run Village LPP "B" component extends further downstream along the Levisa Fork, residents in the Scott Addition Drive area may be impacted in addition to areas discussed in Section 4.5.2.

- Borrow Areas: Same as Alternative 1.

- Nonstructural Area: Same as Alternative 1.

Indirect Impacts: Same as Alternative 1.

Mitigation: Same as Alternative 1.

4.5.4 Alternative 3

Direct Impacts: The same types of noise sources (construction equipment and haul trucks) would be expected for the three types of non-structural activities: acquisition and demolition of residents and businesses; raising residences in place for a higher first-floor elevation; and constructing ring-walls around individual businesses or institutional structures. Because each eligible structure would be evaluated and addressed individually, the scope of each individual activity would be smaller and shorter in duration compared to the LPP components.

- North Pikeville Area: The North Pikeville area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minor, short-term impacts would be limited to individual parcels where nonstructural measures would occur.

- Coal Run Village Area: The Coal Run Village area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minor, short-term impacts would be limited to individual parcels where nonstructural measures would occur.

- Borrow Areas: No impacts to borrow areas would occur, as no construction would take place.

- Nonstructural Area: Impacts from Alternative 3 would be similar to the nonstructural portion of Alternative 1.

Indirect Impacts: No indirect effects would occur.

Mitigation: Same as Alternative 1.

4.6 Water Resources

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on surface water, floodplain management and groundwater impacts.

4.6.1 No Federal Action Alternative

Under the No Federal Action Alternative the Levisa Fork and other area water resources would continue to be adversely affected by human encroachment on riparian buffers, point and non-point source pollutants, and pollution associated with periodic flooding in developed areas within the floodplain.

4.6.2 Alternative 1

Direct Impacts:

The North Pikeville and Coal Run Village floodwalls would change the overflow patterns of the Levisa Fork at either end of the structures. Further, floodwaters would not enter the overbank areas within floodwall limits, and velocities and carrying capacities would change both within and adjacent to the upstream and downstream reaches of the floodwalls.

North Pikeville Area: Based on hydraulic modeling, average stream channel velocity along the Levisa Fork would increase only slightly due to the presence of the North Pikeville floodwall. For the 1% chance flood (100-year frequency), the increase would be less than 0.4 fps due to the floodwall The average channel velocity within the North Pikeville LPP limits for this event reaches approximately 5.5 fps. Upstream of the floodwall, average stream channel velocity is much higher due to the riverbend (up to 11 fps between RM 86 and 87) but the increase due to the floodwall is less than 0.3 fps.

For the larger 0.2% chance flood (500-year frequency), the average channel velocity increases less than 1.5 fps, due to the floodwall, to approximately 7.5 fps. Within the floodwall reach, average stream velocity for this event is less than 6.5. Downstream of the reach, average stream velocity with the floodwall would remain slightly higher than without the floodwall (less than 0.4 fps).

Additional impacts to the stream from scour during high flood stages would be minor. Under existing conditions, the stream reach in the vicinity of the proposed floodwalls has sufficient velocities to transport bed-load through the reach. Pools and riffles within this reach are most likely formed, moved, and transformed annually under existing conditions. Because the LPP would not significantly change flood velocities, geomorphologic effects from these project features would not be expected to be

significant. Potential impacts of surface velocity on aquatic habitat is further discussed in Section 4.7

Construction of the North Pikeville floodwall would have direct, short-term adverse effects on water quality of the Levisa Fork during the construction period. Construction of the floodwall and retaining wall would occur over several months. Increased sedimentation would be expected, especially in the vicinity of Pikeville High School where a retaining wall would be constructed in close proximity to the Levisa Fork (See Figure 2-1). No work in the Levisa Fork would occur.

Runoff from fill material could cause a temporary increase in turbidity in adjacent streams and in the immediate area of the Levisa Fork. Spills or leakage of fuel or other petroleum products from construction equipment and vehicles could occur. Existing water quality conditions would resume once the work is completed and the area revegetated. Potential adverse impacts would be minimized through the use of best management practices.

The floodwall would reduce overall flood storage by eliminating floodplain flow for the lengths of the floodplain during large storm events. An unnamed tributary to the Levisa Fork located behind the KTC Maintenance facility would be impacted as shown in **Table 4-5**. The stream would be cleared and the site reconfigured for the pump station and outlet into Levisa Fork.

Table 4-5. Stream Impacts from North Pikeville LPP

Stream Reach	Type of Impact	Total Length (feet)	Impacted Length (feet)
Unnamed Tributary to Levisa Fork behind KTC Maintenance facility	Construction of floodwall and pumping station. Installation of stone slope protection (rip rap) around pump station outlet and to the confluence with the Levisa Fork	139	139
TOTAL		139	139

Coal Run Village Area: Based on hydraulic modeling, average stream channel velocity along the Levisa Fork would increase moderately as a result of the Coal Run LPP structures. In the the Coal Run Village area, average channel velocity would increase a maximum of approximately 2.0 fps during a 1% chance flood (100-year frequency) event. The average channel velocity within the Coal Run LPP limits for this event reaches approximately 6 fps.

For the larger 0.2% chance flood (500-year frequency), the average channel velocity increases up to 2.5 fps within the Coal Run Village floodwall/levee reach. Average channel velocity reaches approximately 7 fps within the reach. Downstream of the reach, average stream velocity returns within 0.1 mile to non-floodwall velocities of less than 5 fps.

Additional impacts to the stream from scour during high flood stages would be moderate. The stream reach in the vicinity of the Coal Run Village LPPs would transport slightly more bed-load through the reach than without the LPP. However, pools and riffles within this reach are most likely formed, moved, and transformed

annually under existing conditions. Detailed modeling to determine geomorphologic effects from these project features will be presented in the Final EIS. Potential impacts of surface velocity on aquatic habitat is further discussed in Section 4.7

Construction of the Coal Run Village "A" floodwall and levee (See Figure 2-2) would have short-term adverse effects on water quality of the Levisa Fork during the construction period. Construction of the floodwall/levee would occur over several months. Increased sedimentation would be expected. Runoff from fill material could cause a temporary increase in turbidity in adjacent streams and in the immediate area of the Levisa Fork. Spills or leakage of fuel or other petroleum products from construction equipment and vehicles could occur. Existing water quality conditions would resume once the work is completed and the area revegetated. Potential adverse impacts would be minimized through the use of best management practices.

Long-term, the proposed floodwall/levee project would reduce overall flood storage by eliminating floodplain flow for the lengths of the floodwall/levee during large storm events.

Loss of part or all of Ratliff Branch and an unnamed tributary to Ratliff Branch would occur. Ratliff Branch would be used as the location of a pump station and for interior drainage collection during heavy rain events. Impacts to these streams are shown in **Table 4-6**.

Table 4-6. Stream Impacts from the Coal Run Village LPP "A"

Stream Reach	Type of Impact	Total Length (feet)	Impacted Length (feet)
Ratliff Branch			
Upper Section	Removal of vegetation and placement of stone slope protection (rip rap); partial loss of water source from diversion of small unnamed tributary. Occasional (approximately every 3 years) inundation during pump station operation.	440	440
Lower Section	Construction of floodwall and pumping station. Installation of stone slope protection (rip rap) around pump station outlet and to the confluence with the Levisa Fork	593	593
Unnamed Tributary to Ratliff Branch	Diversion of water to Levisa Fork outside floodwall and construction of floodwall.	590	236
TOTAL		1623	1269

Ratliff Branch would be impacted during 33% chance flood (3-year frequency) events on the Levisa Fork. During these events, water from the Levisa would be higher than the outlet of the pump station causing the temporary closure of the pump outlet structure. This would initiate storage of Ratliff Branch flow in the channel area until the runoff reaches a specified storage elevation. Once this elevation is reached, the pumps would be activated in order to maintain the specified elevation. The stored runoff would be released when the Levisa returns to an elevation below the 33% chance flood (3-year frequency) event. Temporary storage may cause an increase in sedimentation in Ratliff Branch, with the potential for contaminants in the

stormwater runoff to settle. However, the degree of sedimentation should be small, as most sediments would be carried into the Levisa once the stored runoff is released.

- Borrow Areas: Excavating the proposed borrow areas may generate temporary turbidity and sedimentation impacts within the immediate vicinity of the operation. Potential exists for surface water and groundwater from fuels and petroleum products. However, best management practices would be used where appropriate to minimize these effects therefore impacts from runoff would be expected to be minimal.

- Nonstructural Area: Minor temporary impacts to the Levisa Fork and tributaries would result from potential increased sedimentation associated with runoff from construction areas as individual properties are acquired and demolished, or as they are floodproofed. Best management practices would minimize these impacts.

  Demolition or modification of these homes could result in a short-term risk to surface water quality and ground water quality as septic systems or straight pipes are closed or modified. Standard best management practices would minimize this risk. Additionally, the Corps requires that all floodproofed structures be connected to a State/County/Public Service Authority (PSA) approved sewage disposal system. If an acceptable system cannot be provided on the lot and an alternative treatment system cannot be provided, the structure would be eligible for floodplain evacuation. Removal of straight pipes from the Levisa Fork floodplain would have a long term beneficial impact on surface and ground water quality.

  Based on previous nonstructural projects, removal of structures within the floodway of the 1% chance event (100-year frequency) has resulted in a lowering of the flood profile of the base flood elevation (BFE) and other frequency events by clearing obstructions to the flow. Removal of any structures from the regulatory floodway would have a beneficial effect on surrounding property and facilities.

Indirect Impacts: No indirect impacts are anticipated.

Mitigation: Mitigation plans are conceptual at this point. A formal mitigation plan will be prepared prior to the Final EIS in consultation with the US Fish and Wildlife Service (USFWS), the Kentucky Department for Fish and Wildlife Resources (KYFWR), and the Kentucky Division of Water (KYDOW). Many of the options presented in this discussion have been developed during informal discussions with these regulatory agencies. In addition, the USACE has already adopted some of their suggestions into project alternatives. For example, construction work limits were modified to reduce impact to the Levisa Fork, as suggested by the USFWS during an October 2003 during an on-site informal consultation.

General principles for environmental mitigation have developed over time as the long-term successes and failures of different measures have been observed. For most situations, on-site or nearby mitigation sites are preferable to off-site compensation (the linear nature of levee construction projects sometimes limits on-site mitigation options). In-kind compensation (for example, forest for forest) in most cases is preferable to out-of-kind; and up front mitigation (before construction) is favored over after-the-fact mitigation. For wetlands, there is continued uncertainty regarding the long-term success

of wetland creation. Enhancement and preservation methods using already-functioning wetlands are generally preferred due to the higher success rates.

Types of mitigation that may be used include preservation, enhancement, and restoration. Each is briefly described below:

- Preservation: Establishing preservation buffers along streams could help prevent future degradation of the streams as development occurs.

- Enhancement: Where natural vegetation has been removed by development and silvicultural practices along the Levisa Fork stream corridor, native tree and shrub species could be planted to establish a more continuous vegetated riparian corridor. Hardwood mast trees could be planted along the corridor along with native species like Sycamore, Yellow-Poplar (Tuliptree), and Silver Maple. Vegetated riparian corridors along streams provide protected greenways that filter stormwater runoff and facilitate wildlife movement.

- Re-vegetation of the riparian corridor along the Levisa Fork could re-establish habitat loss from the proposed project and aid in dissipating energy from the Levisa Fork when it gains access to the floodplain during flood events.

- Placement of boulder groupings in the Levisa Fork could provide stable structure and slack water for enhancement of aquatic habitat.

- Restoration: Restoration of Ratliff Branch may include but would not be limited to the incorporation of natural stream design principles to restore the stream and/or and bio-retention techniques to improve the inlet water quality from urban runoff.

  Stone slope protection (rip rap) may be limited to the side slopes. A natural bank full channel may be possible within the channel bottom allowing for more natural stream morphology with favorable hydraulic properties. Limited re-vegetation at the top of bank would provide shading of the stream. Limited vegetation may also be possible on the bench immediately adjacent to the bank-full channel.

  Bio-retention is a low-impact development practice to manage and treat stormwater runoff by using a conditioned soil bed and planting materials to filter runoff stored within a shallow depression. The method combines physical filtering and adsorption with biological processes. The system generally includes a pretreatment filter strip of grass channel inlet area, a shallow surface water ponding area, a bio-retention planting area, a soil zone, an underdrain system, and an overflow outlet structure. Filter strips are typically bands of close-growing vegetation, usually grass, planted between pollutant source areas and a downstream receiving waterbody.

4.6.3 Alternative 2

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.

- Coal Run Village Area: Impacts from Alternative 2 would be similar to those in Alternative 1, except that the tributary to Ratliff Branch would be inside the protected

area. Instead of diverting water from the tributary to Ratliff Branch directly to the Levisa Fork, the water would be diverted in a culvert to the interceptor inside the floodwall. Total stream impact of 1,408 feet is anticipated (see **Table 4-7**). Mitigation measures would be developed in the same fashion, and could include many of the same features.

- Borrow Areas: Same as Alternative 1.
- Nonstructural Area: Same as Alternative 1.

Indirect Impacts: No indirect impacts are anticipated.

Mitigation: Same as Alternative 1.

Table 4-7. Stream Impacts from Coal Run Village LPP "B"

Stream Reach	Type of Impact	Total Length (feet)	Impacted Length (feet)
Ratlilff Branch			
Upper Section	Removal of vegetation and placement of stone slope protection (rip rap); partial loss of water source from diversion of small unnamed tributary. Occasional (approximately every 3 years) inundation during pump station operation.	440	440
Lower Section	Construction of floodwall and pumping station. Installation of stone slope protection (rip rap) around pump station outlet and to the confluence with the Levisa Fork	593	593
Unnamed Tributary to Ratliff Branch	Diversion of water to interceptor inside floodwall.	590	590
TOTAL		1,762	1,408

4.6.4 Alternative 3

Direct Impacts: Same as nonstructural portion of Alternative 1.

Indirect Impacts: No indirect impacts are anticipated.

Mitigation: Best management practices would be used to minimize these impacts.

4.7 Ecological Resources

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on the ecological resources at the implementation area and surrounding area.

Potential impacts to aquatic and terrestrial resources, wetlands, and protected species were assessed based on existing reports, site reconnaissance, and limited terrestrial and stream surveys. Stream characterization was performed on the Ratliff Branch and

an unnamed tributary to Ratliff Branch in the Coal Run Village LPP area and an unnamed tributary to Levisa Fork in the North Pikeville LPP area.

Informal consultation with the USFWS, KYFWR, and KDOW is ongoing with respect to analysis requirements, permit needs, and mitigation measures. A final Fish and Wildlife Coordination Report reflecting ongoing regulatory coordination, and a mitigation plan will be included in the final EIS.

4.7.1 No Federal Action Alternative

Aquatic Resources: Implementation of the No Federal Action Alternative would be unlikely to directly affect aquatic habitats in the implementation area. Surface water pollutants from nonpoint sources, from straight pipes and from storm water drains would continue. Likewise, the surrounding community would still have a high risk of frequent flooding. Continued encroachment of humans on riparian habitats adjacent to Levisa Fork would indirectly affect aquatic resources through impaired water quality.

Terrestrial Resources: Under the No Federal Action Alternative, there would be no direct changes in land use in the implementation area. However, human encroachment of riparian areas adjacent to Levisa Fork would likely continue, along with associated loss of habitat.

Wildlife Resources: Implementation of the No Federal Action Alternative would result in no immediate changes to wildlife resources in the implementation areas. However, development the floodplain would continue, and over time would reduce the amount of habitat for area wildlife and would further restrict riparian corridor.

Wetlands: Implementation of the No Federal Action Alternative would not be expected to directly impact wetlands. However, continued encroachment of humans on riparian habitats adjacent to Levisa Fork could negatively impact the limited wetland areas found in the Levisa Fork floodplain.

Threatened and Endangered Species: Implementation of the No Federal Action Alternative would have no direct impact on threatened and endangered species. Continued encroachment of humans on riparian habitats adjacent to Levisa Fork could negatively impact habitat for special status species, including the Indiana bat.

4.7.2 Alternative 1

Direct Impacts:

- North Pikeville Area:

Aquatic Resources: Minor direct short-term impacts would occur to the aquatic habitat of Levisa Fork during construction activities, due to an increase in erosion and sedimentation and the potential for release of petroleum products as described in Section 4.6. Also, limited removal of trees within the riparian corridor would occur behind the KTC maintenance facility where the pump station would be constructed. This could cause increased sunlight reaching the Levisa Fork, which could in turn

have minor impacts on aquatic life. Additional information on the impacts to streams as a result of Alternative 1 is included in Section 4.6.2.

A direct long-term impact on an unnamed tributary to Levisa Fork would occur, as discussed in Section 4.6.2.

Terrestrial Resources: Direct impacts to terrestrial resources would occur from the construction of the North Pikeville LPP. As shown in Table 4-1 (Section 4.1), the CWL for the North Pikeville LPP would require less than one acre of bottomland forest, approximately 3.2 acres of old field vegetation, and less than one acre of scrub/shrub upland vegetation. Vegetation directly in the alignment of the floodwall would be removed and would no longer provide habitat for terrestrial organisms. This habitat would be permanently converted to maintain a treeless environment along the concrete floodwall. A change of species composition would occur in these altered environments. Due to the limited acreage converted and the relatively low quality of the existing habitat, this impact is not considered significant.

The riparian corridor riverward of the CWL would not be cleared for this project except near the pump station. However, acquisition of property to construct the floodwall would extend from the construction work limits on the "protected" side of the levee/floodwall to the edge of the Levisa Fork along the alignment. Therefore, land between the flood wall and the Levisa Fork would be permanently precluded from development.

Following construction, the disturbed areas riverward of the floodwall within the CWL would be planted and seeded with native species and would return to a vegetated state. Landward of the floodwall, disturbed areas would either be revegetated with native species or used for development according to community needs.

Wildlife Resources: Terrestrial wildlife within these areas would sustain impacts as a result of land clearing and construction of the proposed project. Relatively mobile animals (i.e. deer, birds, rabbits) would be expected to evacuate the project area during construction activities. These species would be expected to relocate to adjacent undeveloped areas. This could have an impact on adjacent forest communities, due to the potential increase of wildlife in those areas. However, this impact is likely insignificant due to the relatively small area that would be cleared during construction activities. In addition, much of the implementation area is adjacent to developed areas and would not be expected to contain a diverse and/or abundant wildlife population. Less mobile animals (e.g., salamanders, turtles) within the proposed implementation area would be expected to be negatively impacted by construction activities. For these species, direct mortality could occur during the actual construction event or ultimately result from habitat alteration.

The LPP would preclude passage of some wildlife species. Because much of the implementation area is urban, these impacts would not be significant.

Disturbances caused by construction on the project site may affect wildlife in adjacent habitats by disrupting feeding, breeding, and nesting activities. Habitats on and surrounding the site may be used for breeding by migrant and resident songbirds. Increased noise levels created by operation of heavy machinery could

cause birds to abandon their nests and may temporarily displace wildlife during construction. Once construction activities are complete, wildlife would likely resume use of the area.

Overall, impacts to wildlife resources would be minimal and would be further minimized by planting native species in the area between the riverward side of the levee/floodwall and the Levisa Fork following construction. This would help to re-establish plant species, while also stabilizing the soil and providing wildlife habitat. Planting native species of grasses, wildflowers, shrubs, and trees that offer more valuable habitat is expected to offset project impacts to wildlife.

Wetlands: As described in Chapter 3 there no wetlands were identified within or adjacent to the North Pikeville CWL. No impacts would occur.

Threatened and Endangered Species: Because the implementation areas potentially contain special status species, there is a potential for special status species to be impacted by the implementation of Alternative 1. The proposed project area provides summer roosting and foraging habitat for the Indiana bat (Libby et al, 2003). Therefore, this species could be adversely affected by implementation of Alternative 1. The Corps, in consultation with the USFWS and KYFWR, plans to conduct needed clearing activities during winter months (November 15 through March 31) to avoid potential direct impact (i.e., injury) to the Indiana bat. If tree removal would be required outside of this time frame the Corps would coordinate with the USFWS and KYFWR to ensure the necessary precautions are implemented to avoid impact to the Indiana Bat. Ongoing coordination with USFWS and preparation of a formal Fish and Wildlife Coordination Act Report would occur prior to the Final EIS.

- Coal Run Village Area:

  Aquatic Resources: The aquatic habitat of Levisa Fork would potentially be impacted during construction activities, due to an increase in erosion and sedimentation and the potential for release of petroleum products as described in Section 3.6. However, an Erosion and Sediment Control Plan would be adopted prior to project initiation and would help minimize impacts. Limited tree removal would occur within the riparian corridor at the confluence of Ratliff Branch where the pump station would be constructed. This could cause increased sunlight reaching the Levisa Fork, which could in turn have minor impacts on aquatic life. Additional information on impacts to streams is included in Section 4.6.3.

  A direct, long-term impact would occur to Ratcliff Branch and an unnamed tributary to Ratliff Branch, as discussed in Section 4.6.3. Implementation would result in impacts to approximately 1,033 feet of stream habitat along Ratliff Branch, as the stream would be cleared, graded to a stable geometry and lined with stone slope protection. Aquatic resources in Ratliff Branch would be lost during construction, but could slowly reestablish once construction is complete.

  Terrestrial Resources: Terrestrial impacts are directly from the construction of the Coal Run Village LPP "A". As shown in Table 4-1 (Section 4.1), the CWL for the Coal Run LPP "A" would require approximately 16.3 acres of bottomland forest. Vegetation directly in the alignment of the floodwall/levee, including approximately

7.5 acres of the total 16.3 acres of bottomland forest, would be removed and would no longer provide habitat for terrestrial organisms. This habitat would be permanently converted to maintain a treeless environment along the earthen levee and concrete floodwall. A change of species composition would occur in these altered environments. Due to the limited acreage converted and the relatively low quality of the existing habitat, this impact is not considered significant.

The riparian corridor riverward of the CWL would not be cleared for this project except near the pump station. However, acquisition of property to construct the floodwall would extend from the construction work limits on the "protected" side of the levee/floodwall to the edge of the Levisa Fork along the alignment. Therefore, land between the flood wall and the Levisa Fork would be permanently precluded from development.

Following construction, the disturbed areas riverward of the floodwall within the CWL would be planted and seeded with native species and would return to a vegetated state. Landward of the floodwall, disturbed areas would either be revegetated with native species or used for development according to community needs. Most of these areas could be planted with native species following construction.

Wildlife Resources: Same as for North Pikeville Area.

Wetlands: No wetlands were noted within or adjacent to the Coal Run Village CWL, therefore no impacts are anticipated.

Threatened and Endangered Species: Same as for North Pikeville Area.

- Borrow Areas:

Aquatic Resources: Use of borrow areas has the potential to impact aquatic resources. Borrow Area #1 is located adjacent to the Levisa Fork, and the type of impacts could include increased sedimentation and erosion from soil disturbance as well as spills or leaks of petroleum products from equipment and vehicles.

Terrestrial Resources: Impacts to terrestrial resources would be expected to be similar in nature to the other cleared acres previously discussed. Borrow Area #1 is predominantly old field and scrub/shrub vegetation. Due to the limited acreage converted and the relatively low quality of the existing habitat, this impact is not considered significant. Borrow Area #2 has been previously cleared and therefore vegetation would not be impacted except for the few remaining trees.

Wildlife Resources: Impacts to wildlife are not expected to be significant. Borrow Area #1 does not provide significant wildlife habitat, as previously discussed. Borrow Area #2 is cleared and surrounded by residences

Wetlands: Impacts to wetlands could occur from the use of Borrow Areas #1 or # 2. While Borrow Area #1 is located between two wetlands, one of relatively high quality, it is at a higher elevation than the adjacent properties. Excavation of sufficient soil from Borrow Area #1 would have minimal potential to impact these existing adjacent wetlands. Borrow Area #2 is adjacent to an emergent wetland

whose hydrology could be affected by removal of up to five feet of soil from Borrow Area #2. Formal wetland delineations would be completed if needed prior to the final EIS. If jurisdictional wetlands are confirmed within the construction or borrow limits of the proposed project, appropriate coordination and mitigation will be documented in the Final EIS.

Threatened and Endangered Species: Same as for North Pikeville Area.

- Nonstructural Area:

Aquatic Resoures: Minor temporary impacts to the Levisa Fork and tributaries from the non-structural portion of the project would result from minor increases in sedimentation associated with runoff from construction areas as individual properties are demolished, or as they are floodproofed. The potential to impact aquatic habitats from fuels and petroleum products and is similar to the structural alternatives but smaller in scale, and more distributed over time. Best management practices would minimize these impacts. Additionally, as previously described in Section 4.6, installation of an approved sewage disposal systems would have a long term beneficial impact on aquatic resources. Long-term impacts would be beneficial, as fewer human activities that could impact aquatic habitats would occur on the Levisa Fork floodplain.

Terrestrial Resources: No direct adverse impacts are anticipated. Minor disturbances to terrestrial resources in the immediate vicinity of existing structures could occur. Floodplain evacuation and floodproofing would reduce development within the floodplain and would be expected to have a positive impact on riparian habitats that are currently being encroached upon. Moreover, evacuated floodplain areas could be allowed to undergo vegetative succession thereby increasing habitat diversity for many species.

Wildlife Resources: No direct adverse impacts to terrestrial wildlife would be expected. Floodplain evacuation and floodproofing would reduce development within the floodplain and would be expected to have a positive impact on riparian habitats that are currently being encroached upon. This would have a positive impact on wildlife species that utilize riparian habitats. Moreover, many evacuated floodplain areas would revert to wildlife habitat.

Wetlands: No wetland impacts are anticipated.

Threatened and Endangered Species: Voluntary floodplain evacuation and floodproofing activities would reduce development within the floodplain and would be expected to have a positive impact on riparian habitats that are currently being encroached upon. This would potentially improve habitats for some special status species.

Indirect Impacts: As discussed in Section 4.1, the amount of clearing and grading upland areas for resettlement as a result of voluntary floodplain evacuation is difficult to quantify because it is dependent on participation rates and on individual decisions made by relocated persons. The exact number of structures eligible for relocation compared to those eligible for floodproofing is not known at this time. A portion of the displaced population would relocate to existing vacant structures or leave the area. However,

community cohesion in the area is moderately high (see Section 3.9.6), and most of the displaced population would be expected to remain in the area. Conversion of forest to accommodate sufficient additional housing would not be considered a significant impact to terrestrial habitat since approximately 85 percent of Pike County's 504,806 acres are forested.

Mitigation: The USACE would coordinate with the USFWS and KYFWR to ensure the necessary precautions are implemented to avoid impact to the Indiana Bat. Ongoing coordination with USFWS and preparation of a formal Fish and Wildlife Coordination Act Report would occur prior to the Final EIS. An Erosion and Sediment Control Plan would be adopted prior to project initiation and would help minimize impacts to aquatic resources. Additional potential mitigation measures are discussed in Section 4.6.2.

4.7.3 Alternative 2

Direct Impacts:

- North Pikeville Area: Same as Alternative 1.

- Coal Run Village Area:

  Aquatic Resources: Same as Alternative 1.

  Terrestrial Resources: Terrestrial impacts are directly from the construction of the Coal Run Village LPP "B". As shown in Table 4-2 (Section 4.1), the CWL for the Coal Run LPP "B" would require approximately 24.7 acres of bottomland forest and 2.3 acres of old field vegetation.. Vegetation directly in the alignment of the floodwall/levee would include approximately 10.8 acres of the total 24.7 acres of bottomland forest. This vegetation would be removed and would no longer provide habitat for terrestrial organisms. This habitat would be permanently converted to maintain a treeless environment along the ear then levee and concrete floodwall. A change of species composition would occur in these altered environments. Due to the limited acreage converted and the relatively low quality of the existing habitat, this impact is not considered significant.

  The riparian corridor riverward of the CWL would not be cleared for this project except near the pump station. However, acquisition of property to construct the floodwall would extend from the construction work limits on the "protected" side of the levee/floodwall to the edge of the Levisa Fork along the alignment. Therefore, land between the flood wall and the Levisa Fork would be permanently precluded from development.

  Following construction, the disturbed areas riverward of the floodwall within the CWL would be planted and seeded with native species and would return to a vegetated state. Landward of the floodwall, disturbed areas would either be revegetated with native species or used for development according to community needs. Most of these areas could be planted with native species following construction.

Wildlife Resources: Construction of the Coal Run Village LPP "B" would have similar impacts to wildlife as implementation of the shorter LPP. However, because the limits of impact are slightly greater, impacts to wildlife would also be expected to be slightly greater.

Wetlands: Same as Alternative 1.

Threatened and Endangered Species: Same as Alternative 1.

- Borrow Areas: Same as Alternative 1.
- Nonstructural Area: Same as Alternative 1.

Indirect Impacts: Same as Alternative 1.

Mitigation: Same as Alternative 1.

4.7.4 Alternative 3

Direct Impacts:

- North Pikeville Area: The North Pikeville area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minor, short-term impacts would be limited to individual parcels where nonstructural measures would occur, and would be similar in nature to the nonstructural portion of Alternative 1.
- Coal Run Village Area: The Coal Run Village area would be part of the nonstructural program, with individual structures evaluated for voluntary relocation or floodproofing. Minor, short-term impacts would be limited to individual parcels where nonstructural measures would occur, and would be similar in nature to the nonstructural portion of Alternative 1.
- Borrow Areas: No impacts to borrow areas would occur, as no construction would take place.
- Nonstructural Area: Same as nonstructural portion of Alternative 1.

Indirect Impacts: Same as nonstructural portion of Alternative 1.

Mitigation: Same as nonstructural portion of Alternative 1.

Aquatic Resources**:** Implementation of the Alternative 3 would have only a minor short-term adverse impact on aquatic habitats of Levisa Fork and its tributaries. The potential to impact aquatic habitats would be from fuels and petroleum products and is similar to the structural alternatives but smaller in scale, and more distributed over time. Long-term impacts would be beneficial, as fewer human activities that could impact aquatic habitats would occur on the Levisa Fork floodplain.

Terrestrial Resources**:** No direct adverse impacts to terrestrial resources in the implementation areas. Minor disturbances to terrestrial resources in the immediate vicinity of existing structures could occur with this Alternative. Implementation of Alternative 3, which would minimize development within the floodplain, would be expected to have a positive impact on riparian habitats that are currently being encroached upon. Moreover, evacuated floodplain areas could be allowed to undergo vegetative succession thereby increasing habitat diversity for many species.

Wildlife Resources**:** No direct adverse impacts to terrestrial wildlife would be expected. Alternative 3, which would minimize development within the floodplain, would have a positive impact on riparian habitats that are currently being encroached upon; this would have a positive impact on wildlife species that utilize riparian habitats.

Wetlands**:** Implementation of Alternative 3 would not be expected to impact wetlands.

Threatened and Endangered Species**:** Implementation of Alternative 3, which would minimize development within the floodplain, would be expected to have a positive impact on riparian habitats that are currently being encroached upon. This would potentially improve habitats for some special status species.

Indirect Impacts: No indirect impacts are expected.

Mitigation: Best management practices would be used to minimize the potential for release of fuels and other petroleum products during flood proofing or structure removal activities.

4.8 Cultural Resources

This section discusses the potential impacts to cultural resources from the Levisa Fork flood damage reduction project.

The USACE has previously determined that the proposed project would affect properties included in or eligible for inclusion in the National Register of Historic Places (National Register) and has consulted with the Advisory Council on Historic Preservation (Council) and the Kentucky State Historic Preservation Officer (SHPO), pursuant to the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f). Cultural resources, including archaeological resources and historic/architectural resources, could be directly and indirectly affected by the proposed project. Based on the history of the area summarized in Section 3.8, the proximity of the Levisa Fork, and the number of existing historic sites and artifacts found during previous investigations, a relatively high potential exists that previously unrecorded archaeological sites would be identified during site investigations.

To ensure full consideration of potential impact to cultural resources, a Programmatic Agreement has been developed between the USACE, Huntington District and the Kentucky State Historic Preservation Officer regarding this and other Section 202 Flood

Reduction activities within the Levisa Fork basin. The agreement covers activities in Floyd, Johnson, Lawrence counties as well as Pike County, Kentucky. This Programmatic Agreement, dated March 2003 is included as Appendix D.

The Programmatic Agreement sets forth the agreed-upon procedures the USACE would follow prior to implementation of a selected alternative in order to satisfy USACE's Section 106 responsibilities for all individual project undertakings.

One National Register listed property, the Pauley Bridge (see Section 3.8) is north of the proposed project. Because of distance and curve in the river, the Pauley Bridge would not have view shed effects from the proposed project.

4.9 Socioeconomic Resources and Environmental Justice

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on the existing social and economic environment of Pike County communities. To facilitate the discussion of such complex and interrelated issues, the economic and social resources are addressed separately. Social impacts include issues such as changes in population, housing, community services and community cohesion. Included with the discussion of social impacts is the analysis of environmental justice issues associated with the project, as required pursuant to Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Volume 59, Federal Register, Number 32). The discussion of environmental justice identifies and addresses disproportionately high and adverse human health and environmental effects on minority or low-income populations from activities associated with project implementation.

4.9.1 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations*, directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority population and low-income populations. The Corps incorporates environmental justice considerations into both the technical analyses and public involvement activities in accordance with EPA and Council on Environmental Quality guidance (CEQ 1997).

Income. The census data indicates that Pike County is not an area of extreme poverty but has an unusually high proportion of population with income slightly above poverty, but less than average income. The towns of Pikeville and Coal Run have a slightly higher poverty rate than the county. Poverty levels from 1999 indicate that 23.4 percent of the population of Pike County was below the poverty level, 25.4 percent of the City of Pikeville, and 24.4 percent of the town of Coal Run Village which are all higher than the statewide level of 12.4 percent and the nation-wide level of 12.4 percent.

A high percentage of the population of Pikeville has an income level well above the established poverty level threshold and well above the national average. A high percentage of the population of Coal Run Village also has an income level well

above the established poverty level threshold and well above the national average. As described in Chapter 3, the percentage of individuals living below the poverty level in Coal Run Village are approximately double that of the national and state levels (Census 1999).

Minorities. The population of Pikeville is comprised of mostly white residents, with only 275 members of the minority populations residing within the town. The total population of Pikeville is 6,295 and members of minority races comprise 22.5 of the population. The largest minority segment in Pikeville is the African American population, which consists of 166 members (2.6 percent) of Pikeville's population. The population of Coal Run Village is comprised of mostly white residents, with only 30 members of the minority populations residing within the town. The total population of Coal Run is 577 and members of minority races comprise 5.2 percent of the population. The largest minority segment in Coal Run Village is the Asian American population, which consists of 18 members (3.1 percent) of Coal Run Village's population.

Conclusions. No environmental justice issues are expected from the construction and operation of any of the alternatives. None of the described alternatives would adversely or disproportionately affect members of minority populations because the minority populations are not congested in the implementation area and are not meaningfully greater in the implementation area than in the General County and state populations. The structural features would not adversely or disproportionately affect members of minority populations because there are no concentrations of minority populations in the LPP implementation areas. In addition, the greatest potential effect to members of low-income populations would be the required acquisition of residences and relocation of families within the proposed footprint of the levee/floodwall. There would be no disproportionate impact to low-income populations. All displaced persons, regardless of race or income level, would be compensated for moving expenses and replacement housing in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646)*, as amended.

4.9.2 No Federal Action Alternative

Under the No Federal Action Alternative, no flood protection would be offered. As periodic flooding would continue, flood damage would continue to cause hardship for residents and businesses. Because no relocations would occur, existing neighborhoods would remain intact. Community cohesion would not be directly impacted. However, existing trends of outmigration and population decline would most likely continue. This would have long-term indirect impacts on community cohesion.

4.9.3 Alternative 1

The implementation of Alternative 1 has the potential to directly and indirectly affect socioeconomic resources and community cohesion in Pike County. Impacts to housing, income and employment, and community cohesion are discussed below.

Direct Impacts:

- Housing and Community Cohesion. Approximately 1,500 residences and 500 businesses are eligible for the Section 202 program within Pike County. Of these, the overwhelming majority are located in the nonstructural program area. Between 10 and 15 individual nonstructural actions would be anticipated per year under the program. The acquisition of structures throughout the Pike County nonstructural implementation area, as well as in the North Pikeville and Coal Run Village LPP areas could produce a higher demand for existing vacant housing and for new development sites for both residential and nonresidential structures within the county. Some of the relocations can be absorbed by the existing vacant housing, or housing that becomes vacant during the implementation period. For new construction, the market would most likely be able to adjust, provided that adequate building sites are available.

  The number of potential displacements with the voluntary program could produce an unusual pattern of development. Acquisition of a property results in demolition or salvage of the structure resulting in a vacant lot. The acquisition program could occur interspersed with other methods of flood protection or non-participation. Residents would be dispersed, which may weaken community cohesion. The loss of the residential structures in either North Pikeville or Coal Run Village could weaken the overall fabric of the community.

  The North Pikeville LPP would protect approximately 45 structures, both residential and nonresidential, including Pikeville High School and the YMCA. This represents 67.2 percent of existing structures. The LPP would also protect Pike County athletic fields. The CWL for the floodwall and levee would require the acquisition of approximately 22 structures, both residential and nonresidential. This represents approximately 32.8 percent of the existing structures in this area. The loss of these structures would weaken the overall fabric of the community in North Pikeville and has the potential to have significant impacts on community cohesion.

  The Corps is currently reevaluating project alignment in the North Pikeville area with particular emphasis in the Scott Addition Area where approximately 14 residences would be acquired to allow for sufficient room for the floodwall alignment. The reevaluation is focused on avoiding these homes and may include moving floodwall alignment riverward and revising the length of the floodwall. Should the reevaluation result in feasible alternatives which move the alignment riverward, surface water and ecological impacts could be different than discussed in Sections 4.6 and 4.7 and would be reevaluated.

  The Coal Run Village LPP “A” would protect approximately 100 structures, both residential and nonresidential, including approximately 30 businesses, City Hall, the volunteer fire department, and medical offices. This represents 87.7 percent of existing structures. Construction would require the acquisition of approximately 14 structures, both residential and nonresidential. This represents 12.3 percent of the existing structures. The loss of 14 structures could weaken the overall fabric of the neighborhood moderately, because the structures are not concentrated in one area, but geographically distributed along the length of the Coal Run community.

In Coal Run Village, LPP "A" would require acquisition of a majority of existing parking and open space associated with the Coal Run Church of Christ. If constructed as currently designed, the floodwall and levee would significantly impact the church's ability to accommodate the current congregation at services. In addition, the floodwall/levee would require acquisition of property adjacent a newly constructed multi-story medical clinic facility. Acquisition of this property may prevent further expansion of the facility.

The Corps has initiated coordination with representatives from both the Coal Run Church of Christ and the medical clinic. The Corps will continue to work with both organizations during project planning and is currently exploring possible alternatives to minimize or avoid impact to these facilities.

The ABC Daycare would be relocated prior to floodwall/levee construction in Coal Run Village. This would be a short-term adverse impact because it would be disruptive for children and parents, and may cause hardship for some of the parents. No long-term adverse impact is anticipated.

Introduction of the floodwall and levee would create a new physical barrier between three areas of Coal Run Village that were previously connected both geographically and visually (protected area, Scott Addition upstream and commercial area further downstream). These impacts are not thought to be significant because of the current lack of a local street network between the three areas.

- Economic Impact. Direct economic impacts would include the creation of a small number of construction jobs during construction of the North Pikeville and Coal Run Village LPPs. A smaller number of construction jobs would be created during the 15-year nonstructural program.

  The construction of the North Pikeville and Coal Run Village LPPs would not be likely to create new jobs to operate and maintain the levee infrastructure. Therefore, no economic impacts would occur as a direct effect of an operating project once construction has been completed.

  Damages prevented by the North Pikeville LPP from a 1977-level flood event are estimated at $10M. Damages prevented by the Coal Run Village LPP "A" from a 1977-level flood event are estimated at $25M.

  The protection offered by the LPPs would negate the need for flood insurance within the protected areas of North Pikeville and Coal Run Village, thus increasing disposable personal income. Property values would likely rise. New businesses may be attracted to locate within the protected area thereby potentially creating additional employment.

Indirect Impacts: If there is a lack of suitable relocation sites, or if the market cannot accommodate the needs for housing, the county's population could decline if residents choose to relocate outside of Pike County. Population decline could affect future levels of economic development, school enrollment, and services provisions

by the county and communities. A decline in population could produce an overall weakening of the social network within the county. Dispersal of existing communities could weaken familial ties and interrupt visitation patterns, which in turn could impact community organizations such as churches, schools and civic organizations.

Introduction of the floodwall and levees would create potential redevelopment areas because the limited amount of currently vacant land would be protected. This could provide short-term economic benefit through construction jobs and long-term economic benefit through providing a larger property tax base and from increased commercial activity.

Mitigation: Potential mitigation measures to address a shortage of decent, safe, and sanitary relocation housing, if needed, would be considered on a case-by-case basis. Since the nonstructural portion of this alternative would address only 10-15 structures per year, it is anticipated that market forces would be sufficient to create the bulk of available relocation housing. Mitigation measures would more likely be needed for the structural portions of the project because relocations would be mandatory and shorter in duration.

In accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646)*, as amended, residential and nonresidential property owners determined to be eligible only for floodplain evacuation would be offered the fair market value for their property (structure and land). In addition to the fair market value of the property, residential owners are offered standard relocation benefits under P.L. 91-646 to assist in the purchase of a comparable replacement home located out of the April 1977 floodplain area. Displaced persons, including those who rent, would also be compensated for eligible moving expenses. These individuals could relocate to similar housing within Pike County as available.

If comparable replacement dwellings are not available in the implementation area, the last resort housing provisions of Section 206, P.L. 91-646 would be implemented as necessary project-wide, on a case-by-case basis, utilizing the most feasible, cost-effective method available. This provision could include making payments in excess of those authorized by Sections 203 and 204 of P.L. 91-646.

For residents eligible for raise-in-place protection who are not able to climb stairs, other alternatives could include: ramps; chairlifts; and elevators. For many people chairlifts are undesirable and elevators are cost prohibitive. The third method, ramps, may require more horizontal area than is available on small lots. Where stair alternatives are not feasible, special consideration would be given on a case-by-case basis.

4.9.4 Alternative 2

The implementation of Alternative 2 has the potential to affect socioeconomic resources and community cohesion in Pike County. The impacts would be similar to that described in Alternative 1, although slightly higher in magnitude in the Coal Run Area with the lengthened “B” alignment.

Direct Impacts:

Housing and Community Cohesion: Impact would be similar to Alternative 1, except the protected area would be larger and mandatory acquisitions would also be larger. Coal Run LPP "B" would protect approximately 137 structures, both residential and nonresidential. This represents 85.6 percent of existing structures. It would require the acquisition of approximately 23 structures, both residential and nonresidential. This represents 14.4 percent of the existing structures. The extension of the LPP, as compared to the Coal Run LPP "A", would result in a loss of nine additional housing units in a neighborhood of 46 structures, and would weaken the overall fabric of the neighborhood. The community impact could be even greater where seven structures are clustered near the southeastern end of the proposed floodwall. Damages that would be prevented by the Coal Run LPP "B" during a 1977-level flood event are estimated at $17M.

Indirect impacts. Same as Alternative 1.

Mitigation. Same as Alternative 1.

4.9.4 Alternative 3

The implementation of Alternative 3 has the potential to directly and indirectly affect socioeconomic resources and community cohesion in Pike County. Impacts to housing, income and employment, and community cohesion are discussed below.

Direct Impacts: Impacts of a completely nonstructural program involving up to 1,500 residences and 500 businesses would be similar to those discussed previously as part of the nonstructural component of Alternative 1. However, in urban areas such as the North Pikeville and Coal Run implementation areas, implementation of a non-structural alternative has the potential to have a significant effect on socioeconomic resources and community cohesion. A large majority of the homes and businesses within these areas would be eligible for the voluntary non-structural program. As such, community impacts would be directly related to the participation rate of the non-structural program in these areas. Historically, under the Section 202 Program commercial participation for non-structural floodproofing measures has been very low. Furthermore, residential participation in a non-structural program varies significantly but would not be expected to reach 100 percent. Potential significant impacts associated with permanent evacuation, particularly in developed areas, would include the following:

- Community cohesion may be severely disrupted and longstanding sociological and historic ties may be lost.
- Remaining non-eligible areas may not be able to function as a viable economic center and social unit due to losses in population and tax base.
- Relocation into upland areas may occur outside the corporation limits of municipalities and relocated residents could lose the amenities and services furnished by those units of local government.
- Population loss and/or redistribution could impact schools, churches, services, and social organizations.

Indirect Impacts: Same as nonstructural component of Alternative 1 but greater in magnitude.

Mitigation: Same as nonstructural component of Alternative 1.

4.10 Recreational Resources

This section discusses the potential impacts of the Levisa Fork flood damage reduction project on recreational resources.

4.12.1 No Federal Action Alternative

No impacts to recreational resources would occur with this alternative.

4.10.2 Alternative 1

Direct Impacts: Direct, short-term impact to recreational resources would occur at the athletic fields, playground, and the YMCA in the vicinity of or associated with Pikeville School. Short-term impacts associated with construction of the North Pikeville floodwall include fugitive dust and odors (Section 4.4), noise (Section 4.5, construction traffic (Section 4.15). In addition, construction activities would occur in close proximity and could disrupt facility usages during short periods. The USACE would continue on- going coordination with local officials and representatives to limit disruption to these facilities during construction.

The North Pikeville LPP would have a direct long-term impact to the existing riverbank access behind the Pike County Athletic Fields. No direct river access is provided, but the area has maintained grass, a sidewalk, and picnic tables. The area is primarily used by students and athletic teams. This area would be separated by the floodwall from the school and athletic fields.

The Coal Run Village LPP would have a significant impact on the Church of Christ recreation area. The floodwall/levee would be constructed on land that now contains a picnic shelter, parking and outdoor basketball hoops.

The proposed borrow areas do not have recreational resources. No direct impacts would occur from use of any of the three areas to obtain fill for the proposed project.

Direct impacts from the larger nonstructural component of Alternative 1 would include loss of part of the existing playground for the Millard Elementary School. The USACE is coordinating with the school to determine whether the ringwall design can accommodate additional land for replacement recreational area. The Jefferson National Forest would not be affected by the project. No impacts to regional, county or municipal parks or recreational areas would occur.

Indirect Impacts: The project could have long-term benefits to recreational resources within Pike County. As structures are removed from the floodplain, ownership of the acquired land would revert to county ownership. Land use would likely change over time

and could include passive recreational areas such as parks or fishing access, wildlife areas, or gardens.

Mitigation: The USACE would continue ongoing coordination with local officials, including the Pikeville Board of Education, to give consideration to providing a pedestrian door in the North Pikeville floodwall. This door would provide access to the existing maintained area behind the athletic fields. Coordination is also ongoing with the Coal Run Village Church of Christ regarding impacts and continued access to recreation areas.

4.10.3 Alternative 2

Impacts to recreational areas would be the same as Alternative 1.

4.10.4 Alternative 3

Impacts to recreational areas would be the same as the nonstructural component of Alternative 1 except that a pedestrian floodwall gate would not be needed as no floodwall would be created. Floodplain acquisitions may provide additional opportunities for river access.

4.11 Aesthetic and Scenic Resources

This section describes the potential effects of the Levisa Fork Flood Reduction Project on the aesthetic and scenic resources of the Coal Run Village and North Pikeville communities, and other potentially affected areas in Pike County. The methodology for determining impacts is presented followed by a description of the impacts for each alternative.

Aesthetic and scenic qualities can be affected in a variety of ways; impacts can be severe or subtle. Both positive and negative impacts represent visual changes to users in a particular area. These impacts can be assessed by analyzing the design of a project, the project's effects to landmarks and cultural resources, and changes in the natural environment due to the implementation of the project. Adverse and non-adverse impacts to landmarks and cultural resources are discussed in Section 4.8 Cultural Resources and Section 4.10 Recreational and Scenic Resources.

This analysis provides a general assessment of aesthetic and scenic impacts to the implementation area measured in terms of value, scale, and extent. Impacts are discussed in relation to the Coal Run Village and North Pikeville areas as well as the Pikeville community as a whole.

4.11.1 Methodology

The potential impacts to aesthetic and scenic resources are evaluated in terms of value, scale, and extent. Value can be defined as benefiting, distracting, or leaving unchanged an individual's sense of visual enjoyment. The scale of the change can be either minor or major, minor representing changes in scale that complement the existing scene and major representing changes in scale that significantly alter or eliminate the existing

scene. The extent of the change is a measure of the visibility of the change and the number of persons affected by the change.

The USACE's Visual Resource Assessment Procedure (VRAP) is conducted as part of the planning process for any project with the potential to significantly impact aesthetic and/or scenic resources. The VRAP process includes identification of the regional landscape, inventory of existing aesthetic resources, selection of viewpoints or viewsheds, assessment of visual impacts, public input, evaluation of alternative plans, and use of visual simulations and sketch planning methods to assess the design alternatives. This procedure is used to better determine actual impacts of the project to aesthetic and scenic resources and to assist in the development of appropriate mitigation features in the design of the preferred alternative. Mitigation features for structural measures include, but are not limited to wall coverings or graphics, wall color, landscaping, maintenance commitments, sidewalks, door openings, and community history that would be incorporated as part of the final design elements. A Visual Resource Assessment Procedure (VRAP) for the implementation area was conducted in January 2004 and is included as Appendix F to this DEIS.

4.11.2 No Federal Action Alternative

Since no levees or floodwalls would be constructed, no direct change to aesthetic and scenic resources is anticipated under this alternative. However, if a disincentive for investment in existing structures results in deteriorization, an adverse aesthetic impact would result.

4.11.3 Alternative 1

Direct Impacts:

- North Pikeville Area*:* The floodwall and gate would be dominant, co-dominate, and subordinate in the North Pikeville community depending upon individual viewpoints. An existing gate closure is located under US 23/80/460 for flood protection of structures in the downtown Pikeville area, but no flood protection structures currently exist to protect the implementation area. Three viewpoints were inventoried and analyzed in the North Pikeville area. The areas selected for analysis include one location in a residential setting and two locations in an institutional and commercial setting. Presently the Levisa Fork cannot be viewed from any of the selected viewpoints in the North Pikeville area. The left or west bank of the Levisa Fork is comprised of undeveloped forested lands.

  Local impacts to aesthetic and scenic resources would be severe for property owners along the river bank in the residential neighborhood where the floodwall/levee would be a dominant feature. The floodwall would remove approximately ten homes located along the river bank in this residential neighborhood. Views in this area would be significantly altered for remaining residents who live in and/or visit homes located in the high-end residential neighborhood along Cedar Drive, Hickory Lane, and Cherry Lane.

  The existing scenery would not change for viewers traveling along US 23/80/460 in the vicinity of the residential area due to the elevation of the overpass and mature vegetation within the area. In the vicinity of Pikeville High School, views of the

floodwall become a subordinate feature when viewed from US 23/80/460, north of the Community Trust Bank. Views of the proposed floodwall/levee along the Levisa Fork from Mayo Trail are also subordinate in this area. The floodwall would not be dissimilar to the existing visual landscape near the athletic field and high school complex. The floodwall would be co-dominant between the residential neighborhood and the athletic field from Mayo Trail because it would be more visually intrusive in the open area. Businesses located on Mayo Trail north of the Pikeville High School would have views of the floodwall and gate that would dominate the scenery. The gate structure across Mayo trail would be directly visible from Mayo Trail and US 23/80/460 and require the removal of the KYTC District 12 maintenance facility and two structures north of the maintenance facility. The dimensions of the pump station are unknown at this time. Visual impacts due to the construction of this structural element would be prepared when more information is available.

- Coal Run Village*:* The Coal Run floodwall/levee structure would primarily be a subordinate feature throughout Coal Run Village. The floodwall gate structure, which would cross US 23/80/460, would be a dominant feature in the landscape. No existing flood protection structures are currently located in the implementation area. Three viewpoints were inventoried and analyzed in the Coal Run Village area. The views selected for analysis included one location in a residential setting and two locations in an industrial/commercial setting. The Levisa Fork is not visible from any of the selected viewpoints in the Coal Run Village area. The left or west bank of the Levisa Fork is comprised of undeveloped forested lands.

  Local impacts to aesthetic and scenic resources are moderate for property owners along the north river bank. This area, which fronts US 23/80/460, is comprised of a mix of residential and commercial establishments. The floodwall would remove four mobile homes on the north river bank in the residential neighborhood located directly behind commercial establishments. Views in this area would be severely altered for remaining users who live in and/or visit homes located along streets where low to moderate traditional residential homes are presently located. Existing scenery would not change for viewers traveling past this residential and commercial area on US 23/80/460 due to the elevation of the roadway, the location of numerous commercial establishments, and mature vegetation within the area.

  In the vicinity of the AEP facility, travelers would have views of the floodwall/levee, which becomes a subordinate feature when looking westward from US 23/80/460. Views of the floodwall/levee from Church Street, located behind the East Kentucky Beverage Plant (Pepsi Plant), would be co-dominant in this area. The top of the levee would be visible in this area, and aesthetic and scenic impacts would be moderate. Businesses located on US 23/80/460 north of the Pepsi Plant would have views of the floodwall and gate that would dominate the scenery. The gated structure across US 23/80/460 would be directly visible for vehicular traffic traveling north and south along US 23/80/460. The floodwall/levee would require the removal of four multi- and single use business structures. The dimensions of the pump station are unknown at this time. Visual impacts due to the construction of this structural element would be prepared when more information is available.

- Borrow Areas: The proposed borrow areas do not have recreational resources. No direct impacts would occur from use of either of the two areas to obtain fill for the proposed project.

- Nonstructural Areas: In the larger Pike County nonstructural implementation area, no levees or floodwalls would be constructed. Aethetic impacts would result from construction of the proposed Millard Elementary School ring wall. However, the wall is anticipated to be only approximately eight feeet tall and would not have a significant impact on the viewshed.

  Some of the existing structures would be removed. Others would be protected by nonstructural methods such as raise-in-place, move on site, veneer walls, or ringwall/levee. Localized impacts to aesthetic and scenic resources would include raising homes up to 12 feet or the presence of ringwall(s). However, permanent evacuation could open up views of the river.

Indirect Impacts: No indirect impacts are anticipated.

***Mitigation*:** To mitigate the visual impacts of the floodwall/levee structure in areas located in or near the construction work limits, the following measures would be employed where applicable and feasible:

- Incorporation of wall graphics to transform the wall into a community "work of art" capturing the history or spirit of its residents,
- Incorporation of wall texture and color,
- Incorporation of plant material, where appropriate, to buffer and enhance views of the floodwall,
- If possible, construction of residential structures within close proximity of impacted neighborhoods to maintain overall visual continuity of neighborhoods, and
- Incorporation of sidewalks and door openings along the floodwall, where feasible, to allow continued viewing access and use of the Levisa Fork.

4.11.4 Alternative 2

- North Pikeville Area: Impacts would be the same as with Alternative 1.

- Coal Run Village Area: The floodwall structure would primarily be a subordinate feature within Coal Run Village. The floodwall gate structure, which would cross US 23/80/460, would be a dominant feature in the landscape. No existing flood protection structures are currently located in the implementation area. Four viewpoints were inventoried and analyzed in the Coal Run Village area. The areas selected for analysis included two locations in a residential setting and two locations in an industrial/commercial setting. The Levisa Fork is not visible from any of the selected viewpoints in the Coal Run Village area. The left or west bank of the Levisa Fork is comprised of undeveloped forested lands.

  Local impacts to aesthetic and scenic resources would be moderate to severe for property owners along the river bank in the Scott Addition neighborhood. The floodwall would remove five homes located on the east bank in this residential neighborhood. Views in this area would be severe for remaining users who live in and/or visit homes where moderate to high-end traditional residential homes are

presently located. Views from homes on Winward Road, Webster Way, and Red Dog Lane would also be impacted. These views would be moderate due to the fact that only one residence on Winward Road would be acquired. However, the floodwall would be clearly visible throughout the neighborhood.

The existing scenery would not change for viewers traveling along US 23/80/460 in the vicinity of the residential area due to the elevation of the roadway. In the vicinity of the AEP facility, travelers would have views of the floodwall/levee, which becomes a subordinate feature when looking westward from US 23/80/460. Views of the floodwall/levee from Church Street, located behind the Pepsi Plant, are co-dominant in this area. The top of the levee is visible in this area, and aesthetic and scenic impacts would be moderate. Businesses located on US 23/80/460 north of the Pepsi Plant would have views of the floodwall and gate that would dominate the scenery. The gated structure across US 23/80/460 would be directly visible for vehicular traffic traveling north and south along US 23/80/460. The floodwall/levee would require the removal of four multi- and single use business structures. The dimensions of the pump station are unknown at this time. Visual impacts due to the construction of this structural element would be prepared when more information is available.

- Borrow Areas: The proposed borrow areas do not have recreational resources. No direct impacts would occur from use of either of the two areas to obtain fill for the proposed project.

- Nonstructural Areas: Same as Alternative 1.

4.11.5 Alternative 3

Same as Alternative 1 except for the North Pikeville and Coal Run Village areas. The visual change would depend on the number of relocations versus floodproofing and the degree of participation. An architecturally unbalanced view could result if some homes are raised up to 12 feet while others are not.

4.12 Hazardous, Toxic, and Radioactive Wastes

This section discusses the potential issues resulting from unearthing historic hazardous, toxic, or radiological waste (HTRW) disposal in the implementation area that would need to be addressed prior to construction of the Levisa Fork (Pike County) flood damage reduction project. The methodology for determining impacts is presented, along with a description of potential impacts from handling, storage, transportation and disposal of solid and hazardous waste.

HTRW investigations will be conducted by USACE in the implementation areas prior to implementation of construction activities. The purpose of the HTRW investigations are to determine the potential impacts related to the presence, handling, storage, transportation, and disposal of hazardous, toxic, and radioactive waste materials on properties within the implementation areas. Phase I HTRW investigations are nonintrusive evaluations of the potential presence of HTRW or other potential environmental issues with the potential to affect the property. Phase II(a) HTRW

investigations are performed on properties identified during the Phase I HTRW investigation. Phase II(a) HTRW investigations include intrusive sampling techniques and laboratory analyses to confirm the presence of HTRW. HTRW identified during the Phase II(a) investigation must be addressed prior to implementation of construction activities.

A Phase I Hazardous, Toxic, and Radioactive Waste (HTRW) Investigation was performed for the implementation area (WasteTron, Inc., January 2002) for 101 tracts of land. Nine of the tracts were recommended for Phase II(a) HTRW investigations, and five tracts were recommended for removal actions only (Phase II not recommended). *The Phase II(a) HTRW investigations have not been initiated at this time.*

Each structure scheduleld for demolition would be inspected for asbestos. State and USACE requirements woiuld be followed to prevent airborne release of asbestos during demolition. State and local requirements would be followed for disposal of asbestos-containing construction debris.

4.12.1 No Federal Action Alternative

The No Federal Action Alternative would result in no impact, as the project would not be constructed.

4.12.2 Alternative 1

Prior to construction activities, each property affected by the Proposed Action would be evaluated for HTRW and any work necessary to address potential HTRW issues would be addressed prior to construction or demolition activities.

Properties identified as having potential environmental issues and those recommended for Phase II HTRW investigations were compared to the proposed CWL in each implementation area. Subsequent investigations (Phase II(a) HTRW Investigations) have been requested by the USACE for four properties within the CWL for the implementation areas and should be completed prior to the final EIS. The identified areas are described below:

- North Pikeville Implementation area

  P01-00-05-018.00 – Equitable Production, Inc.-formerly Eastern States (Parcel 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.

  P01-00-05-021.00 – Kentucky Department of Transportation, District 12, Garage 16 (Parcel 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.

The two state hazardous waste sites (SHWS) identified in the North Pikeville Implementation area: *Trimble Service* at 838 N. Mayo Trail; and *Power Service Manufacturing Co*. at 192 S. Mayo Trail do not appear to be within the construction work limits.

- Coal Run Village Implementation area:

049-00-00-039.01, Structure 049-00-00-039.01-4 – East Equipment Rental (Parcel 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.

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.

The impact associated with the properties identified above will be evaluated following the completion of the Phase II(a) investigations.

4.12.3 Alternative 2

The impacts associated with this alternative are similar to those described in Alternative 1. In addition to the properties identified for Phase II(a) investigations, two properties along the northern flood wall extension in the Coal Run Village implementation area were identified by WasteTron as potentially requiring removal actions. Parcels 60 and 67 (049-00-00-041.01 and 049-00-00-042.00, respectively)

049-00-00-041.01 (Parcel No. 60)

An above ground storage tank (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.

049-00-00-042.00 (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.

Prior to construction activities, each property affected by the Proposed Action will be evaluated for HTRW and any work necessary to address potential HTRW issues will be addressed prior to construction or demolition activities.

4.12.4 Alternative 3

Individual properties identified for demolition or nonstructural measures such as ringwalls, will be evaluated for HTRW and any work necessary to address potential HTRW issues will be addressed prior to construction or demolition activities

- Borrow Areas

Borrow areas were not evaluated in the Phase I HTRW Investigation performed for the implementation area (WasteTron, 2002) as they had not been identified. None of the three potential borrow areas currently have structures, although it is probable that Borrow Areas #1 and #2 had structures in the past. Phase I HTRW investigations would be conducted on borrow areas selected for further consideration.

Borrow Area #1: The area is vegetated, as described in Section 3.1. The area does not appear to have been previously developed, although detailed site inspection and historical records were not available for review. The area is adjacent to a forested wetland which has natural gas pump stations and pipelines.

Borrow Area #2: The area has been completely cleared except for a few trees, and was muddy and wet during site reconnaissance. Mapping shows a small stream running north to south through the property, but it was not visible during site reconnaissance due to the extensive site disturbance. The area is surrounded by residences and a small machine shop. Natural gas lines are probable within the property limits. The potential exists for USTs from previous land use.

4.13 Health and Safety

This section presents potential health effects of the proposed Levisa Fork (Pike County) flood damage reduction project on both workers and the public. The methodology for determining impacts is presented, along with a description of the impacts of each alternative.

Occupational and public health and safety issues have been evaluated in the context of those activities with the potential to affect human health and safety. The areas identified are construction noise and air emissions, construction traffic and detours, and flooding. Air quality, noise, and water quality considerations area addressed in other sections.

Implementation of agency action would reduce the number of Pike County residents subject to flooding. This action would be a significant benefit to the population, especially children, elderly persons, and disabled persons who are routinely threatened by flooding, being stranded, drowning, and other safety issues.

The level of impacts to community services would depend on resettlement patterns. A significant population addition or loss to an existing municipality would affect tax

revenues, which could stress local fire and police services.

Medical services would likely experience a slight increase in use due to the minor accidents typically associated with a large construction project located in the area. Barring a major accident however, medical services would not be stressed beyond capacity.

Also during construction, hazards from utility disruption, such as electric lines and natural gas, could be a concern. In addition to residential areas, natural gas lines were observed on or near each of the alternative borrow areas.

The use of Borrow Area #2 could cause health and safety concerns because it is located in a residential area. Construction equipment working in an area surrounded by homes, some with small children, would be a concern. Conversion of the site into a pond, wetland, or depressional area could raise concerns for children playing in the area. Mitigation could include fencing or other site control. The residential area is within the nonstructural program.

4.14 Infrastructure

This section discusses the potential impacts to the existing infrastructure in Pike County from each alternative. The methodology for determining impacts is presented, followed by a description of the impacts for each alternative

Impacts resulting from each alternative were determined through comparison with the existing Pike County infrastructure. Direct impacts to infrastructure would only occur in the LPP areas or potentially where ringwalls were constructed as part of the Nonstructural program, due to floodwall/levee construction and associated drainage interceptor lines. Infrastructure affected by the structural elements could include sewer lines, lift stations, water lines, electric transmission and phone cables. New infrastructure that would be added as a result of the alternatives is also presented.

4.14.1 No Federal Action Alternative

This alternative would not cause changes to existing infrastructure. However, the infrastructure would continue to be subject to the periodic flooding of the Levisa Fork, with its associated damages and disruptions.

4.14.2 Alternative 1

Direct impacts: In the wider Pike County nonstructural implementation area, the project would have a minor direct effect on utilities. Impacts would most likely be limited to individual utility connections to structures to be acquired and demolished, or structures to be raised in place or moved. The USACE would coordinate with local utility providers to avoid service disruptions to other properties in the area while water, gas, sewer, telephone, cable, or electric lines are modified as required to construct a project.

A potential temporary impact on water quality could occur from closure and removal of septic systems. Best management procedures used in removal would limit the potential for impact. Long-term impacts to water quality would be beneficial, as some septic systems and/or straight pipes would be removed from the floodplain for property acquisitions. Additional benefit would also occur from floodproofing actions, as the USACE would replace straight pipes and/or faulty septic systems as part of the floodproofing action for individual structures.

Alternative 1 would add the North Pikeville LPP, the Coal Run Village LPP "A", and the associated interceptor lines, pump stations, sumps and gate closures as described in Section 2 of this DEIS.

Existing water and sewer lines within North Pikeville and Coal Run Village would require some relocation work due to the LPP construction and the removal of existing structures and their respective utility connections. Ongoing coordination between USACE and the City of Pikeville and Coal Run Village will continue with a goal of minimizing potential disruption and cost associated with utility relocations. Telephone lines and power lines would also be impacted and require localized relocation or abandonment.

Use of either of the borrow areas could have a minor impact on utilities. Although the areas do not currently have structures on them, there are possibly buried utility connections, especially in Borrow Area #2, which is surrounded by residential properties. Natural gas lines were observed on or near all three properties.

The sewage treatment facility located approximately 1,000 feet downstream of the North Pikeville LPP (near Pound Puppy Road on the opposite side of the Levisa Fork) would not impacted nor be protected from flooding under Alternative 1. During periods of flooding, raw sewage may overflow and briefly contaminate downstream sections of the Levisa Fork as would occur under current conditions.

Indirect Impacts: Countywide utility systems could be indirectly affected by Alternative 1, primarily due to the voluntary nonstructural component. Approximately 1,500 residences and 500 businesses are eligible to participate in the voluntary program of floodplain evacuation and floodproofing. For Alternative 1, the eligible number would be the balance of the total minus the LPP-protected area. A high participation rate for voluntary evacuation could affect the distribution of utility needs and require adjustments in capacity within Pike County. Implementation area residents generally have public water service currently and some have sewer services. The nonstructural component would address approximately 15 structures per year, providing adequate time for utilities to adjust to changing needs.

Mitigation: Ongoing coordination with local utility providers and local jurisdictions would allow sufficient planning time to avoid utility short-term disruptions and long-term capacity or distribution issues. In addition, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL-91-646) and ER 1165-2-117 *Responsibility for Costs of Improved Standards in Highway and Housing Relocations* would allow for floodproofing activities on individual structures to include measures to upgrade substandard water and sewer utility connections.

4.14.3 Alternative 2

Direct Impacts: Alternative 2 would add the North Pikeville LPP, the Coal Run Village LPP "B", and the associated interceptor lines, pump stations, sumps and gate closures as described in Section 2 of this DEIS. Impacts would be similar to those described for Alternative 1, but would be slightly greater as more structures would be affected. Impacts from the nonstructural component would be the same.

Indirect Impacts: Same as for Alternative 1. For Alternative 2, the eligible number would be the balance of the total minus the LPP-protected area.

4.14.4 Alternative 3

Impacts to service providers in North Pikeville and Coal Run Village would be greater than in Altenative 1 or 2. The change in the number of water, gas, sewer, telephone, cable, or electric lines could change, depending on the number of relocations. This could affect utility rates and the type of services provided. In the balance of the county, impacts from Alternative 3 would be the same as those described for the nonstructural component of Alternative 1.

4.15 Transportation

This section discusses the road and rail transportation impacts from the construction and operation of each alternative. The methodology for determining impacts is presented, followed by a description of the impacts for each alternative.

4.15.1 No Federal Action Alternative

The transportation system would not be affected by the No Federal Action Alternative. No detours, closings, or additional traffic would occur. However, since the area would continue to experience periodic flooding, existing flooding patterns would continue to impact roadways and rail lines.

4.15.2 Alternative 1

***Direct Impacts*:** The transportation system would be affected by construction and operation of the LPPs in North Pikeville and Coal Run Village. During construction, temporary local roadway detours or closings could be expected. Temporary lane closings on US 23 would occur during construction of gate closures. Additional traffic would be expected, consisting of trucks and construction equipment. A small amount of debris and soil may deposit on roadways from construction vehicles.

Local street connections and traffic flow would be maintained from North Pikeville into Pikeville via Route 1480 during high water conditions. An existing floodgate currently eliminates local transportation access to downtown Pikeville during flood events.

Local traffic and economic activity along Mayo Trail would be interrupted when high water causes the closure of the floodwall gate which crosses the Mayo Trail,

particularly, traffic patterns around Pikeville High School. However, it can be assumed that during times of high water, economic and school activities along the roadway would likely be interrupted anyway.

Regional traffic and economic activity along US 23/80/460 would be interrupted when high water causes the closure of the Coal Run floodwall gate, which would cross the highway. However, it can be assumed that during times of high water, economic activity along the highway may be interrupted anyway.

The protected area may cut off areas north of the Coal Run floodwall, including other parts of Coal Run, from Pikeville and other communities during times of high water and gate closure. This may create several access and public safety issues, including access to medical services, fire and police services, grocery stores, and schools.

The CSX rail line on the opposite side of Levisa Fork would be slightly impacted by operation of the LPP projects. An evaluation of water levels during flood events with and without the LPPs shows that the difference in water level would be approximately 6 inches at the 0.2% chance (500-year frequency) event at North Pikeville, and the rail line would be inundated with or without the floodwall present. During the 500-year event, the railroad is inundated by more than 2 feet for 10 miles upstream under existing conditions The proposed floodwall would only increase inundation of an additional 137 feet of track during the 500-year event.

In the nonstructural program implementation area, the transportation system would not be affected by this alternative. No detours, closings, or additional traffic would occur. However, since the area would continue to experience periodic flooding, existing flooding patterns would continue to impact roadways and rail lines.

Indirect Impacts: No indirect impacts to transportation are anticipated.

4.15.3 Alternative 2

Direct Impacts: Introduction of the Coal Run Village LPP "B" would create a new physical barrier between two areas of Coal Run that were previously connected both physically and visually (protected area and commercial area further downstream). These impacts are not thought to be significant because of the current lack of a local street network between the areas. Impacts to the nonstructural and North Pikeville area would be the same as from Alternative 1.

Indirect Impacts: No indirect impacts to transportation are anticipated.

4.15.4 Alternative 3

While residences and businesses would be offered flood protection throughout the Pike County implementation area, roadways and rail lines would be unaffected. The types and severity of access limitations due to storm events would remain unchanged. No detours, closings, or additional traffic would occur. However, since the area would continue to experience periodic flooding, existing flooding patterns would continue to impact roadways and rail lines.

4.16 Cumulative Impacts

Evidence is increasing that the most significant environmental effects may not result from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time (CEQ 1997). The Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA) define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions" (40 CFR 1508.7). The regulations further explain "cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."

4.16.1 Methodology

The qualitative cumulative impacts analysis presented in this document is based on the potential effects of the Levisa Fork (Pike County) Section 202 Flood Damage Reduction Project when added to similar impacts from other projects in the region. The region of influence (ROI) considered for the cumulative impacts analysis is the Levisa Fork Basin, with a drainage area of 2,236 square miles (See Figure 1-1). Pike County is located near the center of this watershed. The Levisa Fork Basin includes all or parts of Pike, Floyd, Johnson, Knott, Magoffin, Morgan, and Lawrence Counties, Kentucky and Dickenson, Wise and Buchanan Counties, Virginia. 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.

In the previous resource descriptions and impacts analysis, Sections 3.0 and 4.0, the affected environment and potential environmental effects of the No Federal Action Alternative, Alternatives 1 and 2, and Alternative 3 were evaluated with respect to existing conditions or "background." This takes into account past and present actions in the vicinity of the Levisa Fork (Pike County) Section 202 Flood Damage Reduction Project.

Major past actions include construction of the Pikeville Cut-Throughm Fishtrap Reservoir on Russell Fork, and the John Flannagan Dam on Johns Creek.. The Pikeville Cut-Through was constructed from 1973 – 1987 and created a 3/4-mile channel through Peach Orchard Mountain, providing a path for railroad tracks, rerouting of the Levisa Fork, and U.S. Highways 23, 460, 119, and KY 80. The Cut-Through created a channel for the Levisa Fork to bypass downtown Pikeville. The 1,130-acre Fishtrap Lake, on the Russell Fork, was completed in 1968 to provide flood control for communities downstream.

However, discussions in this section center on the potential cumulative effects of reasonably foreseeable future actions in the Levisa Fork Basin. The construction of the entire Levisa Fork (Pike County) Section 202 Flood Damage Reduction Project, including a nonstructural component for any action, could occur over a period of up to 15 years depending on the participation rate in voluntary programs. This cumulative impacts

analysis focuses on the construction and post-construction (operation) periods, which coincides with other reasonably foreseeable future actions.

An inherent part of the cumulative effects analysis is the uncertainty surrounding actions that have not yet been fully developed. The CEQ regulations provide for the inclusion of uncertainties in the EIS analysis and states that "when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an EIS and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking" (40 CFR 1502.22). The CEQ regulations do not state that the analysis cannot be performed if the information is lacking. Consequently, the analysis contained in this section includes actions that could be reasonably anticipated to occur during the lifetime of the Levisa Fork (Pike County) Section 202 Flood Damage Reduction Project, likely to have cumulative effects within the Levisa Fork Basin.

In evaluating each of the resource areas for cumulative effects, focus is given to those which are likely to be impacted throughout operation of the project and thus could be cumulatively affected by other activities. This narrowing of the scope of analysis supports the intent of the NEPA process which is "to reduce paperwork and the accumulation of extraneous background data; and to emphasize real environmental issues and Alternatives"(40 CFR 1500.2[b]).

4.16.2 Cumulative Impacts

The primary resources that are likely to have cumulative effects from other reasonably foreseeable future projects are water and ecological resources. The cumulative effects to water resources occur primarily during high water events, when hydrologic conditions are altered by the flood control structures. The water resource effects, based on a decrease of the available floodplain of the Levisa Fork, are increases in the local floodwater elevation, and increases in water velocity due to constriction of the channel which can increase scour. The cumulative effects to ecological resources occur both during normal flow and high water events, and are primarily impacts to riparian habitats. Reasonably foreseeable actions which may together have significant adverse affects within the basin are flood contol projects, road construction and mining.

The Corps has authority to study flood damage reduction measures, similar to those of the Levisa Fork (Pike County) Flood Damage Reduction Project, for other communities in the Levisa Fork Basin:

Current or reasonably foreseeable actions include LPPs and non-structural flood control measures outside Pike County but within the Levisa Fork Basin, including Russell Fork. These actions include:

- Non-structural measures, Dickenson County, Virginia, Levisa Fork Basin (EA completed May 2003)
- Non-structural measures, Town of Martin, Floyd County, Kentucky (EA completed March 2000)
- Nonstructural measures, Buchanan County, Virginia, Levisa Fork Basin (EA completed November 2001)

- LPP and non-structural measures, Floyd County, Kentucky, Levisa Fork Basin (planned)
- LPP and non-structural measures, Johnson County, Kentucky, Levisa Fork Basin (planned)

The majority of actions planned or recently taken by the USACE within the Levisa Fork Basin involve nonstructural measures, which have potential for long-term beneficial impact on the floodplain and on riparian habitats within the basin. By removing structures and human activity from the floodplain, more flood storage is created and the riparian corridor may be re-established. Structural projects under consideration are localized in scale and designed to protect specific high-density population areas. The nearest structural project under consideration by the USACE is in Prestonsburg (Floyd County) Kentucky, 20 miles downstream of Coal Run Village.

Adverse cumulative impacts to communities thrououghout the Levisa Fork Basin are possible. Stable, decent, and fiscally sound communities could be weakened by individual landowner decisions to relocate to other areas within or outside of Pike County and the Levisa Fork Basin. County and municipal tax revenues could drop and organizations could suffer as people leave the area.

The Kentucky Transportation Cabinet is responsible for the planning, construction, reconstruction, and maintenance of state roads. A variety of U.S. and State Routes follow the curves of the Levisa Fork and its tributaries within Pike County's narrow valleys. It is reasonably foreseeable that road construction and maintenance activities would be periodically required throughout the lifetime of the project. However, such construction activities would be temporary and thus not expected to contribute significantly to cumulative impacts. The construction of I-66, Pike County's first interstate, will likely be constructed and completed during the project lifetime. However, construction and operation of this major state project will have minimal impact on the Levisa Fork, since it lies outside the implementation area except at its Pikeville terminus.

Resource extraction, especially coal, is the primary industry in Pike County, and one of the major industries in the Levisa Fork Basin. Substantial areas of the basin have been mined over the years, with the mining and sporadic reclamation activities resulting in ongoing pollution of the Levisa Fork and many of its tributaries. It is reasonably foreseeable that there would be ongoing mining activity during the lifetime of the Pike County Section 202 project.

During high water events, the floodwater elevations would be increased in some locations because the levee/floodwall would effectively contain floodwaters that would otherwise flow out into the floodplain in the implementation area. As explained in Section 4.6, floodwater elevations would be increased to some extent upstream of the North Pikeville LPP and between the North Pikeville and Coal Run Village LPPs. Given that the nearest foreseeable flood control project is over 20 miles from Coal Run Village, no overlap of the increased floodwater elevations from these projects with the Pike County Section 202 project effects would be expected.

An additional effect of the Pike County Section 202 project would be increased water velocity during flood events. The stream reach in the vicinity of the proposed flood wall has existing conditions velocities sufficient to transport bedload through the reach and

will continue to transport it after construction of the floodwall. Pools and riffles within this reach are most likely formed, moved, and transformed annually under existing conditions. The forming, moving, and changing of pools and riffles would continue to happen after construction of the floodwall. Although additional sedimentation from the Pike County flood control project would be temporary and minor, sediments transported during flood events that would otherwise be deposited in the floodplain would be carried farther downstream. Other reasonably foreseeable flood control projects could contribute to increased scour and sediment loading of the Levisa during high flood events but these would be localized. The cumulative impacts of these changes could be an adverse impact to aquatic resources during high water events within the lower Levisa Fork Basin.

The potential effects of continued and/or increased coal mining by the mining industry could be periods of increased surface runoff due to removal of vegetation and release of contaminants such as acid mine drainage and slurry. This increased and/or contaminated runoff would cumulatively increase creek and floodwater elevations and velocities within the Levisa Fork Basin, and continue to adversely affect water quality. Both of these situations would adversely affect aquatic resources during high and low water events within the Levisa Fork Basin.

The Levisa Fork (Pike County) Section 202 Flood Damage Reduction Project would result in a direct loss of less than 11 acres of bottomland hardwoods from construction of the North Pikeville LPP and either of the two alternative Coal Run Village LPPs. This land would be permanently converted to a treeless environment along the earthen levee and concrete floodwall. A change of species composition would occur in these altered environments. This overall loss of riparian habitat could be compounded by other reasonably foreseeable flood control projects that could have similar losses. Pressures to find new food sources and habitats would increase as species lose more habitat to development (see Section 4.7). However, the nonstructural portion of Alternatives 1 and 2 would help to mitigate effects of floodwall/levee construction, since some people would voluntarily evacuate the floodplain to live in upland areas, increasing flood storage and allowing revegetation of the floodplain.

4.17 Unavoidable Adverse Impacts

Unavoidable adverse impacts would occur with the No Federal Action Alternative, Alternative 1, Alternative 2, and Alternative 3.

With the No Federal Action Alternative, no measures would be taken to address the existing impacts associated with flooding of the Levisa Fork. Since the Levisa Fork is expected to continue to flood periodically, the losses to property and the resultant stress to residents would also continue.

Alternative 3 would have unavoidable adverse impacts. Noise and air emissions associated with either structure demolition or raising the structure in place would occur. Best management practices would be used to minimize these necessary impacts. Residents would be displaced while their homes are raised in place to put the first floor above the 1977-flood level. These impacts would be temporary and localized.

Both of the structural Alternatives would also have unavoidable adverse impacts. Anticipated impacts are discussed below:

- Mandatory displacement of families and businesses within the CWL would occur. The USACE is refining alignments to minimize the number of mandatory acquisitions.

- Noise and air emissions associated with floodwall/levee construction would occur. These impacts would be temporary in nature, and best management practices would be used to minimize their severity.

- Either alternative would cause a complete short-term loss of the approximately 1,100 feet of habitat associated with Ratliff Branch between Mayo Trail and the Levisa Fork. This area would be used both as a ponding area for interior drainage and as the location for the 40,000 gpm pump station for either Coal Run LPP. Potential mitigation measures discussed with regulatory agencies and included in the conceptual mitigation plan include stabilizing the lower Ratliff Branch with riprap, pretreatment of parking lot runoff before it enters Ratliff Branch, and reestablishing native species to restore habitat along the banks after construction.

- Short-term adverse impacts would occur to the Levisa Fork during construction, especially at the location of the retaining wall behind Pikeville High School. Best management practices would be used to limit erosion and sedimentation from construction activities. Riverine habitat enhancement as discussed with regulatory agencies and described in the conceptual mitigation plan would be used as mitigation for these impacts.

- Long-term loss of some ecological habitat and some residences and businesses would occur within the floodwall/levee footprints. Each alternative footprint and CWL was refined to limit the amount of acreage necessary to provide flood damage and to construct and maintain the structures.

- Long-term minor adverse impacts would occur to the visual resources in the vicinity of the floodwall/levee structures. Under either alternative, views that currently include the Levisa Fork would be unavoidably restricted by the presence of the floodwall/levee structure. Views from the in or near river, such as fishing or boating, would be changed.

- Previously undiscovered cultural resources within the CWL would be adversely affected by either alternative. The USACE would address cultural resource in accordance with the existing Programmatic Agreement among the USACE and the Kentucky State Historic Preservation Officer.

4.18 Irreversible and Irretrievable Commitments of Resources

Both Alternative 1 and Alternative 2 would irreversibly and irretrievably commit the existing ecological habitats within the respective floodwall/levee footprints and in the approximately 1,100 feet of Ratliff Branch between Mayo Trail and the Levisa Fork. Also committed would be any previously undiscovered cultural resources in these areas that may be discovered during construction.

Commitment of resources associated with Alternatives 1, 2, or 3 includes consumption of fossil fuels by construction equipment and workers' vehicles, and to a lesser extent, fuel consumption for long-term operation and maintenance of the facility. Also, materials of construction will be irreversibly committed. The demolition of sound, existing structures will be an irreversible commitment of resources.

4.19 Relationship Between Short-Term Use of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Disruption caused by unavoidable construction of either Alternative 1 or Alternative 2 would cause significant impacts on the short-term use of both the human and natural environment within and adjacent to the CWL. For Alternative 3, similar types of impacts would occur during structure demolitions or raising-in-place but they would be generally occurring on one property at a time, each for a shorter duration. Human and wildlife activities would necessarily be affected by the close proximity of construction activities with associated traffic, noise, and dust. However, the use of Best Management Practices and specific mitigation measures discussed in this DEIS would minimize these impacts and these would no be significant.

Implementation of either Alternative 1 or Alternative 2 would cause long-term loss of ecological habitat and associated productivity for those areas where floodwall/levee infrastructure, including the interceptor lines, is placed. Short-term loss of ecological habitat would occur in the remainder of the CWL and in borrow area(s). The North Pikeville LPP would cause short-term disruption to Levisa Fork from construction of the retaining wall behind Pikeville High School. Either the Coal Run Village LPP "A" or the Coal Run Village LPP "B" would cause complete short-term loss of habitat in Ratliff Branch.

For both Alternative 1 and Alternative 2, habitat riverward of the floodwall/levee is included in the proposed property acquisition and the riverward habitat outside the CWL would either not be disturbed or would be enhanced as part of a final mitigation plan. Over the long term this riverine area could revert into more productive habitat. Portions of the riverine area behind Pikeville High School would have enhancement for use as a passive recreational area. Ratliff Branch, between the floodwall and Mayo Trail, would be stabilized by the placement of rip rap protection, and water quality would be improved by treatment of adjacent surface runoff. This and the other proposed mitigation/enhancement measures included in this DEIS would contribute to the maintenance and enhancement of long-term productivity of the Levisa Fork Ecosystem.