King Coal Highway
Delbarton to Belo Project
and
Buffalo Mountain Surface Mine
Clean Water Act Section 404 Permit Application

Draft Supplemental
Environmental Impact Statement

Mingo County, West Virginia

State Project: X169-SHA/WN-1.03
Federal Highway Administration Project: DPS-0012(013)
U.S. Army Corps of Engineers Project: LRH-2008-491-TUG

U.S. Department of Transportation
Federal Highway Administration

U.S. Department of the Army
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West Virginia Department of Transportation
Division of Highways

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KING COAL HIGHWAY DELBARTON TO BELO PROJECT/ BUFFALO MOUNTAIN SURFACE MINE CLEAN WATER ACT SECTION 404 PERMIT APPLICATION MINGO COUNTY, WEST VIRGINIA DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

State Highway Project X169-SHA/WN-1.03
Federal Highway Administration Project DPS-0012(013)
U.S. Army Corps of Engineers Project LRH-2008-491-TUG

Submitted pursuant to the *National Environmental Policy Act* and the *Clean Water Act* by the
U.S. Department of Transportation Federal Highway Administration,
U.S. Department of the Army Corps of Engineers
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KING COAL HIGHWAY DELBARTON TO BELO PROJECT
AND
BUFFALO MOUNTAIN SURFACE MINE CLEAN WATER ACT
SECTION 404 PERMIT APPLICATION

MINGO COUNTY, WEST VIRGINIA

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

United States Department of Transportation
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ES-1 BACKGROUND

A Draft Supplemental Environmental Impact Statement (SEIS) is being prepared by the West Virginia Department of Transportation Division of Highways (WVDOH) in cooperation with the Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (Corps) to fulfill requirements set forth in both the *National Environmental Policy Act of 1969* (NEPA). The Corps is incorporating its decision regarding a Section 404 Permit into this Draft SEIS to fulfill the requirements of the *Clean Water Act*. The project currently under consideration, to be constructed by CONSOL Energy, Inc. at its own expense on lands owned or controlled by CONSOL, will, if constructed in accordance with approved plans and offered for dedication to the state road system, become a part of an overall 94-mile program of transportation projects known as the King Coal Highway (KCH) and part of an effort by CONSOL Energy, Inc., to develop the Buffalo Mountain Surface Mine.

A Final Environmental Impact Statement (FEIS) for the entire length of the KCH was completed in June 2000, and a Record of Decision (ROD) was issued on August 24, 2000. Since then, an opportunity for a joint development initiative has been identified as part of a proposed post-mining land use plan for the Buffalo Mountain Surface Mine. If implemented, this initiative would involve the potential shift of a portion of the unconstructed KCH alignment between Delbarton and Belo in Mingo County, West Virginia, to post-mined land made available from the Buffalo Mountain Surface Mine.

Section 404 of the *Clean Water Act* regulates the discharge of dredged and/or fill material into waters of the United States (U.S.) and delegates the authority to issue permits for the discharge of dredged and/or fill material into waters of the U.S. to the Corps. The Corps is evaluating CONSOL's Section 404 Individual Permit application LRH-2008-491-TUG for the proposed discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine. Because CONSOL's proposed mine plan would accommodate a rough-grade road bed for the Delbarton to Belo Project, the Corps decided to incorporate its Draft EIS evaluation of IP application LRH-2008-491-TUG into the WVDOH and FHWA's Draft SEIS. The Corps did not participate in the discussions regarding a joint development opportunity because the Corps is required to independently evaluate proposed actions requiring a Section 404 permit in an objective and unbiased manner.

Project Description

CONSOL of Kentucky, Inc. is in the process of developing a surface mine in the same vicinity as the KCH corridor approved in 2000. With the Buffalo Mountain Surface Mine, CONSOL expects to mine approximately 2,300 acres of land located between WV 65 and the approved KCH corridor. Because of its close proximity to the highway corridor, planners for the highway and mining projects saw considerable merit in exploring joint development opportunities as a way to lessen potential environmental impacts and reduce costs. It was reasoned that if the footprints of the two separate projects could be combined as one, the level of environmental impact could be reduced. Furthermore, a combined joint effort would result in better mitigation elements for those environmental impacts that did occur. There would also be an estimated $110 million cost savings to taxpayers.

Consequently, in October 2007, the FHWA, WVDOH, CONSOL of Kentucky, Inc. (a subsidiary of CONSOL Energy), Cotiga Land Development Company, LP, and the Mingo County Redevelopment Authority entered into a Memorandum of Understanding (MOU) to examine a potential joint development initiative related to the KCH. The joint development initiative would be expected to limit the impacts from two nearby areas to one location; avoid significant stream impacts to the Miller Creek watershed; provide a more comprehensive mitigation strategy for impacts to streams; provide treatment for wastewater discharges to area streams; establish deed restrictions along mitigation channels in the Miller and Pigeon Creek watersheds that would ensure undisturbed acreage in perpetuity; and create a utility corridor through the center of the project area specifically aimed at creating new housing and sustainable employment opportunities.

Small sections of the larger KCH are already open and a few other sections are currently under construction. For several reasons, however, the section of the KCH between Delbarton and Belo has not been constructed yet. Although part of a larger transportation improvement plan, the current proposal to construct the KCH between Delbarton and Belo would provide an operationally independent section of the KCH that would serve local and regional needs regardless of whether or not a transportation facility is built across the entire 94-mile corridor. Logical termini for the KCH between Delbarton and Belo have been set at US 52, about one-half mile west of Delbarton, and at US 119 just west of its intersection with WV 65. When

completed, the facility to be constructed on the Buffalo Mountain Surface Mine site would consist of a four-lane, divided highway with partially controlled access.

Purpose and Need

When the opportunity for a joint-use project was identified, the purpose and need statements for the KCH and the proposed Buffalo Mountain Surface Mine were reviewed, and a combined project purpose was developed by the FHWA and the Corps. The purpose of the current action is to develop a coal mine project that incorporates construction of a rough-grade road bed that, upon completion, will be offered for dedication as part of the KCH between Delbarton and Belo in Mingo County, West Virginia. Incorporating a rough-grade road bed for the KCH between Delbarton to Belo into the proposed Buffalo Mountain Surface Mine would satisfy the following needs: produce coal to satisfy national and international demand for electricity; and facilitate construction of a portion of the KCH that is consistent with the purpose and need statements identified in the KCH 2000 Final EIS.

Specific purpose and need statements were established for the KCH project through the 2000 FEIS and its subsequent ROD. As presented in those documents, the project's purposes are: to develop a transportation system with minimal geometric constraints; to minimize conflict between interstate/inter-county traffic and local traffic; to minimize conflict between truck traffic and local traffic, residential areas, and towns; to decrease travel times within the study area; to provide Level of Service (LOS) C within the local transportation system; to minimize crash rates; to reduce emergency response times for ambulance, police, and fire services; to provide safe and efficient highway operations that complement the existing rail system; to provide safe and efficient access to the regional roadway network; and, to support economic development.

During completion of the KCH 2000 FEIS, the following project needs were identified: current and future capacity and LOS of the existing transportation network; current and future transportation; regional and local system linkage; safety and roadway deficiencies; and, social and economic demand. A review of conditions in the area indicated that the purpose and need statements developed for the 2000 FEIS remain valid today. FHWA will evaluate the proposed KCH corridor shift for its ability to meet the purpose and needs identified in 2000.

The Corps evaluates the applicant's project purpose and need based on 33 CFR 320.1 and 40 CFR 1502.12. The Corps will, in all cases, exercise independent judgment in defining the purpose and need for the project from the applicant's and public's perspective as indicated in 33 CFR 325 Appendix B(9)(b)(4). In relation to the Corps, the basic purpose of the Buffalo Mountain Surface Mine is to remove bituminous coal reserves and does not require siting within a water of the United States. The overall project purpose is to construct attendant and associated features, including permanent excess overburden storage areas, construction of required sediment and drainage control structures, and the extraction of bituminous coal reserves underlying stream channels, to facilitate the extraction of minable coal reserves from 10 bituminous coal seams located within the 2,308-acre *Surface Mining Control and Reclamation Act* (SMCRA) permit boundary (S-5018-07), and to allow for the construction of a portion of the KCH between Delbarton and Belo. Accomplishing this would meet the mining project's need to recover a total of 16.8 million tons of bituminous coal reserves within the 2,308-acre SMCRA permit boundary that would be processed and transported off-site for delivery to power generating plants to facilitate the public, commercial and industrial demand for electricity.

ES-2 ALTERNATIVES

During the development of the Buffalo Mountain Surface Mine, the following mining alternatives were investigated: Underground Mining; Surface Coal Extraction within the King Coal Highway Delbarton to Belo Project Right of Way Corridor; Full Seam Surface Coal Extraction (Area/Mountaintop Mining); Contour Mining; and Combination of Contour/Auger/Highwall Mining. These alternatives were determined to be impracticable and have been eliminated from further consideration.

In addition, the USEPA proposed an alternative first utilizing a RAM 145 valley fill optimization model (the RAM 145 Alternative). According to the USEPA, this would allow for an alternative that could be developed utilizing fewer valley fills and result in fewer stream impacts. Following coordination with the West Virginia Department of Environmental Protection (WVDEP), the RAM 145 Alternative was determined to be impracticable and was also eliminated from further consideration.

The surface mining alternative, identified as Alternative Mining Method 5 (a combination of Area/Mountaintop/Steep Slope/Contour with Limited Auger/Highwall Mining), was determined to be a practicable alternative and would provide enough area to allow for the future construction of a portion of the KCH between Delbarton to Belo on land disturbed by the extraction of the targeted coal reserves.

During the development of the KCH in 2000, a broad range of transportation alternatives was evaluated in the KCH 2000 FEIS, including transportation system management (TSM) and improved roadway alternatives, transit alternatives (mass transit and heavy rail/freight alternatives), several build alternatives, and the No-Build Alternative. Through a preliminary screening evaluation, the TSM/improved roadway alternatives and the transit alternatives were shown unable to meet the purpose and need. Upon completion of the detailed analysis of alternatives retained for further consideration, a preferred build alternative selected. Specifically, the preferred alternative for the King Coal Highway is a 94-mile long, 1,000-foot wide corridor through Mercer, Wyoming, McDowell, and Mingo counties, within which a four-lane, divided highway would be constructed.

In order to incorporate construction of a rough-grade road bed suitable for donation and inclusion as a portion of the KCH between Delbarton and Belo into the proposed Buffalo Mountain Surface Mine, CONSOL consulted with WVDOH and FHWA during their mine plan process. The result of this coordination was a post-mining land use plan that would allow for the joint development of the surface coal mine project and a 5-mile section of rough-grade road bed suitable for donation and inclusion as a part of the KCH between Delbarton and Belo.

Incorporating a portion of the KCH alignment between Delbarton and Belo into the proposed surface mine plan played a role in the location and design of the proposed valley fills, and based on the requirements for the highway design, it was determined that 12 valley fills would be required to permanently store the volume of excess overburden generated by the combination of surface mining methods described under Alternative Mining Method 5. By utilizing a combination of Mining Method Alternative 5 and the Joint Development Initiative a joint project could be developed with the construction of 12 valley fills. This alternative, collectively referred to as the Delbarton to Belo Project, is being carried forward as the preferred alternative.

The Delbarton to Belo Project would begin on US 52 approximately 1.5 miles west of the intersection of US 52 and WV 65 in Delbarton, slightly east of the original KCH Corridor. Approximately 0.1 mile from its southern terminus on US 52, this alternative would enter the southwestern limit of the proposed Buffalo Mountain Surface Mine SMCRA permit boundary, and continue across the surface mine in a north/northwesterly direction for approximately 5.0 miles. It would exit the northern limit of the Buffalo Mountain Surface Mine SMCRA permit boundary and continue for approximately 1.8 miles to its northern terminus located about 0.3 of a mile west of the intersection of US 119 and WV 65 in Belo. The total length of this highway alternative is approximately 6.9 miles. Once fully completed, the Delbarton to Belo Project would provide an operationally independent section of the KCH. If construction of the Buffalo Mountain Surface Mine begins but is terminated sooner than expected for any reason, development of the highway through the mine area would still proceed.

The No Action Alternative is also advanced for further consideration. Under the Corps' No Action Alternative, the Corps would deny CONSOL's CWA Section 404 IP application. As a result, the proposed Buffalo Mountain Surface Mine would not be developed, and the potential impacts to the socioeconomic, cultural, natural and physical environment identified for the Applicant's PA (Chapter 4) would not occur. If the Buffalo Mountain Surface Mine were not developed, the King Coal Highway would be developed within the corridor approved in the August 2000 ROD. Therefore the agencies' joint No-Build Alternative would include construction of the KCH as approved in 2000.

ES-3 ENVIRONMENTAL EFFECTS

The preferred alternative (Delbarton to Belo Project) would meet the project's purpose and need and allow for less environmental impacts than the No-Action Alternative. The amount of overburden prescribed for the surface mine project would be returned to both the mineral removal area and the tops of the fills. Incorporating a portion of the KCH would not result in additional stream impacts beyond those needed to accommodate the disposal of overburden associated with coal extraction at the Buffalo Mountain Surface Mine. The potential effects of the alternatives are summarized on Table ES-1. Not all impacts could be quantified in the table below; in some cases qualitative information is provided.

Table ES-1
Summary of Impacts

Resource/Element	No-Build Alternative	Delbarton to Belo Project	Total Impacts of Separate Projects
Environmental Justice	Displacements to Ruth Trace area; positive economic benefits to Mingo County	Displacements to Ruth Trace area; positive economic benefits to Mingo County	Displacements to Ruth Trace area; positive economic benefits to Mingo County
Tax Base	Negligible	$26.8 million of coal severance tax generated	$26.8 million of coal severance tax generated
Business Displacements	5	2	5
Residential Displacements	40	10	40
Community Facilities and Services	Displaces Mingo County Public Service District (PSD) water tower	Displaces Mingo County PSD water tower	Displaces Mingo County PSD water tower
Community Cohesion	Displaces 80% of Ruth Trace area homes	Displaces 20% of Ruth Trace area homes; unlikely to impact overall community cohesion	Displaces 80% of Ruth Trace area homes
Farmlands	0	0	0
Developed Land	56 ac	82 ac	114 ac
Parks and Recreation	Hatfield-McCoy Trail: 4,718 feet & trailhead	Hatfield-McCoy Trail: 6,060 feet & trailhead	Hatfield-McCoy Trail: 8,000 feet & trailhead
Vegetation and Wildlife	805 ac forestland	2,520 ac forestland	3,050 ac forestland
Rare, Threatened, and Endangered Species	0	0	0
Streams/Water Quality	32,217 lf	47,385 lf (including impacts associated with highway connectors); 9,215 lf (temporary, all associated with proposed mine)	81,751 lf
Floodplains	0	0	0
Wetlands	2 (0.9 ac)	6 (0.19 ac, all associated with mine)	5 (0.97 ac)
Groundwater	0	0	0
Air Quality	Consistent with *CAA* standards	Consistent with *CAA* standards	Consistent with *CAA* standards
Noise	Within FHWA Noise Abatement Criteria (NAC)	Within FHWA NAC	Within FHWA NAC
Hazardous Wastes Sites	3	0	3
Cultural Resources (NRHP-Listed/Eligible)	Norfolk & Western RR; Archaeological Site 46MO117	0	Norfolk & Western RR; Archaeological Site 46MO117

Table ES-1 (continued)
Summary of Impacts

Resource/Element	No-Build Alternative	Delbarton to Belo Project	Total Impacts of Separate Projects
Utilities	Mingo County PSD water storage tower	Mingo County PSD water storage tower; creates utility corridor	Mingo County PSD water storage tower
Secondary Impacts	Possible, could be negative or positive	Yes, likely to be positive	Possible, could be negative or positive
Cumulative Impacts	Yes, likely to be positive	Yes, likely to be positive	Yes, likely to be positive
Temporary Construction Impacts	Yes	Yes	Yes
Energy	Yes, most likely positive	Yes, most likely positive	Yes, most likely positive
Section 4(f) Resources	Norfolk & Western RR	0	Norfolk & Western RR
Highway Costs	$198.8 million	$89 million	$198.8 million

Based on the analysis contained in the SEIS and for the following reasons, the FHWA and the Corps are advancing the Delbarton to Belo Project as the preferred alternative:

- the cost savings associated with construction by CONSOL of a rough-grade road bed to be donated as a portion of the KCH between Delbarton and Belo in association with the Buffalo Mountain Surface Mine;
- the benefits to the WV state economy associated with the generation of coal severance tax by the Buffalo Mountain Surface Mine;
- the benefits to regional energy production associated with extraction of coal at the Buffalo Mountain Surface Mine;
- the reduction in residential displacements associated with the preferred alternative compared to constructing the KCH between Delbarton and Belo in the original corridor;
- the increase in developable land;
- the reduction in impacts to wetlands;
- the avoidance of impacts to cultural and Section 4(f) resources; and,
- the water quality improvements associated with CONSOL's Compensatory Mitigation Plan in the Hell Creek watershed.

Through the use of detailed post-mining strategies associated with the preferred alternative, impacts would be avoided, minimized, or mitigated. There would also be a costs saving from constructing the proposed highway project as part of a joint development initiative rather than as a separate project.

ES-4 STATUS OF OTHER PERMITS

The WVDEP issued the SMCRA Permit S-5018-07 for the Buffalo Mountain Surface Mine on November 22, 2011. Subsequent to the WVDEP's issuance of the permit S-5018-07, an appeal to the permit was filed. An agreement has been reached between the parties and an Agreed Order was entered by the Surface Mine Board on August 24, 2012.

CONSOL also submitted a National Pollutant Discharge Elimination System (NPDES) permit application and a CWA Section 401 Water Quality Certification (WQC) application to the WVDEP. The WVDEP issued the NPDES permit on October 29, 2012. The WVDEP advertised their draft Section 401 WQC for the Buffalo Mountain Surface Mine on October 8, 2011, and issued the certification on November 23, 2011.

ES-5 PUBLIC INVOLVEMENT

The Notice of Intent to prepare a SEIS to evaluate the potential impacts related to the proposed Delbarton to Belo portion of the King Coal Highway 2000 FEIS and the Buffalo Mountain Surface Mine Clean Water Act Section 404 permit application was published in the Federal Register on January 25, 2012. Public outreach and environmental agency involvement throughout the joint-use project has been considerable.

There were many public and agency activities during the development of the KCH 2000 FEIS. More recently, a stakeholder/public meeting on the proposed joint-use project was held on November 17, 2011, with 120 people in attendance.

An agency scoping meeting was held on February 16, 2012, to specifically address the KCH Delbarton to Belo project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 permit application. Following the agency scoping meeting, a public scoping meeting was held with approximately 60 people in attendance. Information on the proposed joint-use project was also distributed through local media outlets and the WVDOH web site.

Extensive public outreach activities have also occurred for the proposed Buffalo Mountain Surface Mine Project. Formal agency and public meetings related to the SMCRA and CWA

Section 404 permit applications have been held with the Pigeon Creek Watershed Association, officials from the Town of Delbarton, the Corps, USEPA, FHWA, and WVDEP.

Public involvement activities and agency coordination will continue as the proposed project review and coordination efforts progress. A public hearing on the Draft SEIS will be scheduled in accordance with federal regulations and state policies. Following the close of the public comment period, all public and agency comments will be evaluated by the WVDOH, FHWA, and the Corps. All substantive comments and questions will be addressed in the Final SEIS.

1.0 INTRODUCTION

1.1 Background

The *National Environmental Policy Act* of 1969 (NEPA) requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. To meet NEPA requirements federal agencies may prepare a detailed statement known as an Environmental Impact Statement (EIS). NEPA requires that the potential for environmental impacts be assessed for every federal action that could "significantly affect the quality of the human environment" and an EIS is prepared when it is known that projects will have a significant effect on the environment.

1.1.1 FHWA and WVDOH's King Coal Highway Decision

In June 2000, the West Virginia Department of Transportation, Division of Highways (WVDOH) in conjunction with the Federal Highway Administration (FHWA) issued a Final Environmental Impact Statement (FEIS) for the King Coal Highway, a proposed transportation corridor located in southern West Virginia. The proposed King Coal Highway would originate near Bluefield in Mercer County and terminate near Williamson in Mingo County. The 2000 FEIS described the analysis of potential alternatives, identified a Preferred Alternative, and provided an analysis of the potential environmental impacts associated with development of the preferred alternative.

The preferred alternative for the King Coal Highway is a 94-mile long, 1,000-foot wide corridor that would allow for the development of a four-lane, divided highway alignment constructed on a new location. The corridor would traverse Mercer, Wyoming, McDowell, and Mingo counties. In August 2000, the FHWA issued a Record of Decision (ROD) that approved the preferred alternative as the selected corridor. The ROD is found in Appendix A. The 2000 FEIS is attached to this document as an appendix on compact disk.

1.1.2 CONSOL's Coal Reserves in the Miller Creek and Pigeon Creek Watersheds

In 2006, Consol of Kentucky, Inc., a subsidiary of Consol Energy, Inc. (CONSOL), began an analysis of their coal reserves located in the Miller Creek and Pigeon Creek watersheds of the

Tug Fork River basin. Miller Creek and Pigeon Creek are direct tributaries of the Tug Fork River, a traditional navigable waterway. Specifically, CONSOL's coal reserves were located between the town of Delbarton and the community of Belo in Mingo County, West Virginia within an area bounded by the following physical landmarks: north of US 52, east of Miller Creek, west of Pigeon Creek, and south of US 119. CONSOL's coal reserve is situated within three subwatersheds, which are defined by the U.S. Geological Survey's (USGS) Water Resources of the United States cataloging system as 12-digit Hydrologic Unit Code (HUC) watersheds. The 12-digit HUC subwatersheds include: Miller Creek-Tug Fork (050702010506), Headwaters Pigeon Creek (050702010401), and Outlet Pigeon Creek (050702010403).

Following an analysis of their coal reserve within the Miller Creek and Pigeon Creek watersheds, CONSOL evaluated mining alternatives to efficiently extract the minable coal within the reserve body, and in November 2007, CONSOL submitted a Surface Mine Application (SMA) to the West Virginia Department of Environmental Protection (WVDEP) for a Surface Mine Control and Reclamation Act of 1977 (SMCRA) permit for the proposed Buffalo Mountain Surface Mine (SMA No. S-5018-07). The SMCRA (30 USC 1201 et seq.) is the federal statute that regulates coal mine operations in the United States. SMCRA is a comprehensive statute that requires proposed coal mine projects to efficiently extract minable coal reserves while minimizing potential adverse impacts to the upland and aquatic environment, if avoidance of those impacts is not practicable. The U.S. Department of Interior (DOI), Office of Surface Mining (OSM) administers and enforces SMCRA, but a state may assume primary jurisdiction over the regulation of surface mining within its borders if the Secretary of the Interior approves its proposed program. On January 21, 1981, the Secretary of the Interior approved West Virginia's SMCRA Regulatory Program, and the WVDEP administers the SMCRA Regulatory Program in West Virginia (WV Code § 22-3 and 38 CSR 2) with limited oversight from OSM. While the OSM provides oversight, the agency is not directly involved in WVDEP's decision-making process.

Coal demand in the United States is driven by the electric power industry which historically has accounted for 90 percent of U.S. coal consumption. Total coal production in this country in 2010 was 1,076.6 million tons. Of that, 488.4 million tons was bituminous coal (USEIA 2011). Over the life of the Buffalo Mountain Surface Mine, approximately 16.8 million tons would be expected to be extracted. This represents 1.6 percent of total coal production in the United States for one year or 3.5 percent of bituminous coal production. The consumption of natural

gas by electric power generators has been increasing since 2009, however, and as recently as August, 2012, coal was responsible for about 39 percent of the country's electricity output (USEIA 2012).

Approximately 40 percent of the world's current electricity needs are met through coal production. Only China produces more coal yearly than the United States. Worldwide in 2010, 7,229 million metric tons (7,969 million tons) of coal were produced (WCA 2012). By 2017, coal production may surpass oil as the world's top energy source (USIEA 2012).

1.1.3 Opportunity for a Joint-Use Project between Delbarton and Belo

Highway construction in mountainous terrain typically requires the excavation of mountain sides and ridges, and the placement of fill material into narrow valleys to construct highway embankments for horizontal and vertical alignments that meet current highway design standards. As the terrain gets steeper, more excavation is required which typically results in an increase in project costs and environmental impacts. Therefore, balancing the expense of, and the potential environmental impacts associated with, highway development in mountainous areas is a challenge for transportation officials, taxpayers, and the communities that would be served by highway construction projects. Due to the close proximity of the selected corridor for the King Coal Highway between the town of Delbarton and the community of Belo to CONSOL's proposed Buffalo Mountain Surface Mine, West Virginia transportation planners, CONSOL, and Mingo County officials decided to explore joint development opportunities within the Delbarton to Belo section of the King Coal Highway. As explained later, this joint effort evolved into the Delbarton to Belo Project. The project area is shown in Figure 1-1.

Section 404 of the *Clean Water Act* (CWA) regulates the discharge of dredged and/or fill material into waters of the United States (U.S.) and delegates the authority to issue permits for the discharge of dredged and/or fill material into waters of the U.S. to the U.S. Army Corps of Engineers (the Corps). Therefore, the Corps did not participate in the discussions regarding a joint development opportunity because Section 404 of the CWA requires the Corps to independently evaluate proposed actions requiring a CWA Section 404 permit in an objective and unbiased manner.

In 2006, CONSOL was contemplating the extraction of mineable reserves in the same vicinity as the proposed King Coal Highway between Delbarton to Belo. During surface mine planning within the proposed project area, CONSOL also contemplated several post-mining land uses including: forest land, light industry, commercial, public services, and residential. In October 2007, FHWA, WVDOH, CONSOL, Cotiga Land Company (the largest surface landowner in the Buffalo Mountain Surface Mine area), and the Mingo County Redevelopment Authority (MCRA) entered into a Memorandum of Understanding (MOU) to explore a potential joint-use opportunity related to the portion of the proposed King Coal Highway located between the towns of Delbarton and Belo. The Corps is not a signatory to the MOU and must independently review CONSOL's CWA Section 404 IP application for the discharges of fill material into waters of the U.S. that are proposed in conjunction with the construction and operation of the Buffalo Mountain Surface Mine.

Subject to the right of any party to terminate the MOU upon thirty days' notice without any further obligation, and further subject to and contingent upon the parties entering a definitive final agreement, the MOU contemplated that CONSOL would incorporate the King Coal High into the Buffalo Mountain post-mining land use (PMLU) plan, FHWA and WVDOH would re-evaluate the King Coal Highway environmental documents and ROD, and, if the project was completed, Cotiga would convey highway right-of-way to the State of West Virginia and a 15-foot utility right-of-way located along the proposed highway alignment to Mingo County. Table 1-1 summarizes the proposed responsibilities of each MOU signatory. A copy of the MOU is found in Appendix B.

Table 1-1
King Coal Highway-Buffalo Mountain Surface Mine
MOU Signatory Proposed Responsibilities

MOU Signatory	Proposed Responsibilities
CONSOL	• Incorporate an approximately 5-mile long portion of the King Coal Highway and ancillary development of adjoining lands into the Buffalo Mountain Surface Mine post mine land use plan. • Incorporate a 15-foot wide utility corridor along the approximately 5-mile long portion of the King Coal Highway. • Obtain all necessary permits and agency approvals associated with the Buffalo Mountain Surface Mine. • Implementation of a compensatory mitigation plan and other commitments and conditions associated with all permits and agency approvals.

Table 1-1 (continued)
King Coal Highway-Buffalo Mountain Surface Mine
MOU Signatory Proposed Responsibilities

MOU Signatory	Proposed Responsibilities
WVDOH	• Assist with the re-evaluation of the 2000 King Coal Highway FEIS and preparation of appropriate NEPA evaluation. • Provide technical assistance and approvals for the development of highway line and grade. • Ensure the donated roadbed associated with any joint-use development is formally accepted into the State Road System.
FHWA	• Perform a re-evaluation of the 2000 King Coal Highway FEIS and prepare appropriate NEPA evaluation.
Cotiga	• Donate to the WVDOH the rights-of-way associated with the development of the Delbarton to Belo Project. • Donate to MCRA the rights-of-way associated with the development of a 15-foot wide utility corridor located along the Delbarton to Belo Project.
MCRA	• Commit to cooperatively work with all parties of the MOU to ensure that the Buffalo Mountain Surface Mine post mine land use plan is consistent with the Mingo County Land Use Master Plan.

The joint-use opportunity would be expected to provide the following environmental and economic benefits:

- Combining two projects (the Delbarton to Belo Project and the Buffalo Mountain Surface Mine) may limit the impacts from two nearby areas to one location (compared to the Original King Coal Highway corridor and Buffalo Mountain Surface Mine as separate projects).

- CONSOL's construction of road bed for 5 miles of the Delbarton to Belo Project as part of the Buffalo Mountain Surface Mine would save West Virginia taxpayers approximately $110 million. To put this cost-savings in perspective, the annual construction budget of the WVDOH is about $500 million. A cost-savings of this amount is equivalent to over 20 percent of the agency's annual budget. Additionally, no construction monies are currently appropriated for the Delbarton to Belo Project.

- The eastward shift of the selected corridor would minimize stream impacts within the Miller Creek watershed. In 2000, when the King Coal Highway FEIS was first released for public comment, Miller Creek was a high quality stream that would be impacted by the preferred alternative identified in the EIS. (This portion of Miller Creek is no longer considered a high quality stream, however.)

- The new sewage treatment infrastructure proposed in CONSOL's CMP would be designed to accommodate existing residences within the Hell Creek watershed and the addition of residences and businesses located along Pigeon Creek and its tributaries, which would reduce the pollutant load within the Lower Pigeon Creek subwatershed.

- The Buffalo Mountain Surface Mine PMLU plan identifies a total of 1,328 acres that are proposed to be reclaimed as forest land. The reclaimed forest land would be planted

with tree species native to the project area and would replace forest land disturbed by construction and operation of the mine.

- The Buffalo Mountain Surface Mine PMLU plan identifies approximately 980 acres of developable land located outside the floodplain with access to public water, sewer service, and other utilities through the establishment of a 15-foot wide utility corridor through the area. As noted in the *Mingo County Comprehensive Plan Update*, this modern infrastructure is a key component of Mingo County's smart growth redevelopment and land use strategy, specifically aimed at creating new housing and sustainable employment opportunities to allow homeowners and businesses to move out of the floodplain and protect life and property from future floods (Mingo County Commission 2007).

- The creation of fulltime mining jobs during the mining project, and subsequent highway jobs upon acceptance of the completed project.

- Surface transportation system safety improvements that would reduce highway crashes by re-routing traffic from deficient local roadways and improve emergency response times.

In late 2008, information on the joint-use opportunity was presented at a public meeting held at Burch High School in Delbarton. More than 100 people attended the meeting and over 800 comments were received during the associated 45-day comment period. All of the comments received expressed support for a joint-use project.

While the WVDOH has seen success with joint-use projects in the past, such projects do offer uncertainties and challenges. Joint-use projects may be less costly to government agencies, but they also reallocate risk among public and private sector participants. Nonetheless, because there are opportunities created by co-location of the proposed highway and mining projects, all of the parties entering the MOU have determined it to be in their best interests and have agreed to work toward the development and execution of a definitive final agreement respecting the project should the FHWA and the Corps select the preferred alternative (the Delbarton to Belo Project).

1.1.4 The Corps' Evaluation of CONSOL's CWA Section 404 Permit Application for the Proposed Buffalo Mountain Surface Mine

The construction and operation of the proposed Buffalo Mountain Surface Mine would require the discharge of fill material into waters of the U.S. Therefore, CONSOL is required to obtain a CWA Section 404 permit from the Corps. The Corps received an application for a CWA Section 404 Individual Permit (IP) from CONSOL in late 2008. The Corps is processing the IP

application under project number LRH-2008-491-TUG. As required by the Corps Regulatory Program regulations (33 CFR 320-332), Public Notice 2008-491 was issued on December 3, 2008. The Corps uses the Public Notice to inform the public and Agencies about the IP application, and to solicit comments on the IP application.

1.2 Purpose of this Joint Lead Federal Agency NEPA Document

1.2.1 FHWA and WVDOH

The WVDOH and FHWA in conjunction with CONSOL and Mingo County officials are exploring a joint development project that would incorporate a portion of the King Coal Highway into CONSOL's post mine land use (PMLU) plan for the proposed Buffalo Mountain Surface Mine. The joint development would require an eastward shift of the selected corridor within the 6.9-mile long operationally independent section between Delbarton and Belo. FHWA defines operationally independent as a project or portion of a project described in an environmental document that can be built and function as a viable transportation facility even if the rest of the work described in the environmental document is never built. This shift would not affect the logical termini of adjacent operationally independent sections of the King Coal Highway.

This Draft Supplemental EIS (SEIS) provides the analysis of the operationally independent Delbarton to Belo section of the King Coal Highway and is not a re-evaluation of the entire 2000 King Coal Highway FEIS. For clarity and to distinguish this draft SEIS from other projects, the WVDOH and FHWA have identified the joint effort plainly as the Delbarton to Belo Project. The Delbarton to Belo project is a project by CONSOL of Kentucky to construct, at its own expense and with the cooperation of WVDOH and FHWA, a rough-grade road bed as a part of its proposed post-mine land use for its Buffalo Mountain Surface Mine, that upon completion will be dedicated to WVDOH for incorporation into the state road system as a part of the King Coal Highway.

1.2.2 The Corps

The Corps is evaluating CONSOL's CWA Section 404 IP application LRH-2008-491-TUG for the proposed discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine. On January 4, 2012, the Corps

determined that the discharges of fill material into waters of the U.S. would require the development of an EIS. Because CONSOL's proposed mine plan would accommodate the Delbarton to Belo Project, the Corps decided to incorporate its Draft EIS evaluation of IP application LRH-2008-491-TUG into the WVDOH and FHWA's Draft SEIS.

1.2.3 Joint Lead Federal Agency Process

This Draft SEIS will be used by the FHWA and Corps to combine their separate environmental processes. It will be available to the public and agencies for a minimum 45-day review period. During the review period, a public hearing will be held within the project area. Following the close of the review period, all public and agency comments will be evaluated by the WVDOH, FHWA, and the Corps and a Final SEIS will be issued.

1.2.3.1 Process Map

A flow chart that outlines this joint agency process is provided in Figure 1-2.

1.2.4 Cooperating Agencies

Other environmental resource and transportation agencies with jurisdiction over, or having operating interests with, transportation projects within West Virginia were invited to help guide the proposed joint-use project through the environmental process as either cooperating or participating agencies. A cooperating agency is any public agency with jurisdiction by law over parts of the proposed project or with special expertise related to the project. Participating agencies can be federal, state, tribal, regional, and local government agencies that may have an interest in the project. By definition, all cooperating agencies are also considered participating agencies, but participating agencies are not necessarily cooperating agencies.

The U.S. Environmental Protection Agency (USEPA), the U.S. Fish and Wildlife Service (USFWS), and the West Virginia Division of Culture and History (WVDCH) were cooperating agencies for the 2000 King Coal Highway FEIS and were invited to continue as cooperating agencies for the development of this Draft SEIS. A response was received by the USEPA on March 16, 2012. To date, no response has been received by the USFWS and WVDCH. While

the USFWS and WVDCH have not yet formally accepted cooperating agency status. Coordination with both these and other agencies has been on-going.

The USEPA is required under *Clean Air Act* (CAA) Section 309(a) to review and comment on all draft EISs, and has responsibilities in conjunction with CWA Section 402(d) specific to the National Pollution Discharge Elimination System (NPDES) program, as well as CWA Section 404(b), 404(c) and 404(q) specific to permits issued by the Corps for the discharge of fill material into waters of the U.S. The USFWS has the authority to implement the *Endangered Species Act* (ESA), and has special expertise with federally threatened and endangered species and their habitats. The WVDCH serves as the State Historic Preservation Office (SHPO) for West Virginia, and has responsibilities under the *National Historic Preservation Act* (NHPA).

1.3 Agency Scope of Review in this Draft SEIS

The Corps is evaluating a CWA Section 404 IP application for the proposed discharges of fill material into waters of the U.S. in conjunction with the construction and operation CONSOL's Buffalo Mountain Surface Mine. The 4th Circuit found "the Corps" jurisdiction under CWA Section 404 is limited to the narrow issue of the discharge of fill material into jurisdictional waters. Further, the 4th Circuit found a broader NEPA scope of analysis is not appropriate because the CWA does not provide the Corps the legal authority to regulate coal mining activities beyond the limits of waters of the U.S. The SMCRA regulates coal mining operations (30 USC 1201 et seq.), and it is a comprehensive statue that requires the WVDEP to evaluate proposed coal mining projects to ensure they are designed to efficiently extract minable coal reserves, while minimizing adverse impacts to the upland and aquatic environment, if avoidance of upland and aquatic environment impacts is not practicable. Consequently, the 4th Circuit determined that impacts to the upland environment are not within the Corps' "control and responsibility" because they are "not essentially a product of the Corps action". Therefore, the Corps' scope of analysis in this Draft SEIS is limited to the waters of the U.S. and the adjacent riparian buffers (extending 60 feet from the top of each stream bank) that are located within the SMCRA permit boundary of the Buffalo Mountain Surface Mine. To maintain sufficient aquatic habitat, the literature indicates that 35 to 100 feet of native forested riparian buffers should be preserved or restored along all streams (IOE 1999).

The Delbarton to Belo Project would require an eastward shift of the King Coal Highway selected corridor between Delbarton and Belo to allow for construction of approximately five miles of highway on land that would be disturbed by the proposed surface mine. In order to connect the five miles of highway alignment that would be constructed within the proposed Buffalo Mountain Surface Mine SMCRA permit boundary to the Delbarton to Belo Project's southern terminus at US 52 near Delbarton and its northern terminus at US 119 near Belo, the WVDOH would need to construct an additional 1.9 miles of new highway. Therefore, the WVDOH and FHWA's scope of analysis in this Draft SEIS includes the entire Buffalo Mountain Surface Mine SMCRA permit boundary and two corridors located south of and north of the SMCRA permit boundary that would be required to complete construction.

In order to construct the proposed Buffalo Mountain Surface Mine, CONSOL is required to obtain a CWA Section 404 permit from the Corps. Therefore, this Draft SEIS will first present the Corps' evaluation of CONSOL's CWA Section 404 IP application, and then present WVDOH and FHWA's evaluation of the Delbarton to Belo Project.

The highway portion of the Delbarton to Belo Project proposed to be dedicated within the Buffalo Mountain Surface Mine area would also be covered in the CWA Section 404 permit from the Corps, but a second CWA Section 404 permit would be required for the two termini areas of the proposed highway that are outside the mine footprint. This second permit would be developed later in conjunction with future updates of the environmental documentation related to the proposed highway facility.

1.4 The Corps

1.4.1 CWA Section 404 Alternatives Available to the Corps

The Corps received a CWA Section 404 IP application (LRH-2008-491-TUG) for the discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine in late 2008. The Corps' Regulatory Program regulations (33 Code of Federal Regulations [CFR] 320-332), as well as the NEPA, ESA, NHPA, and other statutes, require the evaluation of impacts associated with the IP application LRH-2008-491-TUG. The Corps' evaluation will result in one of three decisions:

- Issue the permit;
- Issue the permit with conditions; or
- Deny the permit.

The WVDOH would not gain control and ownership of the highway alignment right-of-way located on the surface mine until mine operation and reclamation would be complete (a period of 15 years). While construction of the two connectors are foreseeable future activities and are connected actions under NEPA, IP application LRH-2008-491 TUG, as submitted to the Corps, only includes discharges of fill material into waters of the U.S. within the SMCRA permit boundary that would occur in conjunction with the construction and operation of the Buffalo Mountain Surface Mine. Upon receipt of a separate CWA Section 404 application from the WVDOH, the Corps would then evaluate the potential discharges of fill material into waters of the U.S. associated with construction of the Delbarton to Belo Project connectors.

To reduce federal agency duplication and paperwork (40 CFR 1506.4), the Corps is combining their NEPA evaluation of IP application LRH-2008-491-TUG with WVDOH and FHWA's Delbarton to Belo Project. This NEPA analysis, in conjunction with the CWA Section 404(b)(1) guidelines, will assist the Corps in determining the Least Environmentally Damaging Practicable Alternative (LEDPA) in association with the Buffalo Mountain Surface Mine. Following the LEDPA determination, the Corps will determine whether the LEDPA is in the public interest through the evaluation of the Public Interest Review (PIR) factors identified in 33 CFR 320.4. A copy of the PIR is found in Appendix C. The Corps' final permit decision will be documented in a ROD associated with this Draft SEIS.

1.4.2 Proposed Buffalo Mountain Surface Mine

CONSOL proposes to extract coal reserves within the vicinity of Belo and Delbarton in an area defined by the following: north of US 52, east of Miller Creek, west of Pigeon Creek, and south of US 119 (Figure 1-3). As part of their planning process, CONSOL performed an analysis of the available coal reserves within the area and conducted surveys to evaluate the natural and cultural resources within the study area of the proposed mine. The surveys of natural resources included the identification and evaluation of aquatic resources in the area. Following the completion of data collection to establish the baseline conditions for the area, CONSOL began to evaluate extraction methods to determine the precise project boundary and mine plan.

While, the WVDEP's decision to issue a SMCRA permit for a proposed coal mining project is not a federal action that is subject to NEPA, the SMCRA requires the WVDEP's review and analysis of a SMA to comply with federal regulations such as the *Fish and Wildlife Coordination Act* (FWCA), the ESA, the NHPA, and Section 402 of the CWA, as well as state regulations. The comprehensive review of a proposed coal mine project under SMCRA was recognized by the U.S. Court of Appeals for the Fourth Circuit's (4th Circuit) in their February 13, 2009 opinion in Ohio Valley Environmental Coalition v. USACE, Nos. 07-1355, 07-1479, 07-1480, 07-1974, 17-2112. The 4th Circuit found "the Corps" jurisdiction under CWA Section 404 is limited to the narrow issue of the filling of jurisdictional waters, and impacts to the upland environment are not within the Corps' "control and responsibility" because they are "not essentially a product of the Corps action".

CONSOL submitted a SMA for the Buffalo Mountain Surface Mine to the WVDEP in November 2007. After its review of the SMA was complete, the WVDEP issued SMCRA permit S-5018-07 for the Buffalo Mountain Surface Mine on November 22, 2011.

The Corps will use this Draft SEIS and information from the WVDEP and CONSOL to analyze IP application LRH-2008-491-TUG. In December 2010, CONSOL submitted an Environmental Information Document (EID) to the Corps to assist with the evaluation and analysis of IP application LRH-2008-491-TUG. In response to comments on the EID, CONSOL revised that document and submitted a revised EID in March 2012. The EID contains information collected in conjunction with the SMA for the proposed Buffalo Mountain Surface Mine. It includes CONSOL's description of the mine project planning process, an alternative analysis for mineral extraction and excess overburden placement, baseline terrestrial and aquatic habitat studies, threatened and endangered species surveys and agency coordination, cultural resource surveys and agency coordination, and a summary of CONSOL's Compensatory Mitigation Plan (CMP).

The CMP was submitted to the Corps in June 2010. A CMP is required under CWA Section 404 when an applicant's proposed project would result in unavoidable aquatic resource losses (33 CFR 332). The CMP describes the measures proposed by the applicant to compensate for permanent and temporary impacts to aquatic resources.

The March 2012 EID, supplemental information to the EID, the June 2010 CMP and two CMP addendums dated August 2010 and August 2011 are summarized in this DSEIS. The CMP and its addendum are included as an appendix to this document on compact disk.

While the Corps has the authority to issue CWA Section 404 permits for the discharge of fill material into waters of the U.S., CWA Section 401 provides states the opportunity to evaluate the potential water quality impacts associated with a CWA Section 404 permit application. A CWA Section 404 permit is not valid until the associated 401 Water Quality Certification (WQC) has been issued or waived. The WVDEP has the authority to issue a 401 WQC in West Virginia. CONSOL submitted a 401 WQC application for the Buffalo Mountain Surface Mine to the WVDEP. The WVDEP completed its review of the application and issued 401 WQC for the Buffalo Mountain Surface Mine on November 23, 2011.

1.4.3 CWA Section 404 Permit Application Review and Analysis

The regulations governing the Corps' Regulatory Program are described in 33 CFR 320-332. Specifically, the Corps Regulatory Program's NEPA implementation procedures are described in Appendix B of 33 CFR 325.

The Corps' first determination in association with a permit evaluation is the selection of the LEDPA following the Guidelines described in 40 CFR 230. The Guidelines stipulate that no discharge of dredged or fill material into a water of the U.S. shall be permitted if there is a practicable alternative which would have less adverse impact on the aquatic environment, so long as the alternative does not have other significant adverse environmental consequences (40 CFR 230.10[a]). The Corps' preliminary analysis of CONSOL's preferred alternative for the Buffalo Mountain Surface Mine is provided in the Appendix D of this SEIS. The ROD for this project will include the Corps' final LEDPA determination.

The Corps must evaluate the LEDPA under NEPA, including an analysis under the ESA and NHPA. To reduce federal agency duplication and paperwork (40 CFR 1506.4), the Corps is combining its NEPA evaluation of IP application LRH-2008-491-TUG with WVDOH and FHWA's NEPA evaluation of the Delbarton to Belo Project.

The Corps is also required to determine whether the LEDPA is in the public interest based on an evaluation of a proposed project's reasonably foreseeable individual and cumulative impacts on the Corps' 21 PIR factors (33 CFR 320.4). The Corps will generally issue a permit if it is determined that the LEDPA is not contrary to the public interest. The results of the PIR analysis will also be included in the ROD.

1.4.3.1 Scope of Analysis

The Corps Regulatory Program's NEPA scope of analysis is described in 33 CFR 325, Appendix B, Paragraph 7(b). The specific activities associated with the Buffalo Mountain Surface Mine requiring authorization under CWA Section 404 is the proposed discharge of fill material into waters of the U.S. in conjunction with the construction of valley fills and associated sediment control basins, and mine through areas, where stream channels would be excavated to extract bituminous coal reserves underlying the stream bed. Therefore, the NEPA scope of analysis for the IP application LRH-2008-491-TUG would include waters of the U.S. that would be filled or otherwise adversely affected by the construction of the valley fills, sediment basins, and mine through areas, and the adjacent riparian areas which extend 60 feet from the top of bank on each side of the stream channels. This scope of analysis is consistent with the Fourth Circuit U.S. Court of Appeals' (4th Circuit) February 13, 2009 opinion in Ohio Valley Environmental Coalition v. USACE, Nos. 07-1355, 07-1479, 07-1480, 07-1974, 17-2112.

1.4.3.2 ESA Scope of Analysis

The ESA review for IP application LRH-2008-491-TUG includes informal consultation with the USFWS. The USFWS has delegated its informal consultation review authority of the potential effects of coal mining activities on the federally endangered Indiana bat (*Myotis sodalis*) to the WVDEP in accordance with a Memorandum of Agreement (MOA). Therefore, the effects of the proposed Buffalo Mountain Surface Mine on the endangered Indiana bat (*Myotis sodalis*) were evaluated by the WVDEP in conjunction with its review of the SMA, and the Corps will use the Buffalo Mountain Surface Mine SMA information included in this SEIS to inform its analysis of IP application LRH-2008-491-TUG. The Indiana bat uses riparian and upland areas interchangeably; therefore, the Corps' ESA scope of analysis includes the 2,308-acre SMCRA permit boundary. (As the lead federal agency responsible for implementation of USFWS of the ESA, the USFWS will play a major role in the project if any species of concern are identified as

being potentially impacted by the project. Routine coordination with the USFWS is currently ongoing.)

1.4.3.3 NHPA Scope of Analysis

As part of its SMA review, the WVDEP evaluates the potential effects a proposed coal operation may have on surface or buried historic resources that are included in or are eligible for inclusion in the *National Register of Historic Places* (NRHP). The Corps will use the Buffalo Mountain Surface Mine SMA information included in this SEIS to inform its analysis of IP application LRH-2008-491-TUG under Section 106 of the NHPA. The Corps' NHPA scope of analysis is defined as the "permit area" in accordance with 33 CFR 325, Appendix C. The permit area for the proposed Buffalo Mountain Surface Mine includes the waters of the U.S. subject to CWA jurisdiction that would be impacted by the discharges of fill material associated with the construction of valley fills, associated sediment control basins, and mine through areas, plus those upland areas within the riparian buffer associated with those waters of the U.S. Construction and operation of the proposed Buffalo Mountain Surface Mine would not occur, but for the authorization of work in waters of the U.S. Furthermore, the work in the waters of the U.S. is integrally related to, and directly associated with, the construction of the Buffalo Mountain Surface Mine. Therefore, the Corps' NHPA scope of analysis includes the 2,308-acre SMCRA permit boundary.

1.5 FHWA and WVDOH

1.5.1 Preparation of Supplements to Existing NEPA Documents

FHWA's NEPA regulations concerning supplemental EISs [23 CFR Sec. 771.130] govern their preparation of this document. Those regulations state in part that a draft EIS, FEIS, or SEIS, may be supplemented at any time. An EIS shall be supplemented whenever the agency determines that new information or circumstances relevant to environmental concerns and bearings on the proposed action or its impacts would result in significant environmental impacts not evaluated in the original (or previous supplemental) EIS.

In effect, agencies prepare supplemental EISs when there are substantial changes, new circumstances, or significant new information on the proposed action or its potential impacts.

This SEIS will evaluate the direct, indirect, and cumulative effects of the proposed action within the Delbarton to Belo Project. Besides its responsibility under NEPA, FHWA will use this SEIS to address its obligations under other related laws, policies, and guidelines.

1.5.2 King Coal Highway

The King Coal Highway Corridor is a proposed transportation improvement program that begins in Bluefield, Mercer County, West Virginia, and traverses Mercer, McDowell, Wyoming, and Mingo counties to US 119 (Corridor G) near Williamson, Mingo County, West Virginia. The overall purpose of the King Coal Highway is to improve the transportation system in southern West Virginia while supporting opportunities for economic development. The estimated construction cost for the entire 94 miles is approximately $1.5 billion. The King Coal Highway is part of the Interstates 73 and 74 (I-73/74) Corridor, a Congressionally-designated, high-priority corridor connecting the states of Michigan, Ohio, West Virginia, Virginia, North Carolina, and South Carolina.

The King Coal Highway is being developed under design criteria developed for the Appalachian Development Highway System. Although this criteria is sometimes confused by the public with Interstate standards, neither the Delbarton to Belo Project nor other parts of the King Coal Highway are being built to Interstate design criteria. The Delbarton to Belo Project, as a part of the King Coal Highway, is being advanced as a four-lane, rural divided arterial with at-grade intersections with public roads. By utilizing the Appalachian Development Highway System criteria, rather than Interstate standards, the WVDOH determined that it would be able to complete construction at a lower cost and with fewer environmental impacts with no loss of highway capacity, safety, or mobility. Additional information on the design criteria, including a typical highway section diagram, is found in the Alternatives chapter of this Draft SEIS.

The 2000 FEIS and the ROD allowed for alignment shifts, both within and outside of the 1,000-foot wide selected corridor, would be considered during alignment design to minimize environmental impacts, and achieve the most cost-effective alignment (FHWA 2000a). The 2000 King Coal Highway FEIS and ROD are incorporated into this SEIS by reference. A copy is also provided on a compact disk in this Draft SEIS.

Based upon the length of the corridor, it was always envisioned that the projects would be advanced over a long period of time as funds became available. The WVDOH has planned and scheduled the work so that useable sections of highway will be produced and provided to the public in shorter intervals. This sequencing yields beneficial portions to the public much earlier than the completion of the total corridor. Additionally, a reevaluation of the ROD is completed prior to the construction of each section to ensure that environmental impacts and commitments are current.

In 2000, the WVDOH and FHWA identified 11 operationally independent sections within the overall King Coal Highway with an estimated completion date for the entire length of highway of 2033. These sections would connect to important routes in the area and function as viable transportation facilities regardless of whether or not other transportation projects were constructed. Portions of the first three priorities are either complete and open to traffic, or under construction. They are shown on Figure 1-4. Alignment construction to date includes:

- The eastern terminus area, a new interchange connecting US 52 and US 460 northeast of Bluefield (partially constructed and open to traffic);
- The Premium Energy Section, an approximately 3.6-mile section between Gilbert and Hampden that is being constructed in conjunction with the reclamation of the Premium Energy's Surface Mine No.2 (SMCRA Permit S-5020-99) (under construction);
- The Sharon Heights Connector, a 1.9-mile connector road to US 52 near the community of Sharon Heights (approximately 0.7 mile under construction with surface mine; 1.2 miles to be designed and constructed by WVDOH);
- The Red Jacket Project, an approximately 11.37–mile section between Taylorville and Hampden (open to traffic); and
- The Horsepen Connector, an integral part of the Red Jacket Project, a 1.6-mile connector road to US 52 at Horsepen Mountain (open to traffic).

The Red Jacket Project was undertaken as a public-private partnership (P3) with construction funding to be provided by both the public and private partners. P3 projects are legally-binding contracts between governments and businesses for the provision of assets and delivery of services that allocates responsibilities and business risks among the various partners (Partnerships BC 2003). In 2004 the project was elevated due to the unique P3 opportunity to rapidly advance the project at considerable time and cost savings. Accelerating the project created savings to the tax payers in the tens of millions of dollars.

1.5.3 Delbarton to Belo Project

The Delbarton to Belo Project could function as a viable transportation facility even if the rest of the King Coal Highway would not be built. Thus, no other sections of the overall 94-mile King Coal Highway are under reevaluation in this Draft SEIS. Some parts of the King Coal Highway selected corridor already fall on land that would be used for the Buffalo Mountain Surface Mine Project, but at its farthest distance, the Original King Coal Highway corridor would be shifted less than a quarter-mile east of the location approved in 2000. The proposed shift would place an approximately 5-mile long section of the King Coal Highway Corridor within the SMCRA permit boundary of the proposed Buffalo Mountain Surface Mine (S-5018-07). An additional 1.9 miles of the new alignment would also be required to connect the highway to US 52 near Delbarton and US 119 near Belo. The entire length of the proposed project would total 6.9 miles.

The Buffalo Mountain Surface Mine, if all permit authorizations are obtained, would be under construction for 15 years. Construction would include all aspects of surface mining: timbering and grubbing, construction of haul roads, removal of overburden, fill placement and back-stacking, coal extraction, re-grading and land restoration, and completion of other mitigation commitments. Post-mine construction would include commercial and residential land development, construction of a utility, and highway construction. Although preparation of a rough-grade road bed as part of a post-mining land use would commence with the initiation of mining activities, the WVDOH would not gain ownership and control of the right-of-way for the 5-mile alignment located within the SMCRA permit boundary and would not commence highway construction until reclamation of the surface mine is complete. As a result, the Delbarton to Belo Project would not be expected to be open to traffic for at least 15 years. At some point during this period, the WVDOH and FHWA would update its documentation of environmental impacts for the highway's two termini areas. The future environmental documentation would be likely to be in the form of a re-evaluation of this SEIS. Coordination with state and federal resource agencies would be ongoing and help determine the appropriate time, and form, for the re-evaluation. This re-evaluation would occur well in advance of the need to construct the highway's termini.

Construction of the Delbarton and Belo connectors would begin at the appropriate time to insure that the roadway would be operationally independent and useable by the public at the earliest

possible date. Construction of the connectors is foreseeable future activities and is connected actions under NEPA. As such, the potential impacts associated with them are also under evaluation in this SEIS. If construction of the Buffalo Mountain Surface Mine would begin but would be terminated sooner than expected for any reason, development of the highway through the mine area would still proceed.

1.5.4 Consistency with Other Plans

The proposed project is consistent with national, state, regional, and local plans. At the national level, the King Coal Highway is part of the Congressionally-designated, high priority I-73/74 Corridor. Although not all segments of the I-73/74 Corridor will be built to full Interstate standards, including the portion located in West Virginia (essentially the King Coal Highway and a related project, the Tolsia Highway), when completed in its entirety, the I-73/74 Corridor will provide a major new route connecting the states of Michigan, Ohio, West Virginia, Virginia, North Carolina, and South Carolina. Beginning with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), corridors have been designated in Federal transportation legislation as high priority corridors on the National Highway System (NHS) for inclusion in the 163,000-mile approved NHS as specific routes or general corridors (FHWA 2012). ISTEA designated 21 corridors. Subsequent legislation added additional corridors. By the end of 2005, there were over 80 such corridors.

At the state level, the King Coal Highway is consistent with both the West Virginia Multi-Modal Statewide Transportation Plan (WVDOH 2010b) and the Statewide Transportation Improvement Plan (STIP): 2010-2015 (WVDOH 2009), West Virginia's principal long and short range transportation planning documents. The Multi-Modal Statewide Transportation Plan is a policy document that evaluates current needs, revenue, and expenditures across all transportation modes. It evaluated the King Coal Highway along with other priority projects to lay the planning foundation for future improvements. The King Coal Highway was identified within the Multi-Modal Statewide Transportation Plan as an important element of the state highway network. The STIP is the fiscally-balanced six-year plan of transportation improvements in West Virginia. Although no funds are identified for constructing the Delbarton to Belo Project, the STIP identified the portion between Delbarton and Belo as a high priority project that would be advanced rapidly when additional funds become available.

The King Coal Highway has also been designated as part of the West Virginia Coal Resources Transportation System. Construction of the Delbarton to Belo Project would provide an operationally independent segment of the 94-mile long highway. A special Coal Resource Transportation Fund (CRTF) was created in 2003 to support the West Virginia Coal Resource Transportation Road System (CRTS) utilizing matching funds provided by coal companies and other parties for the repairs and improvements to those roads and bridges used to transport coal.

The Delbarton to Belo Project would also be consistent with the statewide Coalfields Community Development Program. Under the program, counties with surface-mined properties are required to produce a land use master plan for coal operators to use for potential post-mine development within their mining permit boundaries. These plans specifically deal with uses of mined properties in accordance with the *West Virginia Code* and OSM regulations. The Coalfields Community Development Program requires the Office of Coalfield Community Development to assist in the creation of these plans and to review them to ensure they meet certain criteria. Mingo County has been at the forefront of the state's efforts to implement the program and is considered a leader in land use planning by the Office of Coalfield Community Development. The Office of Coalfield Community Development has also participated in the Delbarton to Belo Project scoping.

At the regional level, the Region II Planning and Development Council of West Virginia has requested the development of new transportation facilities to improve the economic health of southern West Virginia. The Planning and Development Council is a regional development agency formed to strengthen the development potential of Cabell, Lincoln, Logan, Mingo, and Wayne counties. Specifically, the Planning and Development Council has noted in its Comprehensive Economic Development Strategy and Regional Development Plan (Region II 2010) that the Delbarton to Belo Project is an important undertaking within Mingo County.

At the local level, the Delbarton to Belo Project would be consistent with the Mingo County Land Use Master Plan (MCRA 2001) and the Mingo County Comprehensive Plan Update (Mingo County Commission 2007). Because of its strong emphasis on future land use, the Land Use Master Plan has supplemented the countywide comprehensive plan. It has been endorsed by the Mingo County Commission and presented to the community at public meetings and development workshops. A key component of both county plans is to develop strategies that

encourage residential development outside of flood-prone areas. Although not condoned by any government agency, development within the floodplain has traditionally been viewed by local residents as easier than building homes on the steep terrain typical of southern West Virginia; therefore, residential, commercial, and industrial development has occurred primarily in the floodplains of the narrow valleys. This has caused problems throughout the area during times of flooding because about 20 percent of Mingo County residents live in one of its five incorporated places, the City of Williamson and the Towns of Delbarton, Gilbert, Kermit, and Matewan. Although development in the incorporated areas is not all within a floodplain, there are major floodplains in all of these communities (FEMA 2011).

The Delbarton to Belo Project is expected to be consistent with the Buffalo Mountain Surface Mine PMLU plan (CONSOL 2010a). The plan is shown on Figure 1-5. The PMLU plan was developed after a review of both the Mingo County Comprehensive Plan Update and the Mingo County Land Use Master Plan. In terms of the Delbarton to Belo Project, the local plans identify the project area as a key land utilization area, targeting it for future industrial, commercial/retail, residential, public facilities (transportation and utility conveyance), and recreation use.

If approved and implemented, the Buffalo Mountain Surface Mine CMP developed by CONSOL and submitted to the Corps to assist with their review of IP application LRH-2008-491-TUG would be consistent with the Upper Pigeon Creek Watershed Restoration Plan (Canaan Valley Institute 2008). The Upper Pigeon Creek Watershed Restoration Plan stated that the Upper Pigeon Creek watershed has been significantly impacted by human activities, but short and long term efforts to bring centralized wastewater treatment and stream restoration projects to the area would result in improved ecological conditions. Further, the Upper Pigeon Creek Watershed Restoration Plan specifically encouraged coal mining companies to participate in these restoration efforts.

The Delbarton to Belo Project and the Buffalo Mountain Surface Mine PMLU plan would be expected to be consistent with the future Mingo County zoning ordinance. Although there is currently no zoning in the county, the Mingo County Comprehensive Plan Update recommended that a partial zoning ordinance be adopted in the future (Mingo County Commission 2007). The ordinance would be applied to growth areas first and gradually be endorsed for use throughout the county, depending on the level of future development. As a high priority area for residential,

commercial, and industrial development, the King Coal Highway corridor that cuts across the county would see application of the zoning ordinance before many other areas.

Purpose and need is essential in establishing a basis for the development of reasonable alternatives and the eventual selection of a preferred alternative. Although the project is consistent with regional and local plans, consistency with those plans does not imply that local and regional planning goals are adopted as part of the proposed project's purpose and need.

1.6 Permits

The Corps is currently evaluating CWA Section 404 IP application LRH-2008-491-TUG for the proposed discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine. This Draft SEIS is a joint NEPA document for the WVDOH and FHWA's proposal to shift a portion of the King Coal Highway Corridor from Delbarton to Belo and for the Corps's determination on IP application LRH-2008-491-TUG.
On November 22, 2011, the WVDEP issued the SMCRA Permit S-5018-07 for the Buffalo Mountain Surface Mine. Subsequent to the WVDEP's issuance of SMCRA Permit S-5018-07, an appeal to the permit was filed. The appellants raised four objections related to runoff, drainage, installation of rain gauges, and installation of flow meters. An agreement has been reached between the parties and an Agreed Order was entered by the Surface Mine Board on August 24, 2012.

In addition to the SMA, CONSOL submitted a NPDES permit application and a CWA Section 401 WQC application to the WVDEP. The WVDEP issued the NPDES permit on October 29, 2012. The WVDEP advertised their draft Section 401 WQC for the Buffalo Mountain Surface Mine on October 8, 2011, and issued the certification on November 23, 2011.

2.0 PURPOSE AND NEED

2.1 Study Area

The study area for the proposed Delbarton to Belo Project is located in Mingo County, West Virginia. The area parallels WV 65 to the east and is perpendicular to US 119 in the north and US 52 in the south. Miller Creek is located to the west. The major routes within the study area include WV 65, a two-lane road; US 119, a four-lane divided highway; and US 52, a two-lane road through the study area. The study area is centered along the north-south oriented Buffalo Mountain ridge. The study area is rural and heavily forested with development located at the southern end in the town of Delbarton. The steep topography has generally limited development to the floodplain of Pigeon Creek (the widest valley floor through the study area), the floodplain of Miller Creek, and the flood-prone areas of the Miler Creek and Pigeon Creek tributaries.

The study area's estimated U.S. Census population is 579 (United States Census Bureau [USCB] 2010). Belo is a small unincorporated community of about 100 to 200 people located at the northern end of the study area. Residential development is located along WV 65, but is limited along US 119 and US 52.

The City of Williamson, the Mingo County seat, is located approximately 3 miles southwest of the study area, and has the largest population of any community located in the vicinity of the study area. The population of Williamson at the 2010 Census was 3,191. Government, retail, and personal services are available in Williamson. Other nearby communities include Kermit and Matewan, both with populations under 500. The total population of Mingo County is 26,839, a decline of 5.0 percent since the 2000 census (USCB 2010).

Logical termini for the Delbarton to Belo Project have been set at US 52, about one-half mile west of Delbarton, and at US 119 just west of its intersection with WV 65. If built, the proposed project would consist of a four-lane, divided highway with partially controlled access.

The proposed Buffalo Mountain Surface Mine project area is also located in the vicinity of Belo and Delbarton in Mingo County in an area defined by the following: north of US 52, east of Miller Creek, west of Pigeon Creek, and south of US 119. The precise Buffalo Mountain Surface Mine

project boundary was determined and refined through an alternative development process undertaken by CONSOL as part of its SMCRA permit. The construction and operation of the proposed Buffalo Mountain Surface Mine would result in the discharge of fill material into waters of the U.S. Therefore, the proposed surface mine would require authorization from the Corps under CWA Section 404.

2.2 Proposed Action

Since the King Coal Highway selected corridor was approved in August 2000, an opportunity for a joint-use project in conjunction with the proposed Buffalo Mountain Surface Mine has been identified for a portion of the corridor between the towns of Delbarton and Belo. As a result, the purpose of the current action is to construct a surface coal mine project that accommodates the future construction of the King Coal Highway between Delbarton and Belo. Construction of a new highway alignment between Delbarton and Belo would become an integral part of the Buffalo Mountain Surface Mine PMLU plan. Therefore, the proposed actions to be evaluated in this Draft SEIS are:

- The Corps' decision to issue, issue with conditions, or deny a CWA Section 404 permit for the proposed discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine and the associated highway accommodation; and,
- A potential shift of the Original King Coal Highway corridor between Delbarton and Belo that would allow a rough-grade road bed to be constructed in conjunction with the construction, operation, and reclamation of the Buffalo Surface Mine.

2.3 Purpose and Need

When the opportunity for a joint-use project was identified, the purpose and need statements for the King Coal Highway and the proposed Buffalo Mountain Surface Mine were reviewed, and a combined project purpose was developed. The purpose of the current action is to develop a coal mine project that accommodates the future construction of the King Coal Highway between Delbarton and Belo in Mingo County, West Virginia.

Incorporating construction of a rough-grade road bed accommodating the King Coal Highway between Delbarton to Belo into the proposed Buffalo Mountain Surface Mine would satisfy the following needs: produce coal to satisfy national and international demand for electricity; and

allow future completion of a portion of the KCH that is consistent with the purpose and need statements identified in the 2000 King Coal Highway FEIS.

The Corps' evaluation of a CWA Section 404 IP application for proposed discharges of fill material into waters of the U.S. in conjunction with the construction and operation of CONSOL's Buffalo Mountain Surface Mine differs from WVDOH and FHWA's evaluation of the potential to construct the Delbarton to Belo Project as a joint-use project. Therefore, the separate purpose and needs statements that would be used to evaluate each agency's respective action are provided in this Chapter.

2.3.1 The Corps

CONSOL submitted a CWA Section 404 IP application to the Corps for the discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine (LRH-2008-491-TUG). The Buffalo Mountain Surface Mine PMLU plan includes the construction of a 5-mile portion of the Delbarton to Belo Project. Construction of a portion of the Delbarton to Belo Project within the Buffalo Mountain SMCRA permit boundary (SMCRA permit S-5018-07) requires an eastward shift of the King Coal Highway selected corridor between Delbarton and Belo. The potential impacts associated with this corridor shift and two connectors located outside the SMCRA permit boundary are under evaluation by WVDOH and FHWA in this Draft SEIS.

The Corps evaluates the applicant's project purpose and need based on 33 CFR 320.1 and 40 CFR 1502.12. The Corps will, in all cases, exercise independent judgment in defining the purpose and need for the project from the applicant's and public's perspective as indicated in 33 CFR 325 Appendix B(9)(b)(4). This, purpose and need in terms of the Corps were defined as the following:

- Basic Purpose – The basic purpose is the fundamental, essential or irreducible purpose of the proposed project and is used to determine water dependency [40 CFR 230.10(a)(3)]. The basic purpose of the proposed project is to remove bituminous coal reserves and does not require siting within a water of the United States. Therefore, the proposed discharge of fill material is a not water dependent activity.

- Overall Purpose – The overall project purpose is to construct attendant and associated features, including permanent excess overburden storage areas, construction of required sediment and drainage control structures, and the extraction of bituminous coal

reserves underlying stream channels, to facilitate the extraction of minable coal reserves from 10 bituminous coal seams located within the 2,308-acre SMCRA permit boundary (S-5018-07), and to allow for the subsequent construction of a portion of the King Coal Highway between Delbarton and Belo.

- Need - To recover a total of 16.8 million tons of bituminous coal reserves within the 2,308-acre SMCRA permit boundary that would be processed and transported off-site for delivery to power generating plants to facilitate the public, commercial and industrial demand for electricity.

2.3.2 FHWA and WVDOH

Specific purpose and need statements were established for the project through earlier planning documents, including the 2000 King Coal Highway FEIS and ROD. The project's purpose and need from then remains valid and is as follows:

- To develop a transportation system with minimal geometric constraints.
- To minimize conflict between interstate/inter-county traffic and local traffic.
- To minimize conflict between truck traffic and local traffic, residential areas, and towns.
- To decrease travel times within the study area.
- To provide Level of Service (LOS) C within the local transportation system.
- To minimize crash rates.
- To reduce emergency response times for ambulance, police, and fire services.
- To provide safe and efficient highway operations that complement the existing rail system.
- To provide safe and efficient access to the regional roadway network.
- To support economic development.

During completion of the 2000 King Coal Highway FEIS, five project needs were identified. They were also re-evaluated with updated information. Although there have been considerable improvements on US 119, level of service on the area's other principal roadways remains at LOS D or E. LOS is a measure of traffic efficiency. LOS A represents the best operation of a roadway and LOS F represents the worst.

Average Daily Traffic (ADT) in the area also continues to grow on local roadways and geometric deficiencies remain. Most new transportation facilities are designed to operate at LOS C. Additionally, population in the area has decreased and unemployment remains high, resulting in a need to support economic diversity. The Delbarton to Belo Project needs also remain valid and are as follows:

- Current and future capacity and LOS of the existing transportation network – ADT on US 52 in the vicinity of Delbarton has grown from 4,200 vehicles in 2004 to 5,400 in 2010. During the same period, ADT on WV 65 north of Delbarton has grown from 3,800 to 4,100, grown from 3,000 to 3,500 at Belo, and increased from 4,900 to 5,200 north of Belo (WVDOH 2010a).

  During initial studies, approximately 67 percent of US 52 and many of its intersecting segments were functioning at LOS D or worse. Although it is one of the area's major roadways, US 52 is primarily a two-lane facility with a high percentage of no passing zones, low advisory speeds, and sharp curves that restrict traffic flow. Without future roadway improvements, as much as 90 percent of US 52 could reach LOS D or LOS E.

- Current and future transportation demands (regional and local) – US 119 in the area has some of the highest traffic volumes in Mingo County, ranging from 6,600 ADT west of the proposed termini to 8,900 ADT east of the termini (WVDOH 2010a). Traffic on US 52 between Delbarton and Williamson exhibits similar but slightly lower numbers, carrying between 4,200 ADT and 5,100 ADT. US 52 functions as both a local service road and one of the principal coal carrying facilities in southern West Virginia. That traffic appears to be growing with each passing year. By the year 2020, traffic in the area could reach 12,000-17,000 ADT (WVDOH 1997).

  The traffic forecasts developed in 1997 were utilized to determine the type of transportation facility needed to meet the project's purpose and need. Although new forecasts were not developed during the development of this Draft SEIS, the existing projections were analyzed to determine their current validity and judged appropriate to proceed with the same type of transportation facility as originally anticipated. Updated traffic information on the project area's major roadways is found in the Alternatives chapter of this Draft SEIS.

  Coal extraction and its transport support the major segment of the region's economy. The high volume of coal trucks using US 52 conflicts with local traffic and access. The high volume of local coal truck traffic is expected to continue into the future even as demands for coal rise and fall to meet future energy needs.

- Regional and local system linkage – Many of the towns in Mingo County lack safe and efficient routes to the regional roadway network, often limiting development opportunities and access to other areas where commercial, medical, and social activities are found. The locations of these services are generally limited to the county's larger towns. Together with population loss and a localized economy that has been traditionally dependent on the coal industry for jobs, the inadequate roadway network has resulted in considerable personal and community isolation.

  Besides being part of the I-73/74 Corridor, the proposed King Coal Highway has been designated as a high priority corridor within the National Highway System. When fully constructed, it will provide linkage to major interstate highways in Kentucky, Ohio, and Virginia, as well as link many small communities throughout southern West Virginia to larger towns and regional activity centers.

- Safety and roadway deficiencies – During the original studies for the project, 35 percent of US 52 had accident rates higher than the statewide average and 90 percent had a higher percentage of injuries and fatalities than the statewide average. More recently,

the rate for fatal crashes in Mingo County was 3.59 fatalities per hundred million vehicle miles travelled (WVDOH 2003). That is 95 percent higher than the statewide average of 1.94 fatalities per hundred million vehicle miles travelled. Mingo County also had the seventh highest number of fatalities in the state and the sixth highest fatality rate per hundred million miles travelled.

Both US 52 and WV 65 are inadequate roadway facilities operating with two lanes throughout their length, no passing zones, many blind curves, unlimited property access, and numerous access points from skewed driveways. Coupled with the high rate of speed driven by many people using the local roads, uncomfortable driving conditions are frequently experienced throughout the study area.

- Social demand and economic demand – The local economy has been traditionally dependent on the coal industry for jobs and development. Because the local coal industry relies principally on trucking to transport coal, the highway network sees many conflicts associated with the interface of coal trucks and other traffic. With the creation of the Hatfield-McCoy Recreation Area, a major regional recreational trail attracting all-terrain vehicle (ATV) enthusiasts from throughout the United States, the economy of the area has begun to diversify into the tourism industry.

  With construction of US 119 as a modern transportation facility, increased access into the region has also allowed timber and wood production to increase as well. Timber and wood production has existed in Mingo County for years, but until recently has been a much smaller part of the economy.

3.0 ALTERNATIVES

3.1 Introduction

An alternatives evaluation process for the project was developed through the cooperative effort of WVDOH, FHWA, and the Corps. Through the scoping process for the current project, other agencies and the public were instrumental in assuring that a full range of alternatives are investigated for both the highway and mining projects.

Specifically, this chapter discusses the alternatives associated with two types of federal actions. The Corps is evaluating authorization under CWA Section 404 for the discharge of fill material into waters of the U.S. in conjunction with the construction of a private sector coal mine project proposed by CONSOL, identified as the Buffalo Mountain Surface Mine in this SEIS. The WVDOH and FHWA are evaluating a proposal to construct a rough-grade road bed for future dedication and inclusion as a portion of the King Coal Highway between Delbarton and Belo, West Virginia, identified as the Delbarton to Belo Project in this DSEIS. Therefore, the construction of a portion of the Delbarton to Belo Project as a joint-use project is dependent on the Corps' decision regarding CONSOL's CWA Section 404 IP application (LRH-2008-491-TUG) for the proposed Buffalo Mountain Surface Mine. As a result, the alternatives under evaluation by the Corps for IP application LRH-2008-491-TUG are presented in this chapter before the alternatives under evaluation by the WVDOH and FHWA for the Delbarton to Belo Project.

The discussion of alternatives in this chapter is organized into four sections. The first section, *Outcomes Available to the Federal Agencies,* identifies the Corps' three options regarding its decision on CONSOL's CWA Section 404 IP application with the FHWA/WVDOH decision on whether or not to shift the King Coal Highway from the original corridor. The second section, *Alternatives Available to CONSOL for the Buffalo Mountain Surface Mine*, discuss the mineral reserves within the Buffalo Mountain Surface Mine project area, and the mining techniques that were available to CONSOL for the extraction of minable coal reserves within the mine project area. The third section, *Alternatives Development for the Original King Coal Highway*, presents the background information that led to a preferred alternative corridor for the project in 2000, and it is a summary of the alternatives described in the King Coal Highway FEIS. The fourth and final section, *Preliminary Alternatives for the Delbarton to Belo Project*, discusses the

alternatives developed specifically for the Delbarton to Belo Project as a joint-use project. The joint-use project would shift a portion of the approved King Coal Highway Corridor to the east and allow a portion of the highway alignment to be incorporated into the Buffalo Mountain Surface Mine.

3.2 Outcomes Available to the Federal Agencies

In accordance with 33 CFR 320.1 (4), the Corps is neither an opponent nor a proponent of the applicant's (CONSOL) proposal; therefore, the applicant's final proposal is identified as the Applicant's Preferred Alternative (PA). As described in Chapter 1, the Corps has determined that the Applicant's PA requires authorization under CWA Section 404, and CONSOL submitted a CWA Section 404 IP application (LRH-2008-491-TUG) for the discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine in late 2008. The Corps will reach one of the three outcomes relative to CWA Section 404 IP application LRH-2008-491-TUG: 1) issue the permit; 2) issue the permit with conditions; or 3) deny the permit.

The FHWA/WVDOH is making a determination on whether to build the King Coal Highway in the Original Corridor as identified in the 2000 FEIS or to shift the portion between Delbarton to Belo partially to the east and construct approximately 5.1 miles of the highway on rough-grade road bed to be constructed as part of the Buffalo Mountain Surface Mine post-mine land use. Although the FHWA/WVDOH is also evaluating minor configuration differences within the potential shift, should the Corps deny the Section 404 permit (the Corps' No Action Alternative) the WVDOH would construct the King Coal Highway within the Original Corridor in accordance with the 2000 FEIS and ROD. The King Coal Highway was identified within the Multi-Modal Statewide Transportation Plan and the STIP. Although no funds are currently programmed for construction within the original corridor or the shifted corridor, the project is a high priority and would be advanced rapidly when additional funds become available. If the highway would be constructed within the original corridor, the environmental impacts would be those identified in the 2000 FEIS. Therefore, if the Corps issues the Section 404 permit or issues the permit with conditions, the WVDOH preferred alternative would involve the construction of the King Coal Highway between Delbarton and Belo in the eastern-shifted alignment on the Buffalo Mountain Surface Mine.

In accordance with 33 CFR 320.4 and 40 CFR 230, the Corps performed an independent evaluation of the Applicant's alternatives for the proposed Buffalo Mountain Surface Mine. The Section 404(b)(1) guidelines (40 CFR 230) must be used to evaluate all practicable alternatives available to the Applicant that would meet the overall project purpose(s) to determine the LEDPA. An alternative is practicable if it is available to the Applicant and is capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose(s). Considerations of cost do not necessarily mean that the least costly alternative would be selected over the most environmentally preferred alternative. Further, an area not currently owned by the Applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic project purpose may be considered practicable [40 CFR 230.10(a)(2)].

Property acquisition, underground and surface coal extraction methods and excess overburden placement alternatives to the Applicant's PA were considered. Technological considerations included an analysis of potential mining methods to extract the targeted coal reserves, as well as measures to minimize the discharges of dredged or fill material into waters of the U.S. that were considered during mine plan development. Property ownership and logistical considerations included an analysis of potential excess overburden storage areas within upland areas and within valleys adjacent to the proposed mineral removal areas that may potentially result in discharges of dredged or fill material into waters of the U.S.

3.3 Mining Method Alternatives Available to CONSOL for the Buffalo Mountain Surface Mine

This section describes the mining method alternatives CONSOL evaluated during the planning phases of the proposed Buffalo Mountain Surface Mine, and the criteria employed by CONSOL to determine the practicability of each alternative. CONSOL's planning process began with an analysis of the coal reserve to determine an approximate project boundary, and continued with an evaluation of potential mining methods to efficiently extract the minable coal reserve. Following the coal reserve analysis and evaluation of mining methods available to extract the available coal reserve, CONSOL began to evaluate potential alternatives for the permanent placement of excess overburden, and sediment and drainage control alternatives for the proposed Buffalo Mountain Surface Mine. CONSOL used the results of the analyses described above to develop its PA for the proposed Buffalo Mountain Surface Mine, and to evaluate

potential measures that could be incorporated into the PA to minimize impacts to waters of the U.S.

The Corps relies on information provided by the applicant to help identify practicable alternatives; however, it exercises its discretion regarding the use of this information, and independently reviews CONSOL's alternatives analysis to determine if it is comprehensive and presents reasonable conclusions. The results of the Corps' review will be documented as part of its application of the Section 404(b)(1) guidelines to determine whether CONSOL's PA for the Buffalo Mountain Surface Mine is the LEDPA. The Corps' preliminary LEDPA determination analysis is provided Appendix C.

3.3.1 Mine Project Location

Central Appalachian coal reserves have been mined for the past 100 years; thus, resource depletion increasingly limits the locations of new coal development projects. As described above, the first step in planning a new coal mine project involves the geologic exploration and analysis of the coal reserve present within a specific area of interest. This area of interest is defined by the Applicant's current mineral rights; available workforce, equipment and existing infrastructure; and long-term planning. The Corps recognizes that the geologic characteristics of the available coal reserve, in conjunction with the economic and physical constraints associated with the Applicant's ability to recover the reserve, limit the location of proposed coal mining projects to areas where coal reserves are present and can be economically recovered.

During the initial planning phases for the Buffalo Mountain Surface Mine, CONSOL explored the development of recoverable coal reserves within an area of interest defined as: north of US 52, east of Miller Creek, west of Pigeon Creek, and south of US 119. The area of interest was selected because the underlying coal reserve was under CONSOL's control, and the workforce, equipment and infrastructure required to extract the reserve was also available.

The King Coal Highway Corridor between US 52 near Delbarton and US 119 near Belo is located within CONSOL's area of interest for the proposed Buffalo Mountain Surface Mine. CONSOL engaged the WVDOH and FHWA to explore the opportunity to construct a rough-grade road bed for future incorporation as a portion of the King Coal Highway in conjunction with the construction, operation and reclamation of the proposed coal mine project. Upon

completing the reserve analysis for the area of interest, CONSOL, in conjunction with WVDOH and FHWA, began to evaluate potential mining method alternatives that would efficiently extract the available coal reserve and allow for the future construction of a portion of the King Coal Highway between Delbarton and Belo.

3.3.2 Mining Method Alternatives

Underground and surface coal mining methods were evaluated by CONSOL following the reserve analysis process and in light of the overall project purpose. The following mining methods alternatives were evaluated for practicability:

- Underground Mining;
- Surface Coal Extraction within the King Coal Highway Delbarton to Belo Project Right of Way Corridor;
- Full Seam Surface Coal Extraction (Area/Mountaintop Mining);
- Contour Mining;
- Combination of Contour/Auger/Highwall Mining; and
- Combination of Surface Coal Mining Methods (Area/Mountaintop/Steep Slope/Contour with Limited Auger/Highwall Mining)

3.3.2.1 Alternative Screening Criteria

Screening criteria were developed to determine the practicability of each mining method. As defined in 40 CFR 230.3(q), alternative practicability is assessed based on availability to the Applicant, cost, existing technology, and logistics in light of the overall project purpose. Therefore, screening criteria for underground and surface mining methods were developed based on the geologic conditions of the coal reserve, compliance with applicable environmental and occupational safety regulations and policies, current operational and/or industry standards, surface and mineral lease obligations, equipment and infrastructure requirements, current and project market conditions and the ability to construct a rough-grade road bed for the King Coal Highway Delbarton to Belo Project.

The economic viability of a coal mining operation will vary based on project location, topography, coal reserve condition and geology, operational costs associated with the

movement of overburden to expose the coal reserve, and market conditions. CONSOL used four main screening criteria in assessing alternatives of the project in relation to the overall project purposes. First, CONSOL indicated the coal within the identified project area must be marketable. Marketable coal is determined based mainly on ash content, with higher ash content coal having a lower market value than lower ash content coal.

Secondly, CONSOL determined that the industry standard of at least 60 percent of the available reserve was acceptable in light of the costs incurred to recover the coal reserve. The establishment of a minimum reserve recovery threshold also allowed CONSOL to evaluate whether the proposed mining methods would maximize reserve recovery to minimize future land disturbance, as required by the West Virginia Surface Coal Mining and Reclamation Act (West Virginia Code §22-3-10(a)(3)(C)(13)).

Thirdly, one of CONSOL's criteria is to determine whether a surface mining method is practicable is the overburden to coal ratio, or mining ratio. Mining ratios are calculated as bank cubic yards (BCY) per clean ton of coal extracted, and they increase with the thickness of overburden, thickness of clean coal in each targeted coal seam and the slope of the natural ground. According to CONSOL, a mining ratio of 14 cubic yards per ton (14:1) or below is attractive because the operation is more likely to accommodate fluctuations in equipment operation and material expenditures. Mining ratios in excess of 18 to 1 (18:1) become less likely to absorb fluctuating equipment operation and material costs. Higher mining ratios (i.e., increased overburden to coal) increase the costs of disposing the overburden: more material must be moved from the mining area to the disposal area, requiring more equipment time and greater expenditures for labor and fuel, for instance. Essentially, this reduces the profit margin for the extracted coal to a point that the marketed coal does not recoup the costs of extracting the coal (taking into account all the other costs of operating a coal mine).

Finally, CONSOL evaluated mining method alternatives based on their ability to provide construction of a rough-grade road bed for dedication as a portion of the Delbarton to Belo project. To meet this criterion, the reclaimed project area would have to allow for the line and rough-grade appropriate to WVDOH design standards for the Delbarton to Belo project.

Additional cost considerations included overburden transportation, and CONSOL used the costs associated with overburden transportation on their Miller Creek surface mine operations to evaluate the overburden disposal methods of selected surface mining alternatives.

Coal seam thickness and its geologic location were used to develop technical criteria to evaluate the underground mining alternative, and specifically address mining equipment efficiency and size constraints, and ground control maintenance to prevent subsidence during mining. Similarly, coal seam thickness and in-seam parting thickness were important reserve characteristics for the development of the technical criteria used to evaluate auger mining methods, and also mining equipment constraints and ground control maintenance. Technical considerations for screening criteria for surface mining methods and sediment and drainage control alternatives included compliance with WVDEP's surface mining regulations (West Virginia Code of State Rules [CSR] §38-2) and NPDES regulations for coal mining facilities (CSR §47-30), respectively.

3.3.2.2 Alternative Screening Process

Technical criteria for each mining method alternative were used to evaluate each coal seam present in the reserve both individually and cumulatively. Specifically, each coal seam located above and including the lowest targeted coal seam was evaluated individually, and the evaluation of a specific seam concluded when it failed to meet one of the screening criteria. The targeted coal seams were also evaluated cumulatively to determine if a particular mining method would meet the above alternative screening criteria.

A total of 10 coal seams are located within the reserve, and the lowest coal seam to be mined in the reserve would be the Winifrede. The coal seams located above the Winifrede include: Lower Buffalo, Buffalo, Coalburg, Coalburg Rider, Stockton, Five Block, Middle Kittanning Leader, Middle Kittanning, and Upper Kittanning.

3.3.2.3 Underground Mining

There are two general underground mining types, room and pillar and longwall; however, both underground mining types can only be employed if the geologic nature of the coal reserve meets specific criteria. Room and pillar mining involves mining a seam or seams such that

shafts of coal remain to provide roof support and mine ventilation after mining. Longwall involves the use of a continuous longwall miner (specific type of mining equipment) to mine the seam, the use of hydraulic roof supports in advance of the miner, and with the roof of the previously mined area allowed to collapse after mining. In addition, the main alternative screening criteria indicated above, the main technical criteria used to evaluate this alternative include:

- Minimum seam height of 36 inches; and,
- Minimum of 100 feet of vertical cover.

The minimum seam height of 36 inches is related to the constraints of current mining equipment. To cover the fixed costs of underground mining equipment, the seam height must be at least 36 inches; otherwise, it becomes uneconomical to mine using underground methods. The minimum vertical cover height is related to the prevention of mine subsidence or roof collapse during mining. Typically, the first 100 feet above any coal seam contains fractures and reduced cohesion of materials due to the geologic weathering of these materials. Underground mining with less than 100 feet of cover requires extensive roof control requirements that reduce productivity such that it becomes uneconomical. As indicated above, the 60 percent minimum resource recovery is the industry standard for economical coal recovery, and for this particular mining method, this threshold was analyzed for individual coal seams as well as cumulative seams within the project area.

Only six of the ten coal seams, Upper Kittanning, Middle Kittanning, Five Block, Coalburg, Buffalo, and Winifrede, met the minimum seam height criteria of 36 inches. Therefore, given the constraints of current underground mining equipment, these seams would be the only ones recoverable using underground mining. Of these six seams, the Upper Kittanning, Middle Kittanning, and Five Block do not have a minimum of 100 feet of cover. Therefore, underground mining could not meet the safety standards required to prevent future mine subsidence. Of the remaining three seams, the Buffalo and Winifrede have been previously mined within the project area thereby reducing these available reserves to uneconomical underground mining recovery. Three individual reserve areas within the Coalburg seam would yield a total of approximately 1.58 million clean recoverable tons; however, this total represents eight percent of the reserve. Even combining the Buffalo, Winifrede and Coalburg reserve areas within the project area would be well short of the 60 percent minimum resource recovery for total reserves.

In relation to the general screening criteria listed above, marketable coal could be extracted using underground mining methods (albeit only from the Coalburg seams). As underground mining generates very little in the way of overburden, it would meet the economical mining ratio criteria of being below 14:1. However, the underground mining alternative failed to meet the minimum resource recovery criteria of 60 percent, and it was eliminated as a practicable mine method alternative. Further, this mining method would not accommodate the line and rough-grade requirements of WVDOH for the Delbarton to Belo project.

3.3.2.4 Surface Mining

Alternative 1: Coal Extraction within the King Coal Highway Delbarton to Belo Project Right of Way Corridor

This surface mining alternative includes the extraction only of the reserves located within the right of way corridor of the Delbarton to Belo Project if the highway alignment would be constructed through the Buffalo Mountain Surface Mine project area. This would include the extraction of coal seams exposed during the excavation of soil and rock from the surface down to the proposed roadway sub-grade elevation. Coal recovery along this corridor would be restricted to portions of the Middle Kittanning seam down through the Coalburg seam (the Upper Kittanning seam is located outside of the proposed corridor area).

This alternative would result in the extraction of marketable coal. However, extraction of coal exposed during the excavation within the Delbarton to Belo Project right of way corridor would yield just 2.3 percent of the targeted reserves, and failed to meet the minimum resource recovery threshold of 60 percent. In addition, this alternative would result in a mining ratio of approximately 41.3:1, well above the ideal economical ratio of 14:1 and even the marginal economical ratio of 18:1. Therefore, this alternative was eliminated from further consideration as a practicable mining method alternative. Although impracticable for meeting the mining criteria, this method would result in partial construction of the Delbarton to Belo Project.

Alternative 2: Full Seam Extraction (Area/Mountaintop Mining)

This alternative considers full extraction of each seam proposed to be mined in the reserve area. Full extraction was evaluated for each seam incrementally in the ridgelines where mining is planned as part of the proposed project. This alternative was considered using two scenarios

due to the two criteria of minimum resource recovery percentage and economical overburden to coal ratios.

This alternative would result in the extraction of marketable coal. Each of the seams proposed for development was evaluated beginning with the uppermost seam in the geologic column (Upper Kittanning) through the Coalburg Rider seam located within the targeted reserve area. This analysis determined that full seam extraction from the Upper Kittanning seam through the Coalburg Rider seam would yield only 21.2 percent of the targeted coal reserve, and it failed to meet the minimum resource recovery criteria of 60 percent. Therefore, full seam extraction through the Coalburg Rider seam was eliminated from consideration as a practicable alternative.

Due to the presence of minable coal reserves below the Coalburg Rider seam, a second full seam extraction evaluation was performed. This evaluation considered full seam extraction from the Upper Kittanning seam through the Coalburg seam, and extraction of reserves within the Buffalo, Lower Buffalo and Winifrede seams situated below the Coalburg seam in specific locations within the targeted reserve area. Extraction of reserves within the Upper Kittanning seam through the Coalburg seam would recover 78.7 percent of the minable coal reserve; however, because of the depth of the Coalburg, full seam extraction of these reserves would increase the amount of overburden removed to expose the seam. Extraction of the Buffalo, Lower Buffalo, or Winifrede seams, which are located at an elevation below the Coalburg, would increase reserve recovery, but the excavation to expose these seams would also increase the amount of overburden generated. Therefore, full seam extraction of reserves within the Upper Kittanning seam through the Coalburg seam with the removal of the Buffalo, Lower Buffalo, and Winifrede seams, as a standalone method of mining, would recover over 60 percent of the available reserve, but it would result in excessive and uneconomical coal to overburden ratios (approximately 18.5:1, 20.1:1 and 20:2:1, respectively). Further, this mining method would not accommodate the line and rough-grade requirements of WVDOH for the Delbarton to Belo project. Thus, this alternative was eliminated from further consideration as a practicable alternative.

Alternative 3: Contour Mining

This alternative would be a stand-alone method of mining the coal reserves within the Buffalo Mine project area. Contour mining as a stand-alone method would result in the extraction of marketable coal. Mining was considered for typical contouring, with the lowest seam being mined first and mining sequentially up the geologic column in a stair-step fashion. Mining of the targeted reserve area by contour mining methods alone would recover approximately 2.41 million tons of coal or 12.3 percent of the total reserve base. Therefore, contour mining, as a standalone method, failed to recover a minimum of 60 percent of the minable coal reserve, and it was eliminated from further consideration as a practicable alternative. Further, it would only marginally meet the economical overburden to coal ratio (approximately 18.2:1). In addition, this mining method would not result in meeting the WVDOH line and rough-grade design standards for the Delbarton to Belo Project.

Alternative 4: Combination of Contour/Auger/Highwall Mining

In addition to evaluation of this alternative under the screening criteria outlined above, to be considered as a practicable alternative for contour/auger/highwall mining, the area must also meet all of the following technical criteria:

- The minimum seam height for auger mining is 24 inches;
- The maximum in-seam parting (i.e. a split in the coal seam) for auger mining cannot exceed 6 inches;
- The minimum seam height for highwall mining must be at least 33 inches;
- The maximum in-seam parting for highwall mining in seam heights under 36 inches will not exceed 6 inches; and,
- The maximum in-seam parting for highwall mining in seam heights over 36 inches will not exceed 18 inches.

This alternative mining method would result in the extraction of marketable coal. However, in order to limit the potential for acid mine drainage, CONSOL would use only down-dip or on-strike augering and/or highwall mining. This limits the area suitable for auger and/or highwall mining.

The minimum seam height for auger mining is due to the drill size and the need to prevent exposure of the drill to sandstone layers (through which it cannot cut and would be damaged). Further, the auger is designed to cut through the soft coal in the seam, and partings comprised

of sandstone cannot be cut, while partings comprised of shale may be cut, but at a much slower rate. With shale partings of greater than 6", the drill efficiency is reduced such that it becomes uneconomical to mine those seams. For highwall mining, the minimum seam height of 33 inches is necessary for the highwall mining equipment to operate. For seam heights of less than 33 inches, more non-coal rock would have to be excavated in order to make room for the continuous miner to operate. This additional material removal and disposal makes it uneconomical to mine seams of less than 33 inches using highwall mining methods. Similarly, with seam partings (areas within a seam not comprised of coal) greater than 6 inches (within a seam height of 36 inches or less), the additional material required to be removed reduces productivity such that it becomes uneconomical to mine these seams. The same limitations apply to seams heights greater than 36 inches when the seam partings are greater than 18 inches.

Based on the above limitations, the tonnage of coal that could be recovered by auger and/or highwall mining is calculated to be approximately 631,000 tons. The estimated total tons associated with the contour/auger/highwall mining areas is approximately 3 million clean recoverable tons or 15.4 percent of the total project reserves. The recovery of these reserves could be achieved at an economical overburden to coal ratio of approximately 14.4:1. However, because it would recover less than 60 percent of the minable reserve, contour/auger/highwall mining as a standalone method was eliminated from further consideration as a practicable alternative. In addition, this standalone method of mining would not result in the construction of a portion of the Delbarton to Belo Project as it would not meet WVDOH line and rough-grade design standards.

Alternative 5: Combination of Area/Mountaintop/Steep Slope/Contour with Limited Auger/Highwall Mining

It was determined during the evaluation of Alternative 2 that full seam extraction of all the targeted coal seams (or even through only the Coalburg seam) would recover over 60 percent of the minable coal reserve; however, full seam extraction of all these seams would result in an excessive amount of overburden requiring removal and disposal. Further, the evaluation of Alternative 3, stand alone contour mining and Alternative 4, a combination of contour mining with highwall and auger mining determined that each of these mining methods would not recover a minimum of 60 percent of the available reserve. As a result, Alternative 5 was created to combine the surface mine methods described in Alternatives 2, 3, and 4. Alternative

5 is a combination of mining methods that includes area/mountaintop mining, steep slope/contour mining with limited auger/highwall mining. This alternative employs each of these surface mine methods in specific areas based on the geology and condition of the targeted reserves, which reduces the amount of overburden generated to expose a specific coal seam for extraction.

In addition to evaluation of this alternative under the screening criteria outlined above, to be considered as a practicable alternative for area/mountaintop/steep slope/contour with limited auger/highwall mining, the contour areas must first satisfy all of the following technical criteria:

- The minimum seam height for auger mining is 24 inches;
- The maximum in-seam parting for auger mining cannot exceed 6 inches;
- The minimum seam height for highwall mining must be at least 33 inches;
- The maximum in-seam parting for highwall mining in seam heights under 36 inches will not exceed 6 inches;
- The maximum in-seam parting for highwall mining in seam heights over 36 inches will not exceed 18 inches;
- Cumulative recovery of a minimum of 60 percent of the total reserves in the project area, in conjunction with contour mining; and,
- Ability to achieve an economical cumulative overburden to coal ratio.

This combined mining method alternative would result in the extraction of marketable coal. Each of the targeted coal seams was evaluated for a combination of mining methods beginning with the uppermost seam in the geologic column (Upper Kittanning) and mining down to the Winifrede, the lowest coal seam targeted for extraction. Area mining (full seam extraction) for each of the seams evaluated was determined not to be practicable as a standalone method of mining. However, area/mountaintop mining of the Middle Kittanning, Five Block, Stockton, Coalburg Rider, and Coalburg seams in specific areas combined with contouring of the Coalburg, Buffalo, Lower Buffalo, and Winifrede adjacent to and within potential valley fill locations, and augering and/or highwall mining along the contour areas was determined to be a practicable alternative. Areas proposed for augering and/or highwall mining were subject to the same limitations as explained under Alternative 4, above. Combining area/mountaintop/steep slope/contour with limited auger/highwall mining as proposed would result in the recovery of approximately 16.8 million tons or 85.1 percent of the total targeted reserves. Mining of the targeted reserves as proposed under Alternative 5 satisfies all of the minimum criteria; therefore, it was determined to be a practicable alternative. Further, Alternative 5 would provide enough area to allow for the future construction of a portion of the King Coal Highway between

Delbarton to Belo on land disturbed by the extraction of the targeted coal reserves. Therefore, Mining Method Alternative 5 is CONSOL's preferred mining method alternative for the Buffalo Mountain Surface Mine.

Following the agency and public scoping meetings, FHWA, WVDOH, and Corps asked CONSOL to re-evaluate Alternative 5, to determine if the mine plan could be modified to reduce the project's overall "footprint" and minimize the impact to aquatic resources located within the project area.

CONSOL's re-evaluation of Alternative 5 concluded that the mine method did not need to be modified to accomplish a reduction in the project's footprint. However, there was a possibility that proposed Valley Fill No. 2 could be eliminated, which would minimize the proposed project's impact to aquatic resources.

3.3.2.5 Excess Overburden Placement Alternatives

All surface coal mining methods require some excavation of overburden to expose the coal seam targeted for extraction, and blasting activities associated with excavation in mountainous terrain fractures *in-situ* rock formations into jagged pieces that do not fit together perfectly. Therefore, the excavated material assumes a greater volume, and it is not feasible to place all of the material back into the coal removal area to restore the land to its pre-mining topography, as required under SMCRA. Therefore, following the determination that a combination of surface mining methods was practicable, CONSOL performed an analysis of alternatives for the permanent storage of excess overburden.

It is important to note that due to the overall project purpose of construction of a rough-grade road bed for a portion of the Delbarton to Belo Project, which would traverse the Buffalo Mountain Mine on (basically) a north-south alignment, the disposal of excess overburden was analyzed in light of meeting this project purpose. In order to incorporate the construction of a rough-grade road bed for a portion of the King Coal Highway between Delbarton and Belo into the proposed Buffalo Mountain Surface Mine, CONSOL consulted with WVDOH and FHWA during their mine plan process. The result of this coordination was a PMLU plan that would allow for the development of the surface coal mine project in a manner that would accommodate a 5-mile section of the King Coal Highway between Delbarton and Belo. The embankments

suitable for the highway within this 5-mile section would be constructed as part of the development of the Buffalo Mountain Surface Mine. The proposed development of the surface coal mine in a manner that would accommodate the King Coal Highway resulted in the selection of valley fill locations that satisfied WVDEP's surface mining regulations and would allow for the construction of a four-lane divided highway that complied with WVDOH's highway design criteria. No fills were proposed by CONSOL to serve highway construction only; CONSOL designed all fills on the proposed highway alignment to permit future construction of the highway.

Incorporating a portion of the King Coal Highway alignment between Delbarton and Belo into the proposed surface mine plan played a role in the location and design of the proposed valley fills, and based on the requirements for the highway design, it was determined that 12 valley fills would be required to permanently store the volume of excess overburden generated by the combination of surface mining methods described under Alternative Mining Method 5, above.

Due to the requirements for valley fills to support the line and rough-grade design of the Delbarton to Belo Project (as specified by the WVDOH), the alternative excess overburden analysis focuses on the excess overburden associated with proposed Valley Fill Nos. 6 and 12. For those particular areas, the first consideration was for upland areas located beyond the project area that may have the capacity to permanently store the excess overburden. CONSOL considered areas beyond the project area that may or may not have a WVDEP SMCRA permit (e.g., permitted or non-permitted). CONSOL developed evaluation criteria for each excess overburden alternative based on WVDEP's SMCRA regulations, and practicable industry standards. One example of a practicable industry standard includes the establishment of a maximum material haul distance. Hauling material over more than this distance increases the costs of producing the coal to a point where the alternative is not practicable in terms of cost. Factors contributing to material hauling costs include fuel, additional trucks (costing over one million dollars each), labor time, creating and managing roads in rough terrain, maintaining and repairing trucks from rough road hauls (with costs such as tire replacement for $30,000 per tire), and labor time for all these factors. CONSOL determined that the maximum one-way haul distance was approximately 5,000 feet. This maximum haul distance was determined based on CONSOL's evaluation of haul costs on their adjacent Peg Fork Surface Mine. Their analysis took into account the close similarity of coal seams and topography between the Peg Fork Surface Mine and the currently proposed mine. The following describes their analysis of

alternatives for the permanent storage of excess overburden in upland areas located outside of the Buffalo Mountain Surface Mine project area.

Hauling Off-Site

The following criteria were used during the evaluation of potential off-site areas for the permanent storage of excess overburden:

- Practicable haulage distance (less than approximately 5,000 feet, one way);
- Property ownership and/or control;
- Ability to receive excess overburden; and,
- Impacts on public road systems.

The only non-permitted site in the vicinity of the project area is a completely released contour surface mine operation located along the ridgeline dividing Ruth Trace Branch and Little Road Branch. This area is located less than 5,000 feet from the proposed Buffalo Mountain Surface Mine and is controlled by CONSOL. However, this area does not have sufficient capacity to permanently store excess overburden generated from the Buffalo Mountain Surface Mine because it was a contour mining project that has been restored to the pre-mining topography, or as described by SMCRA, the site had been reclaimed to the approximate original contour (AOC). Therefore, transportation and storage of excess overburden to non-permitted areas located off-site was not a practicable excess overburden storage alternative because the only site located within a 5,000 foot hauling distance from the project area did not have sufficient storage capacity.

Nine permitted areas were identified within the vicinity of the project area, and included two surface mines, five underground mines, and two surface facilities. Only two of the nine permitted areas were located less than 5,000-feet from the project area. However, both areas are underground mines that are not controlled or operated by CONSOL. Further, underground mine projects typically consist of an excavated area that is large enough to either expose the coal seam or provide access to a coal seam and provide an operational area that is large enough to safely accommodate workers and mining equipment. Thus, neither of the two underground mines located within the practicable haul distance of 5,000 feet had sufficient storage capacity for the permanent storage of excess overburden generated from construction and operation of the Buffalo Mountain Surface Mine.

Two additional permitted areas (Peg Fork Surface Mine and MT-500 Surface Mine) are located less than 5,000 feet from the proposed Buffalo Mountain Surface Mine when comparing the SMCRA permit boundaries. However, the closest proposed mineral removal area on Buffalo Mountain Surface Mine to the Peg Fork Surface Mine would be over 8,000 feet. In addition, the closest existing valley fill on the Peg Fork Surface Mine would be No. 5, which has already been overstacked and does not have additional capacity for excess overburden. In relation to the MT-500 Surface Mine, given the terrain, a safe haul road could not be constructed which would allow the haulage of excess overburden to this permit. In order to construct a safe haul road to a fill disposal area from the closest proposed Buffalo Mountain Surface Mine mineral removal area to the MT-500 Surface Mine, the road would be required to be over 8,000 feet in distance. As indicated above, this distance would preclude the economic disposal of overburden from the Buffalo Mountain Surface Mine.

This analysis determined that none of the nine off-site permitted areas satisfied all of the evaluation criteria for the permanent storage of excess overburden at off-site permitted areas; therefore, this alternative was eliminated from consideration as a practicable permanent excess overburden storage alternative.

Placement of Excess Overburden in Valley Fills (On-Site Disposal)

As indicated above and in consultation with the WVDOH, the majority of the proposed valley fills (namely, Valley Fill Nos. 1 through 5, 7 through 9, and 10a and 10b) would be necessary to achieve the overall project purpose of constructing a rough-grade road bed suitable for inclusion in the Delbarton to Belo Highway Project. In consideration of the excess overburden associated with mining areas outside of this highway corridor, the final permanent excess overburden storage alternative under evaluation is the construction of valley fills, and the following criteria were used during the evaluation of this alternative:

- Practicable haulage distance (less than approximately 5,000 feet, one way);
- Property ownership and/or control;
- Ability to receive excess overburden; and,
- Impacts on public road systems.

Valleys with sufficient storage capacity to permanently store the excess overburden generated from the construction and operation of the Buffalo Mountain Surface Mine are immediately

adjacent to the proposed mineral removal areas, and some of these areas are under CONSOL's control. Public roads would not need to be utilized to construct valley fill structures because the areas could be accessed from the mineral removal area via the construction of haul roads within the project area. Valley fill construction would occur concurrent with overburden excavation which would minimize land cover and land use disturbances. Therefore, construction of valley fills for the permanent storage of excess overburden satisfied all the evaluation criteria and it was determined to be a practicable alternative. As to the locations of proposed Valley Fill Nos. 6 and 12, CONSOL used the Final AOC Guidance Document (explained further below under Fill Optimization) to determine the most efficient locations adjacent to the proposed mineral removal area (efficiency related to amount of excess overburden capacity per length of waters of the U.S.). In addition, the costs associated with CONSOL's adjacent Miller Creek surface mining operations during 2011 ranged from $3.50 to $3.80 per BCY. According to CONSOL, operational costs at the lower end of the range are achieved in areas where bulldozers can be used to move overburden, while operational costs within the higher end of the range are associated with areas where bulldozer use is limited and dump trucks must be used to haul the overburden. On average, hauling overburden with dump trucks is approximately 2.5 times higher than the costs associated with pushing the overburden with bulldozers. Therefore in addition to the adjacency determination completed in association with the Final AOC Guidance Document, the higher costs of hauling overburden using dump trucks to on-site areas other than the proposed Valley Fill Nos. 6 and 12 further confirmed the locations of these proposed valley fills to maintain economic mining ratios in association with the Buffalo Mountain Surface Mine.

3.3.2.6 Joint-Use Project Opportunity

SMCRA requires surface mining operations to restore the mined land back to its "approximate original contour" (AOC), which is achieved by "backfilling and grading of mined areas so that the reclaimed area, including any terracing or access roads, closely resembles the general surface configuration of the land prior to mining and blends into the complements the drainage pattern of the surrounding terrain" (30 U.S.C. § 1265(b)(3) and WV Code § 22-3-3(e)). The opportunity to incorporate a portion of the King Coal Highway between Delbarton and Belo would require a waiver or variance from restoring the area disturbed by surface mining to AOC. The WVDEP can approve an AOC variance if the applicant can demonstrate that their proposed PMLU plan would "constitute an equal or better use of the affected land, as compared with pre-mining use" (WV Code §22-3-13(b)(25)(c)(3)(A)).

Two of the 12 proposed valley fills, Valley Fill No. 6 and Valley Fill No. 12, would not be located within or immediately adjacent to the proposed alignment for the King Coal Highway Delbarton to Belo Project. However, CONSOL has stated that both valley fill locations and the areas proposed for mining adjacent to them are necessary for the economic viability of the Buffalo Mountain Surface Mine. Within the Buffalo Mountain Surface Mine project area, mining ratios are generally lower in the center and southeastern portion of the permit area and increase towards the northwestern portion of the permit area. In this geographical region, the general dip of all of the strata tends to be toward the northwest. This has the effect of the seams of coal being at a lower elevation in the northwest direction and generally the total overburden above the lowest target seam is increased. The thickness of the coal seams being mined also affects the overall mining ratios. Due to the increased depth of total overburden in the northwestern portion of the project area and decreased thickness of some of the coal seams being mined, the mining ratios increase in that area and are some of the highest on the project.

CONSOL's coal reserve analysis determined that the mining ratios within the proposed mineral removal areas adjacent to Valley Fill No. 1, located in the northern portion of the project area, are 22.8:1, which are the highest overburden to coal ratios within the project area. However, mining within this area is necessary for the development of a highway alignment for the King Coal Highway between Delbarton and Belo. CONSOL's coal reserve analysis also identified two areas beyond the King Coal Highway alignment area with lower overburden to coal ratios. These areas include the proposed mineral removal area adjacent to Valley Fill No. 6, which has mining ratios of approximately 17.7:1, and the proposed mineral removal area adjacent to Valley Fill No. 12, which has the lowest mining ratios within the project area (approaching 14:1). Therefore, CONSOL performed the analysis described below to determine if simultaneous mining within the mineral removal areas adjacent to Valley Fill No. 6 and Valley Fill No. 12 could potentially minimize the standalone costs associated with mining reserves within the mineral removal area adjacent to Valley Fill No. 1.

Considering the mining ratios and overburden transport costs described above, if CONSOL assumes a realization of $68 per clean ton of coal, the operation cost in an area with a mining ratio of 22.8:1 would be calculated by dividing the realization cost (i.e., $68 per ton of clean coal) by the overburden portion of the mining ratio (i.e., 22.8). The result is an operation cost of $2.98 per BCY, which is below the minimum of $3.50 that has been documented for CONSOL's Miller Creek surface mining operations. Therefore, the mining ratios must be reduced in order

for the Buffalo Mountain Surface Mine project to be economically viable. By reducing the mining ratio to 18.8:1, a realization cost of $68 per clean ton of coal can be achieved with an operation cost of $3.62 per BCY, which is within the operation cost range of CONSOL's Miller Creek surface mine operations. Due to the location of the mineral removal areas adjacent to proposed Valley Fill No. 6 and Valley Fill No. 12, CONSOL has determined that the $3.62 per BCY operating cost can only be achieved if bulldozers can be used to move the majority of the excavated overburden which would keep dump truck hauling distances short.

Based on the analysis above, CONSOL determined that mining within the mineral removal areas adjacent to Valley Fill No. 6 and Valley Fill No. 12 in conjunction with mining within the mineral removal areas adjacent to Valley Fill No. 1 would maintain the economic viability of the final phases of the Buffalo Mountain Surface Mine project.

In summary, CONSOL concluded, after consultation with WVDOH on line and rough-grade design standards for the Delbarton to Belo Project, that the 12 valley fill locations proposed with the Joint Development Alternative would satisfy the overall project purpose to construct attendant and associated features to facilitate the extraction of minable coal reserves (permanent storage of excess overburden, construction of sediment basins, and extraction of bituminous coal reserves underlying stream channels) from 10 bituminous coal seams located within the 2,308-acre SMCRA permitted boundary (S-5018-07), and reclaim the proposed project to allow for construction of a portion of the King Coal Highway between Delbarton and Belo. Therefore, the Joint Development Initiative valley fill location alternative was determined to be a practicable alternative.

3.3.2.7 Valley Fill Construction Minimization Measures

<u>Fill Optimization</u>

According to the West Virginia Surface Coal Mining Rule (38 CSR 2), an area proposed for surface coal extraction with an average slope exceeding 20 degrees, is defined as a steep slope area. As such, overburden excavated to extract the targeted coal reserve must be returned to the mined area to achieve AOC, and any excess excavated overburden must be placed within designated permanent storage areas in a manner that is consistent with the requirements of the WVDEP *Final AOC Guidance Document*, dated February 19, 2004. The Final AOC Guidance

Document was developed in accordance with the U.S. District Court Bragg vs. Robertson Consent Decree, and describes the AOC+ methodology. The AOC+ methodology is an extensive yet reproducible method for determining the maximum volume of excavated overburden material that can be returned to the mineral removal area, including the additional volume that can be backfilled or "backstacked" within the mineral removal area, and evaluates valley fill locations such that capacity of each fill is maximized or "optimized." The overall goal of the AOC+ methodology is to reduce stream impacts by reducing the volume of excess overburden to be placed within valley fills, and selecting valley fill locations that have the most efficient storage capacity. The proposed project area is a steep slope area and the AOC+ methodology was used to determine valley fill location and design.

Candidate drainage areas were evaluated based on proximity to the targeted reserves, slope sufficiency and stability, property constraints, proximity to the proposed King Coal Highway, line of sight from the public, and the potential for maximization of the fill volume per foot of fill length. The evaluation included a slope stability analysis predicated on 38 CSR 2-14.14.e.2, which states that fill material must be sufficiently compacted or otherwise mechanically stabilized so as to insure stability with a static safety factor of 1.5. The placement of the proposed valley fills in the uppermost reaches of the watersheds helps to reduce the disruption of periodic water inundation patterns by reducing the amount of drainage area displaced by their construction.

Selected valleys fill locations were then carried forward in the AOC+ process, and the optimized valley fill toe locations were determined with the Excess Spoil Disposal Area (ESDA) Bank Method, as specified in the WVDEP *Final AOC Guidance Document*. Since the Buffalo Mountain Surface Mine would not be reclaimed to AOC, the amount of overburden prescribed by the AOC+ methodology for return to the mineral removal area would instead be returned to both the mineral removal area and the deck of the each valley fill. As such, the "Target Fill Elevations" would be exceeded to accommodate the additional overburden, and backstacking the additional overburden would be done to maintain the PMLU grading configuration. Backstacking the overburden above the "Target Fill Elevations" would not change the optimized toe location of each valley fill identified by the ESDA Bank Method; therefore, the AOC variance required to implement the Delbarton to Belo Project for the Buffalo Mountain Surface Mine would not result in additional stream impacts.

Valley Fill Construction Method

There are two methods for construction of valley fills: end-dumping and bottom-up. Generally, valley fills are more cost effective when constructed through end-dumping and not through a bottom-up procedure. With end-dumping, excess overburden is not brought by equipment to the bottom of the fill, and therefore the end-dumping procedure requires fewer trucks and less time and fuel for hauling. Bottom-up construction allows for greater control of the fill material as well as simultaneous reclamation (i.e., revegetation of the valley fill face), and, therefore, less potential for sedimentation impacts to the stream below the fill. Because of the reduced risk of landslide, the valley fills constructed through a bottom-up method do not require the additional construction of permanent erosion protection zones, and, therefore, have fewer permanent stream impacts.

In the beginning of 2008, preliminary design of the valley fills included eight fills constructed by the bottom-up method and five constructed by the end-dumping method. After coordination with resource and regulatory agencies upon pre-inspection of the SMCRA permit area in March 2008, CONSOL adjusted an additional valley fill to use bottom-up instead of end-dumping construction. After additional coordination with WVDEP in September 2009, the remaining valley fills initially designed for end-dumping construction, then numbering four, were switched to a bottom-up construction design, having the direct result of reducing the permanent discharges of fill material into streams by 1,463 linear feet. Additional pond length was also added at this time at the request of the WVDEP, however, and the temporary discharges of fill material into streams would be increased. All valley fills would now be constructed with the bottom-up method. The location of the proposed valley fills are shown on Figure 3-1.

Placement of Drainage and Sediment Control Structures

After initial design and continuing coordination with WVDEP in September of 2009, additional NPDES outlets were added to the proposed project. Additional outlets were added to keep surface waters in the same hydrologic watershed, rather than having water travel and discharge into an adjacent watershed. The additional outlets would also reduce the average discharge volumes, thus further limiting the chance of blow-outs from high discharges from single outlets.

Drainage and sediment control structures (ponds) are required to provide storm storage and sediment control for the surface operations. To avoid discharges of fill material into jurisdictional streams, placing the ponds outside stream channels was considered but found not to be practicable because of the narrow valley floors. There are no available areas for construction of the ponds that do not require in-stream discharges of fill material.

Measures were taken during the design of the ponds to minimize the discharges of fill material into streams to the extent practicable. First, the ponds would be located as near as practicable to the valley fills. Second, in order to provide full-factor control required for the proposed disturbance, proposed pond pool areas were designed with an extended depth to reduce the extension of the discharge of fill material farther downstream.

An additional measure was adding retention time for waters below several proposed valley fills. During preliminary design, it was determined that several valley fills would require two ponds because of the narrow valleys below them; however, for other valleys, only one pond was determined necessary. In September 2009, in coordination with WVDEP, CONSOL added proposed pond length below each of the valley fills for which Erosion Protection Zones (EPZs) were removed. For Valley Fill Nos. 6, 7, and 11, this would include adding a second pond, and for Valley Fill No. 12, because of topographical constraints, this would include simply extending the existing pond downstream. The resulting 996 linear feet (lf) (0.136 ac) of additional pond length would increase the retention time and cleaning of the surface waters prior to their release downstream.

Specifically for Valley Fill Nos. 7 and 11, the addition of ponds also required a reconfiguration of the infrequently used access roads (IUARs), which would add 319 lf (0.044 ac) of temporary discharges of fill material into streams in association with the proposed project. The total increase in proposed temporary discharges of fill material into streams from the changes to the pond configuration after September 2009 equals 1,315 lf (0.180 ac). However, as described in Section 2.1.5.3 (“Construction of Fills”), proposed permanent discharges of fill material into streams were reduced during this same period of the alternatives analysis by 1,463 ft (0.214 ac).

Mine Plan Re-evaluation to Reduce the Number of Valley Fills

CONSOL re-evaluated Mining Method Alternative 5, and the valley fill locations proposed under the Joint Development Initiative Valley Fill Placement Alternative. CONSOL determined through this re-evaluation that it could eliminate proposed Valley Fill No. 2 by transporting the volume of overburden to proposed Valley Fill No. 1 and adjacent mineral removal areas, and over stack the material on the valley fill deck and the adjacent mineral removal area approximately 50 feet higher than originally planned. Therefore, this would eliminate the construction of Valley Fill No. 2, but would require the construction of the remaining 12 valley fills in the locations identified by the Joint Development Initiative valley fill location alternative.

The elimination of Valley Fill No. 2 would change the geometry of the highway alignment proposed under the Joint Development Initiative; therefore, following the analysis of this valley fill placement minimization measure, CONSOL consulted with the WVDOH and FHWA to determine if the revised highway alignment geometry would satisfy highway design criteria. Following its analysis of the revised highway alignment geometry, the WVDOH determined that the revised highway alignment geometry would still satisfy highway design criteria. Therefore, and including the above elimination of Valley Fill No. 2, the Joint Development Initiative valley fill location alternative was determined to be a practicable alternative.

3.3.3 RAM 145 Alternative

In an effort to help develop a viable project with additional minimization of impacts, the USEPA provided limited, preliminary information on another alternative in October 2012. The USEPA provided additional information on this preliminary alternative in early January 2013. For development of the alternative, a consultant under contract to the USEPA used readily available data to prepare a geologic model, analyze excess spoil fills, analyze backfill volumes, and analyze the amount of spoil material associated with each mining area in the mine plan. Rather than use the AOC+ model, as required in West Virginia to calculate the amount of material that could be backfilled in the mined area, the consultant used the Kentucky Division of Mine Permits *Reclamation Advisory Memorandum #145* (RAM 145) to guide this effort. Both models provide methodologies for achieving approximate original contour after mining is conducted, as required by law, and minimizing excess overburden and spoils from proposed mining operations.

According to the USEPA, they identified an alternative that would reduce environmental impacts while retaining the original mine plan, SMCRA permit area, and mined coal tonnage. After completing its analysis, the USEPA prepared a brief technical memorandum and offered it for review to the Corps, FHWA, WVDOH, and WVDEP in January 2013. A copy of that memorandum is included with other agency correspondence in the appendix of this SEIS.

The USEPA proposed a "mine only" alternative first utilizing a RAM 145 model that assumed the King Coal Highway would remain in its original corridor. According to the USEPA, this would allow for an alternative that could be developed utilizing five valley fills and 18,467 lf of stream impact.

Following the initial development of this alternative, a highway alignment was added to it to merge mining and highway needs. According to the USEPA consultant, WVDOH parameters were incorporated into the alternative, assuring that the same termini, alignment, curvatures, grades, and design speeds were portrayed; however, WVDOH has not approved the alignment. Some adjustments were made to the conceptual alignment to determine the sizes and locations of any additional fills necessary to accommodate the proposed roadway. This alternative would, however, eliminate commercial and residential development from the PMLU. The result was a mining project that would utilize seven valley fills and 26,235 lf of stream impact.

Upon review, however, the Corps and FHWA determined that the proposed RAM 145 alternative would not meet the project's purpose, particularly its consistency with the state's master land use planning process; would not be practical from an engineering viewpoint; and would be contrary to a consent decree entered by the U.S. District Court requiring the use of the AOC+ model in West Virginia. Specifically, by eliminating commercial and residential development from the project, the intertwined reasons for undertaking the project (i.e., to provide the roadbed for future incorporation as a portion of the King Coal Highway; to provide for post-mining economic development; and to allow coal to be mined) were not being completely addressed.

The WVDEP specifically expressed concern that the RAM 145 alternative was not consistent with the state's land use planning process. Under state law, counties with surface-mined properties are required to produce a land use master plan for coal operators to use for potential post-mine development within their mining permit boundaries. These plans specifically deal

with uses of mined properties in accordance with the West Virginia Code and OSM regulations. The Mingo County Master Land Use Plan envisions highway and economic development parcels in the Buffalo Mountain area and state law requires post-mining land use to be in accordance with the land uses specified in a county land use plan [W.Va. Code Sec. 22-3-10(a)(3)].

The WVDEP also noted that the AOC+ model is mandated by a consent decree entered by the U.S. District Court (Bragg vs. Robertson 2000) and has been approved by the USEPA, the Corps, and the OSM for use in West Virginia. The AOC+ policy defines the methods for calculating the amount of material that can be backfilled in the mined area, raises the elevation of the valley fills above the elevation of the lowest coal seam, and requires the use of efficient excess spoil disposal areas. As a result of the consent decree, and subsequent agreements with state and federal regulatory agencies, the use of AOC+ modeling is standard practice in West Virginia.

The WVDEP also expressed uncertainty that the RAM 145 alternative would work from a practical engineering standpoint. According to the WVDEP, some of the valley fills proposed in the alternative appears to exceed state regulatory limitations on original ground slope at their toe locations. The WVDEP indicated it appears that the decks of the redesigned valley fills have significant overstacking.

Based on the limited information provided by USEPA to date and the information provided by the WVDEP, the Corps and FHWA have made the determination that the RAM 145 alternative is not a viable or practicable alternative. If the Corps and FHWA receive additional information from USEPA, this determination will be re-evaluated prior to issuance of the Final SEIS.

3.3.4 Summary of Mining Method Alternatives and Description of the Applicant's Preferred Alternative

During review of their coal reserves within the project area and in light of the overall project purpose, CONSOL looked at underground mining and five alternative surface mining methods. CONSOL determined underground mining was not practicable and would not meet the overall project purpose as it would not result in at least 60 percent recovery of the reserves and would not meet the line and rough-grade requirements for the future Delbarton to Belo Highway Project. Surface mining Alternative 1 (Coal Extraction within the Delbarton to Belo Project

Right-of-Way) would meet the line and rough-grade requirements of the highway, but was determined to be impracticable as it would not result in the recovery of at least 60 percent of the reserves. Alternative 2 (Full Seam Extraction), although resulting in extraction in greater than 60 percent of the reserves (through the lowest seams available) would result in uneconomical mining ratios and therefore was deemed impracticable. Alternative 3 (Contour Mining) would not extract at least 60 percent of the reserves and would not meet the line and rough-grade requirements of the future highway and therefore was determined to be impracticable. Alternative 4 (Combination of Contour, Auger and Highwall Mining) was determined to be impracticable as it would not result in the recovery of at least 60 percent of the reserves and would not meet the line and rough-grade requirements of the future highway. Alternative 5, a combination of area/mountaintop/steep slope/contour mining with limited auger and highwall mining, was determined to be the preferred mining alternative as it passed all the criteria associated with meeting the overall project purpose.

CONSOL also examined alternatives to the disposal of excess overburden in light of the overall project purpose. The locations of off-site disposal areas were constrained due to the fills necessary for the construction of a portion of the Delbarton to Belo Project. However, CONSOL examined off-site disposal alternatives related to proposed Valley Fill Nos. 6 and 12 (which would not be associated with the highway alignment). Based on cost constraints and the potential locations for disposal, it was determined off-site disposal of overburden was impracticable. In order to optimize fill placement in valleys adjacent to the mining areas, CONSOL followed the Final AOC Guidance Document. This ensured that the proposed valley fills would result in the least amount of fill discharge into waters of the U.S. In examining other on-site alternatives, it was determined the locations of the proposed valley fills also ensured the mining ratio for the proposed mine was met to make the project economical. CONSOL examined construction methods (bottom-up vs. end dumping) to further minimize impacts to waters of the U.S. and determined the bottom-up method was less environmentally damaging.

For other associated mining activities, CONSOL examined the potential locations of drainage and sediment control structures. It was determined complete avoidance of the discharge of fill material into waters of the U.S. in association with the sediment control ponds was impracticable. CONSOL's sediment pond design would ensure the ponds would be located as close to the toes of the proposed valley fills as possible. As indicated above, the determination to construct all proposed valley fills bottom-up would result in a decrease in the permanent

discharges of fill material into waters of the U.S., but would increase the temporary discharges, mainly associated with the lengthening of sediment control ponds. These proposed changes further minimized the discharges of fill material into waters of the U.S.

As indicated above, CONSOL re-examined the proposed on-site disposal of excess overburden into Valley Fill No. 2 and determined this fill could be eliminated with the excess overburden backstacked on Valley Fill No. 1. The elimination of this fill would further avoid the discharges of fill material into waters of the U.S. and would still meet the overall project purpose of construction of a rough-grade road bed suitable for inclusion as a portion of the Delbarton to Belo Highway Project.

CONSOL's analysis of mining methods, excess overburden placement, valley fill location and drainage and sediment control alternatives determined that Alternative 5, a combined mining method of area/mountaintop/steep slope/contour with limited auger/highwall mining, and was identified as the only practicable mining method alternative. The construction of valley fills was determined to be the only practicable excess overburden placement method, and the valley fill location alternative (the Joint Development Initiative) was determined to be practicable.

Finally, analysis of drainage and sediment control alternatives determined that due to topographic constraints associated with the valleys selected for permanent excess overburden storage (i.e., steep valley walls with narrow valley floors) that the construction of in-stream sediment basins or ponds was the only practicable alternative. Sediment basins would be removed following the completion of mining; therefore, the proposed sediment basins would involve temporary discharges of fill material into the stream reaches within the footprint of the basin. To minimize the temporary discharges of fill material into streams associated with each proposed sediment basin, CONSOL proposes to construct each sediment basin as close as practicable to the toe of each proposed valley fill.

Table 3-1 provides a summary of CONSOL's analysis of the mining method, excess overburden placement, valley fill location, and drainage and sediment control alternatives.

Table 3-1
Alternative Summary for Buffalo Mountain Surface Mine

	Underground Mining	Surface Mining Alternative 1	Surface Mining Alternative 2	Surface Mining Alternative 3	Surface Mining Alternative 4	Surface Mining Alternative 5	Off-Site Excess Overburden Disposal	On-Site Valley Fills
Extraction of Marketable Coal	Y	Y	Y	Y	Y	Y	Y	Y
Minimum 60% Recovery of Reserves	N	N	Y[1]	N	N	Y	Y	Y
Economical Mining Ratio (~18:1 or Less)	Y	N	N[2]	Y	Y	Y	Y	Y
Construction of Rough-grade Road Bed	N	N	Y	N	N	Y	N[3]	Y[3]

[1]If full seam extraction applied to all seams available
[2]If full seam extraction through Coalburg seam achieved, this would be Y; however, it would not result in minimum of 60% reserve recovery
[3]Examination of off-site alternatives for fills not associated with highway was also completed

Under Alternative 5 with the Joint Development Initiative, 12 valley fills are proposed for construction and would be located within and adjacent to: Ruth Trace Branch (Valley Fill No. 1); Unnamed Tributary (UT) 1 of Right Fork of Conley Branch (Valley Fill No. 3); UT5 of Miller Creek (Valley Fill No. 4); UT1 of Right Fork of Hell Creek (Valley Fill No. 5); Left Fork of Conley Branch (Valley Fill No. 6); UT4 of Right Fork of Hell Creek (Valley Fill No. 7); Right Fork of Hell Creek (Valley Fill No. 8); UT1 of Left Fork of Hell Creek (Valley Fill No. 9); Left Fork of Hell Creek (Valley Fill No. 10A); UT10 of Left Fork of Hell Creek (Valley Fill No. 10B); Pigeonroost Creek (Valley Fill No. 11); and UT of Pigeon Creek (Valley Fill No. 12).

3.4 Alternatives Development for the Original King Coal Highway

A broad range of alternatives was evaluated in the King Coal Highway FEIS. Those alternatives included: transportation system management (TSM), improved roadway alternatives, transit alternatives, build alternatives, and the No-Build Alternative. Following the preliminary alternatives analysis, three build alternatives and the No-Build Alternative were advanced for further analysis. Upon completion of the detailed analysis, the No-Build Alternative was eliminated from further consideration and a preferred build alternative selected. Specifically, the preferred alternative for the King Coal Highway is a 94-mile long, 1,000-foot wide corridor through Mercer, Wyoming, McDowell, and Mingo counties, within which a four-lane, divided highway would be constructed in accordance with Highway Design Criteria as described below (FHWA 2000a).

As noted in Chapter 1, The King Coal Highway is being developed as part of the Appalachian Development Highway System. As such, the proposed roadway would not be built to Interstate standards, but it would be advanced as a four-lane, rural divided arterial with at-grade intersections with public roads. By utilizing the Appalachian Development Highway System criteria, rather than Interstate standards, the WVDOH determined that it would be able to complete construction at a lower cost and with fewer environmental impacts and no loss of highway capacity, safety, or mobility.

3.4.1 Highway Design Criteria

Current design criteria and typical sections were developed from information in the American Association of State Highway and Transportation Officials (AASHTO) publication, *A Policy on the Geometric Design of Highways and Streets* (2004) and the WVDOH *Design Manual and Directives, DD-601, Geometric Design Criteria for Rural Highways* (2006). These design criteria are shown in Table 3-2. A typical section would require 136 feet, but with the addition of more right-of-way for construction cuts or fill, the actual roadway width and associated right-of-way would be about 300 feet.

Table 3-2
Design Criteria

Design Element	Criteria
Functional Classification	Rural Divided Arterial
Design Speed	65 mph
Maximum Grade	6% (limited 7% permitted)
Minimum Grade	0.5%
Access Control	At-grade intersections with public roads
Number of Lanes	4 (12 feet through lanes in each direction)
Horizontal Radius	1,480 LF (min.) D =3°52’17”
Cross Slope	2% minimum, 8% maximum
Clear Width of Bridge	Clear roadway width of approach

Figure 3-21 shows a typical section utilizing current design criteria. The project continues to be advanced as a divided, four-lane rural arterial with turning lanes at intersections, as required by specific locations.

3.4.2 Traffic

The traffic forecasts developed for the 2000 King Coal Highway FEIS were utilized to determine the type of transportation facility needed to meet the project's purpose and need. The 2000 FEIS showed that the Delbarton to Belo section along the original King Coal Highway corridor was expected to carry between 11,700 ADT and 16,700 ADT. Although new forecasts were not developed for this DSEIS, the 2000 FEIS forecasts were re-evaluated to determine their continued validity. The re-evaluation took into account current traffic levels in the project area, as well as other factors affecting traffic, such as system linkage, traffic capacity, travel times, development patterns in the area, and population distribution.

In evaluating current traffic levels on the project area, ADT along US 119 and US 52 were considered. Traffic on US 119 currently ranges from 7,200-9,500 ADT west of the proposed termini to 8,900-9,300 ADT east of the termini (WVDOH 2010). Further south on US 119, between Nolan and Williamson, an ADT of 14,400 is found (WVDOH 2010). Traffic on US 52 between Delbarton and Williamson has between 4,200 ADT and 7,500 ADT (WVDOH 2010). Figure 3-3 shows current ADTs on the area's principal roadways.

Traffic distribution and travel times have remained relatively consistent with those found when the 2000 FEIS was prepared. Based on current traffic levels and other factors affecting traffic, the 2000 FEIS traffic projections remain valid and continue to demonstrate that the same type of transportation facility is needed, as originally selected.

3.4.3 Highway Costs

The cost of constructing a new highway between Delbarton and Belo along the original corridor has been estimated to be between $142 million and $199 million. The construction cost estimates were based on the typical sections and developed using unit costs from similar type projects. Possible unit costs for this area of southern West Virginia are in the range of $20-28 million/per mile. Factors that may affect future costs include the types and locations of the interchanges and intersections, access roads, earthwork balance, geotechnical issues, typical section modifications, the locations and number of bridges, and inflation.

3.5 Alternatives Carried Forward for Each Federal Action

As a result of the preliminary alternatives analysis, the No-Build and the Mining Method 5/Joint Development Initiative were retained for detailed analysis: Through the screening process, it was determined that a combination of Mining Method 5 and the Joint Development Initiative was capable of meeting the project's purpose and need and could be constructed if selected as the preferred alternative.

3.5.1 No-Build Alternative

Under the Corps' No Action Alternative, the Corps would deny CONSOL's CWA Section 404 IP application. As a result, the proposed Buffalo Mountain Surface Mine would not be developed, and the potential impacts to the socioeconomic, cultural, natural and physical environment identified for the Applicant's PA (Chapter 4) would not occur. However, the No Action Alternative must be considered, because a permit cannot be issued by the Corps, if such issuance would be contrary to the public interest and/or would not comply with the Section 404(b)(1) guidelines. Inclusion of the No Action Alternative in this analysis is required under provisions of NEPA, and it serves as a basis of comparison of environmental impacts among alternatives. Under this alternative, the targeted coal reserves at the proposed Buffalo Mountain Surface Mine would not be extracted and sold on the market for electricity generation.

The No Action Alternative does not assume that there would be no surface disturbance within the Buffalo Mountain Surface Mine SMCRA permit boundary or adjacent to it. The study area for the Buffalo Mountain Surface Mine has been altered by past pre-law coal mining, current surface and underground coal mine operations, timber harvest activities, and natural gas development (e.g., existing natural gas wells and access/maintenance roads). Furthermore, the King Coal Highway Corridor, identified in the 2000 FEIS and ROD is located within the Buffalo Mountain Surface Mine study area, and traverses the western slope of Buffalo Mountain between US 52 near the town of Delbarton and US 119 near the community of Belo. Therefore, the No Action Alternative is not identical to existing or baseline conditions of the affected environment, because it is assumed that existing coal mine operations would continue to be developed, timber harvest activities would continue as planned by the property owners, and natural gas exploration and development would continue independently of the development of the proposed Buffalo Mountain Surface Mine. As stated earlier in this Chapter, this DSEIS

includes the WVDOH and FHWA's evaluation of the opportunity to develop the King Coal Highway Delbarton to Belo Project as a joint-use project in conjunction with the Buffalo Mountain Surface Mine. Therefore, if the Buffalo Mountain Surface Mine were not developed, the King Coal Highway would be developed within the corridor approved in the August 2000 ROD. Therefore the agencies' joint No-Build Alternative would include this construction. There would still be environmental impacts associated with the joint No-Build Alternative and the appropriate Corps and WVDEP permits would be needed for these impacts to occur.

Potential surface disturbance associated with the No-Build Alternative include: the removal of trees, vegetation, soil and rock overburden to expose coal reserves proposed for extraction by current surface and underground coal mine operations; the construction of access and/or haul roads and permanent excess overburden storage areas associated with current surface and underground coal mine operations; removal of trees and the construction of haul roads, skid roads and log landings associated with timber harvest activities planned by the surface property owners; and the construction of access roads and well drilling areas, and the installation of pipe gathering lines associated with natural gas development. Construction of the King Coal Highway within the corridor approved in the August 2000 ROD would result in the removal of trees, vegetation, soil and rock to create a linear route consistent with current design criteria for a four-lane highway.

Potential impacts to the socioeconomic, cultural, natural and physical environment for current surface and coal mining operations are regulated under SMCRA which is administered by the WVDEP with oversight by OSM. Potential impacts to forests, streams and their associated riparian areas, and wildlife associated with timber harvest activities are managed through the implementation of the best management practices by the timber harvest operation, as required by West Virginia Division of Forestry regulations. The frequency and location of future timber harvest activities is dependent on forest management plans developed and implemented by surface property owners. Natural gas development may impact forests, streams and their associated riparian areas and wetlands. Natural gas development activities are regulated by the WVDEP's Office of Oil and Gas, and potential discharges of dredged or fill material into waters of the U.S., including wetlands, would be regulated by the Corps under CWA Section 404. King Coal Highway construction would result in potential impacts to forests, streams and their associated riparian areas, wetlands and wildlife. The WVDOH and FHWA are responsible for highway transportation project planning, design and construction following regulations,

guidance, and design criteria developed jointly by each agency. These regulations require interagency coordination, and the Corps would participate in the planning and design process to ensure that potential discharges of dredged or fill material into waters of the U.S. comply with Section 404 of the CWA.

For the purposes of the analysis presented in this DSEIS, the Corps assumes that the No-Build Alternative is "the future without the project", or the future without the development of the proposed Buffalo Mountain Surface Mine. Implementation of the No Action Alternative would not meet the basic and overall project purpose or the need for the proposed Buffalo Mountain Surface Mine. However, the potential impacts to waters of the U.S. associated with the No-Build Alternative are considered in the analysis of cumulative effects. Under the No-Build Alternative, the Applicant would still consider the development of a mine or multiple mines as they currently lease the mineral rights to the coal within the study area. Therefore the analysis under this alternative includes potential impacts in association with this mine(s) development. However, as this alternative would not meet the overall purpose and need for the Buffalo Mountain Surface Mine, these potential impacts were not examined in detail by the Applicant.

3.5.2 Mining Method Alternative 5/Joint Development Initiative

By utilizing a combination of Mining Method Alternative 5 and the Joint Development Initiative a joint-use project could be developed with the construction of 12 valley fills. This alternative, collectively referred to as the Delbarton to Belo Project, is being carried forward as the preferred alternative.

The Delbarton to Belo Project would begin on US 52 approximately 1.5 miles west of the intersection of US 52 and WV 65 in Delbarton, roughly parallel to the original King Coal Highway Corridor, but slightly east of it. Approximately 0.1 mile from its southern terminus on US 52, this alternative would enter the southwestern limit of the proposed Buffalo Mountain Surface Mine SMCRA permit boundary, and continue across the surface mine in a north/northwesterly direction for approximately 5.0 miles. It would exit the northern limit of the Buffalo Mountain Surface Mine SMCRA permit boundary and continue for approximately 1.8 miles to its northern terminus located about 0.3 of a mile west of the intersection of US 119 and WV 65 in Belo. The total length of the joint development initiative alternative is approximately 6.9 miles, approximately 0.2 mile shorter than the Original King Coal Highway Alternative. Once

dedication of the rough-grade road bed is accepted and the highway is fully completed, the Delbarton to Belo Highway Project would provide an operationally independent section of the King Coal Highway. The alternative is shown in Figure 3-4.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected socioeconomic, cultural, and natural environment of the study area. It also provides the analytical basis for comparison of the No-Build Alternative and the Delbarton to Belo Project (the preferred alternative for this SEIS). As stated in Chapter 3, the No-Build Alternative would result in the construction of the King Coal Highway in its original corridor as identified in the 2000 FEIS.

CONSOL received authorization for the proposed Buffalo Mountain Surface Mine under the SMCRA by the WVDEP on November 22, 2011. Under the Delbarton to Belo Project, the King Coal Highway would be shifted to the east of the original corridor to be incorporated into the PMLU of the Buffalo Mountain Surface Mine. Although this analysis may not strictly be necessary for CONSOL's proposed construction of a rough-grade road bed and offer of dedication to WVDOH, ultimate acceptance by WVDOH and construction of the highway makes this analysis both appropriate and necessary.

Each section within this chapter identifies the affected environment, the probable impacts to the resources of the study area, and proposed mitigation efforts and strategies to address the potential impacts to the resources, where appropriate. Although the WVDOH and the FHWA will be evaluating all of the features or resources present, the Corps' Regulatory Program regulations (33 CFR 320-332) limited the Corps' NEPA scope of analysis to its LEDPA determination. In addition, the Corps is required to determine whether the LEDPA is contrary to the public interest through an analysis of its PIR factors (33 CFR 320.4).

The Corps will also use this SEIS to make these determinations, as well as its final determination regarding issuance or denial of a CWA Section 404 permit to CONSOL. Approval under Section 404 would authorize the discharge of fill material into waters of the U.S. associated with construction of the proposed valley fills, sediment basins, and mine through areas associated with the SMCRA-approved mine plan for the Buffalo Mountain Surface Mine.

The Project Resource Checklist, shown as Table 4-1, identifies resources that are present and provides the context through which the WVDOH, the FHWA, and the Corps analyzed them.

Table 4-1
Project Resource Checklist

Feature or Resource	Not Present	Present	Method of Identification	Review Agency Scope of Analysis
Socioeconomics				
Residences, Businesses		X	Field investigation; review of project mapping; SMCRA Permit application; and consultation with local officials	FHWA and WVDOH; Corps will evaluate under PIR
Community Facilities		X	Field investigation; review of project mapping; SMCRA Permit application; research; and consultation with local officials	FHWA and WVDOH; Corps - PIR
Recreation Facilities		X	Field investigation; review of project mapping; SMCRA Permit application; and consultation with local officials	FHWA and WVDOH; Corps - 404(b)(1) and PIR
Environmental Justice Populations		X	Field investigation; review of project mapping; SMCRA Permit application; 2000 U.S. Census data; and consultation with local officials	FHWA, WVDOH and Corps
Major Utilities		X	Field investigation; SMCRA Permit application; and research	FHWA and WVDOH
Community Cohesion		X	Field investigation; 2000 U.S. Census data; SMCRA Permit application; and consultation with local officials	FHWA and WVDOH; Corps - PIR
Natural Resources				
Wetlands		X	Field identification; SMCRA Permit application; research; and National Wetland Inventory (NWI) mapping review	FHWA, WVDOH and Corps
Streams, Rivers & Watercourses		X	Field identification; SMCRA Permit application; United States Geological Survey (USGS) map review; SMCRA Permit application; research; and agency consultation	FHWA, WVDOH and Corps
Wild or Stocked Trout Streams	X		Field investigation; SMCRA Permit application; and *WV Title 46, Series 1 Requirements Governing Water Quality Standards*	FHWA, WVDOH and Corps
Groundwater Resources (i.e., wells, water supply)		X	Field investigation; SMCRA Permit application; research; consultation with local and state officials; and review of project mapping	FHWA and WVDOH; Corps - PIR
Floodplains/ Floodways	X		Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map; SMCRA Permit application; and research	FHWA and WVDOH; Corps - PIR
Navigable Waters	X		SMCRA Permit application and research	FHWA, WVDOH and Corps
Other Surface Waters (lakes, reservoirs, ponds)	X		Field identification; SMCRA Permit application; research; and USGS map review	FHWA, WVDOH and Corps
National/State Scenic Rivers and Streams	X		National/State Scenic Rivers Inventory review and SMCRA Permit application	FHWA, WVDOH and Corps
Threatened or Endangered Species	X		Agency consultation; SMCRA Permit application; and research	FHWA, WVDOH and Corps
Unique Geological Resources	X		Field identification; SMCRA Permit application; USGS map review; and review of state geological data sources	FHWA and WVDOH
Wildlife & Habitat		X	Agency consultation; field identification; SMCRA Permit application; and research	FHWA and WVDOH; Corps - PIR

Table 4-1 (continued)
Project Resource Checklist

Feature or Resource	Not Present	Present	Method of Identification	Review Agency Scope of Analysis
Sanctuaries/ Refuges	X		Field identification; SMCRA Permit application; WV Atlas & Gazetteer map review; and USGS map review	FHWA and WVDOH; Corps - 404(b)(1) and PIR
Agricultural Lands	X		Field identification; SMCRA Permit application; United States Department of Agriculture (USDA) Soil Data Mart files; and USGS map review	FHWA and WVDOH; Corps - PIR
State Game Lands, Forests or Parks	X		Field identification; SMCRA Permit application; WV Atlas & Gazetteer map review; and USGS map review	FHWA and WVDOH; Corps - 404(b)(1) and PIR
Sensitive Air Quality Sites	X		Field review; SMCRA Permit application; and agency coordination	FHWA and WVDOH
Sensitive Noise Sites		X	Field review; SMCRA Permit application; and project mapping	FHWA and WVDOH
Waste Sites	X		Field review; SMCRA Permit application; and research	FHWA and WVDOH; Corps - 404(b)(1) and PIR
Cultural Resources				
National Historic Landmarks	X		Field identification; SMCRA Permit application; National Park Service (NPS) National Natural Landmarks website review	FHWA, WVDOH and Corps
NRHP-Eligible Sites/Districts		X	Review of project mapping; research; field investigation; SMCRA Permit application; and consultation with the State Historic Preservation Office (SHPO)	FHWA, WVDOH and Corps
Known Archaeologica l Sites		X	Field investigation; SMCRA Permit application; consultation with SHPO; and Phase I archaeological survey	FHWA, WVDOH and Corps
Section 4(f) Resources		X	Field investigation and consultation with SHPO	FHWA and WVDOH

The information in this chapter represents a summary of descriptive and analytical data taken from the King Coal Highway 2000 FEIS, CONSOL's Buffalo Mountain Surface Mine SMCRA application, CONSOL's CWA Section 404 IP application, and supporting documents (March 2012 EID and June 2010 CMP). Additional information and other reports, including specific studies conducted to inform the impact analysis, are in the Project Technical Support Files. The Project Technical Support Files are available, upon request, for public viewing during the comment period. The Project Technical Support Files are currently located and maintained at the Corps Huntington District office in Huntington, West Virginia and at FHWA offices located in Charleston, West Virginia.

4.1 Introduction

Situated about 80 miles south of Charleston, West Virginia, the project study area is located in Mingo County, West Virginia. The study area is approximately bounded by US 119 in the north, US 52 in the south, WV 65 in the east, and Miller Creek in the west. The study area also encompasses the Buffalo-Miller-Pigeon Creek watersheds (based on the National Resource Conservation Service 12-digit hydraulic unit codes). Delbarton, the only incorporated municipality within the immediate study area, is located in the southeast corner where routes US 52 and WV 65 intersect. The unincorporated towns of Belo and Bias, located along WV 65, are also located within the study area.

4.1.1 Corps Scope of Analysis

The WVDEP evaluated the impacts of the Buffalo Mountain Surface Mine during the SMCRA permit process in accordance with its regulations (WV Code § 22-3). Therefore, the majority of the information and data in this chapter were prepared for, submitted to, and reviewed by the WVDEP prior to issuance of SMCRA Permit S-5018-07 for the Buffalo Mountain Surface Mine.

The Corps is evaluating a CWA Section 404 IP application for the discharge of fill material into waters of the U.S. in conjunction with the construction and operation of the Buffalo Mountain Surface Mine. The Corps' scope of analysis differs from the broader evaluation conducted by the WVDOH and the FHWA. While the FHWA and the WVDOH will conduct a comprehensive evaluation of the potential environmental, social, and economic consequences of the alternatives in accordance with NEPA and 23 USC § 109(h), the Corps' NEPA scope of analysis is limited to the waters of the U.S. and the riparian areas (extending 60 feet from the top of the bank on each side of the stream) adjacent to those waters that are proposed to be filled by the construction of the valley fills and associated sediment basins and mine-through areas. The Corps' scope of analysis is consistent with the U.S. Court of Appeals for the Fourth Circuit's (Circuit) February 13, 2009 opinion in *Ohio Valley Environmental Coalition v. USACE, Nos. 07-1355, 07-1479, 07-1480, 07-1974, 17-2112 (4th Cir)*. The Circuit found the Corps' jurisdiction under CWA Section 404 is limited to the narrow issue of the filling of jurisdictional waters. Upland environmental effects are not within the Corps' "control and responsibility" because they are "not essentially a product of the USACE [Corps] action." The Corps' scope of analysis

under Section 7 of the *Endangered Species Act* and Section 106 of the *National Historic Preservation Act* will include the entire Buffalo Mountain Surface Mine SMCRA permit boundary.

4.1.2 WVDOH/FHWA Scope of Analysis

FHWA's NEPA regulations concerning supplemental EISs [23 CFR Sec. 771.130] govern the WVDOH/FHWA scope of analysis. Those regulations state in part that an EIS, may be supplemented when the agency determines that new information or circumstances relevant to environmental concerns on the proposed action or its impacts would result in significant environmental impacts not evaluated in the original document. In 2000, the WVDOH and FHWA identified 11 operationally independent sections within the overall King Coal Highway with an estimated completion date for the entire length of highway of 2033. These sections would connect to important routes in the area and function as viable transportation facilities regardless of whether or not other transportation projects were constructed. The Delbarton to Belo Project area is one of those independent sections and could function as a viable transportation facility even if the rest of the King Coal Highway would not be built.

The No-Build Alternative is carried into a detailed study as a baseline for establishing potential impacts. In terms of the Delbarton to Belo Project, the WVDOH and the FHWA evaluated the area required to provide an operationally independent section of the King Coal Highway. For the No-Build Alternative, the area included a 1,000-foot corridor stretching from US 52 about a mile west of Delbarton to US 119 about half a mile west of Belo. Thus, the WVDOH/FHWA's scope of analysis includes the entire Buffalo Mountain Surface Mine SMCRA permit boundary and two connecting areas beyond the southern and northern limits of the SMCRA permit boundary. The areas beyond the SMCRA permit boundary would be necessary to connect the King Coal Highway to US 52 and US 119 so that the proposed roadway would have operational independence.

4.2 Socioeconomic Environment

Although there are many homes and businesses within the study area, the predominant landscape feature outside of Delbarton, Belo, and Bias is forested open space. Delbarton, the largest population center in the study area, is a mixture of all land uses typically found in a small city in southern West Virginia, including residential neighborhoods, a compact business district,

three parks, schools, a post office, churches, and industrial facilities. The three parks located within Delbarton are Kiwanis Park, W.H. Compton Park, and the Town Square. Schools located within Delbarton include Burch Elementary School, Mingo Career and Technical Center, and the Regional Christian School. Land use within the two smaller towns of Belo and Bias is generally residential or industrial. The businesses in the area are primarily associated with coal extraction, transportation, or service sector.

4.2.1 Economic Environment

4.2.1.1 Population, Employment, and Income

Population

Based on the 2000 U.S. Census, the population of West Virginia was 1,808,344 (USCB 2000). Since then, population counts from the 2010 U.S. Census Bureau show that West Virginia's population has increased to 1,852,994, or by 2.5 percent. Current statewide estimates show that the population is now in excess of 1,864,481 (USCB 2012).

The local area is not sharing in this growth, however. The population of West Virginia during the 2000 U.S. Census was 1,808,344 (USCB 2000). Population counts from the 2010 census show that West Virginia's population has increased to 1,852,994, or by 2.5 percent. Although the population of West Virginia has increased since 2000, the population of Mingo County has dropped 5.0 percent from 28,253 in 2000 to 26,839 (USCB 2010).

The population of Mingo County has decreased in every decade since 1950, from a peak of 47,409 that year to current levels (USCB 2010). Population projections indicate that population loss will continue into the future (WVU 2010a). Population is expected to continue to decrease between now and 2035, by 14.7 percent to 22,889 (WVU 2012). Table 4-2 provides a demographic overview of Mingo County as it relates to the entire state.

Table 4-2
Demographic Overview for the Year 2010

Area	Population Characteristics					Individuals Below Poverty Level		Housing Units		
	Total Population	White	African Amer.	Other Minority	Age 65 & Over	Total	Percent	Total	Occupied	Owner Occupied
Mingo County	26,839	26,048	473	318	3,623	5,797	21.6	12,699	11,125	8,459
West Virginia	1,852,994	1,739,988	63,124	49,882	297,404	322,421	17.4	881,917	763,831	561,013

Source: USCB 2010.

At the 2010 census, population density was approximately 63 persons per square mile. In terms of age stratification, 28.0 percent of the population was under the age of eighteen, 58.5 percent was age 19 to 64, and 13.5 percent was 65 years of age or older. There were 10,936 households and the average household size was 2.45 persons. There were 12,699 housing units with a homeownership rate of 77.1 percent.

Over the past ten years, Mingo County has seen considerable investment in new water lines, sewage treatment facilities, industrial parks, and road improvements that have helped diversify the local economy. Despite construction of these needed infrastructure improvements, unemployment still stands at 10.8 percent at the end of 2012 (USDOL 2013).

Population within the immediate study area is more difficult to determine, but there are approximately 3,000 people living within it. The study area approximates much of U.S. Census Tract (CT) Block Groups (BG) 1 and 2. As shown on Figure 4-1, these two block groups encompass densely populated areas of Delbarton, all of Belo and Bias, the populated areas along WV 65, and an unpopulated area east and west of the WV 65 corridor. Table 4-3 provides relevant demographic information on the study area.

Table 4-3
Demographics of the Study Area

Area	Population Characteristics					Individuals Below Poverty Level		Housing Units		
	Total Population	White	African Amer.	Other Minority	Age 65 & Over	Total[1]	Percent	Total	Occupied	Owner Occupied
Mingo County	26,839	26,048	473	318	3,623	5,797	21.6	12,699	11,125	8,459
Study Area	2,837	2,799	10	28	330	611	21.5	1,232	1,110	850
Delbarton Only	563	558	4	1	67	158	28.1	326	260	172

Sources: USCB 2000, 2010; [1] Based on 2000 Census data due to 2010 data suppression.

The population of Mingo County is expected to continue its decrease over the next 20 years Projections prepared by West Virginia University show that population could drop to 22,889 by the year 2035, a 14.7 percent loss from 2010 (WVU 2012). During that same period, the population of West Virginia is expected to grow by 3.9 percent. West Virginia's growth is expected in the eastern panhandle, Morgantown and the Teays Valley areas, but not in southern West Virginia.

Employment

Despite diversification of the economy, there is still a heavy reliance on the coal industry for employment and job creation. As of 2008, six of the county's largest employers were involved in coal production or related services (CONSOL 2012). Less than ten years prior (1999), only three of the county's largest employers were related to the coal industry. Table 4-4 compares the ten largest employers in 1999 to the ten largest employers in 2008.

Table 4-4
Ten Largest Employers in Mingo County

1999		2008	
Employer	**Coal Related**	**Employer**	**Coal Related?**
Mingo County Board of Education	No	Mingo County Board of Education	No
Mountaineer Coal Dev. Company	Yes	West Virginia Mine Power, Inc.	Yes
Mingo Logan Coal Company	Yes	Williamson Memorial Hospital	No
Williamson Memorial Hospital	No	Mingo Logan Coal Company	Yes
Matewan National Bank	No	Coal Mac, Inc.	Yes
Mingo County Econ. Opportunity Comm.	No	Brody Mining, LLC.	Yes
Lee Sartin Trucking Company	No	Unlin Flooring NC, LLC	No
Kedco, Inc.	Yes	Laurel Creek Co.	Yes
Mingo County Commission	No	Rockhouse Creek Dev. Company	Yes
Mingo Health Care Center	No	Appalachian Enterprise Security Ser.	No

Source: CONSOL 2012

In the year 2000, total employment stood at 9,964. By the year 2007, the number of jobs in the county had grown to 10,345. In 2009, unemployment in the entire state was 8.0 percent. In Mingo County in 2009, unemployment was slightly higher, reaching 9.3 percent. Within Mingo County, over 1,200 people, or about 20 percent of all non-farm employees, are employed in some aspect of coal mining. Annual combined wages for those mining jobs were approximately $85 million in the year 2010. Currently, there are about 50-60 active surface and deep mining operations in the county (WVCA 2011).

Although employment in Mingo County between the years 2003 and 2008 grew faster than statewide (annually at 3.9% and 0.9%, respectively) because of changes in the goods-producing sectors, much of this growth was attributed to countywide infrastructure improvements. The number of jobs is expected to grow to 12,177 by 2020 (MCRA 2010). Statewide, the number of jobs stood at approximately 709,000 in 2008. Despite the recent economic downturn in the country, statewide employment is expected to grow in the short-term to about 714,000 by 2014 (WVU 2010b). Long-term projections predict statewide employment will reach over 1 million by the year 2040 (West Virginia Development Office [WVDO] 2009).

Mingo County's unemployment rates are similar to the rest of West Virginia. In 2009, unemployment in the entire state was 8.0 percent. In Mingo County, unemployment was slightly higher, at 9.3 percent. Of the six southern West Virginia counties typically considered part of the southern coal region (Boone, Lincoln, Logan, Mingo, Raleigh, and Wyoming); only Wyoming County's unemployment rate (10.3%) is higher than Mingo's at 10.0 percent (WVU 2010b).

Despite the number of jobs in the area, Mingo County is generally poorer than other areas of West Virginia and the United States (WVU 2009). In terms of per capita personal income, in 2007 Mingo County ranked 30th in the state, about the middle of West Virginia's 55 counties. In that year, per capita personal income was $25,793 in Mingo County and $29,385 in West Virginia. Nationally, per capita personal income was considerably higher, averaging $38,615. As noted in Table 4-2, 21.6 percent of all people in Mingo County had incomes below the poverty level while 17.4 percent of all West Virginians had income below the poverty level. Nationwide, 13.8 percent of all Americans had income below the poverty level (USCB 2010).

Although Mingo County has historically been less dependent on the coal mining industry for employment than the state of West Virginia as a whole, mining has increasingly contributed to total employment in the county since 2000. Mining accounted for 30.8 percent of the total employment in Mingo County in 2009, which is more than eight times the state level of 3.7 percent (West Virginia Bureau of Employment Programs, 2010). From 2000 to 2008, mining employment in Mingo County increased by 18.2 percent (from 2,240 in 2000 to 2,739 in 2008) but decreased by 11.8 percent in 2009 (Table 4-5). This more recent decrease in mining employment in Mingo County occurred along with an overall decrease in county and statewide coal production (Figure 4-2). In 2009, Mingo County supplied approximately 7.2 percent (10.3 million tons) of statewide coal production. Approximately 68 percent of Mingo County's total

coal tonnage production in 2009 was from surface mining (WV Office of Miners' Health Safety and Training, 2010).

Table 4-5
Employment in Mingo County

Mingo County	2000	2005	2006	2007	2008	2009	Percent Change 2000-2005	Percent Change 2005-2009
Total Employment	8,370	7,700	8,130	8,230	8,620	7,940	-8.0%	3.1%
Mining	2,240	1,900	2,310	2,530	2,739	2,450	-15.2%	28.9%
Manufacturing	310	410	420	310	410	280	24.4%	- 46.4%
Trans. & Public Utilities	1,060	800	820	800	820	870	-24.5%	8.8%
Retail Trade	620	530	520	530	540	590	-14.5%	11.3%
Services	1,950	2,400	2,470	2,370	2,740	2,780	18.8%	15.8%
Government	1,570	1,360	1,360	1,400	1,390	1,370	-13.4%	0.7%

Source: West Virginia Bureau of Employment Programs, 2010.
Notes: 1) Not all employment sector detail is provided, therefore sectors do not sum to total employment.
2) Comparison of data after 2005 to prior data is not provided because of changes in the employment sector classifications.

Figure 4-3 shows population and employment trends for Mingo County since 1996. During this time, employment decreased along with the population. As shown in Figure 4-3, Mingo County's unemployment rates throughout the past decade have been higher than the state and national unemployment rates, though recent increases in unemployment has brought the U.S. and State more in line with Mingo County (U.S. Bureau of Labor Statistics, 2010).

In Mingo County, the service sector employed similar numbers of workers as mining between 2000 and 2009. However, the mining sector provided higher wage earnings. Average annual mining wages ($61,056) are more than double the average countywide wage ($28,738) (WV Bureau of Employment Programs, 2010).

The West Virginia University Bureau of Business and Economic Research produces an employment forecast for the state, which has been updated for 2010 (WVU BBER, 2009). According to the forecast, the state economy was in a severe recession in 2010. In the past year, West Virginia has lost jobs, following a national trend. The forecast indicates that mining

employment has fallen, but should stabilize during the forecast period (2010-2014) reflecting the stabilization of coal production during the same period (WVU BBER, 2009).

The number and type of employees at the Buffalo Mountain Surface Mine would vary over the 15-year mine life. It is estimated that the proposed mine project would provide the mining community with a continued full-time-equivalent workforce of 103 direct mining jobs at full production, which would be 9.5 years of the mine life, and an average of 79 jobs over the entire 15-year period. The estimated average annual payroll for the Buffalo Surface Mine would be $75.4 million over 15 years (Hicks and Burton, 2007). These jobs also support additional employment in the county, both through support services to the mining industry and employment in other sectors, such as retail.

As a result of its size and scope, the Buffalo Mountain Surface Mine would contribute to the mining industry in Mingo County. Average annual coal production at Buffalo Mountain Surface Mine would be anticipated at 1.25 million tons for each of the 13.5 years of production, which represents 18.1 percent of Mingo County's 2009 total coal tonnage production (WV Office of Miners' Health Safety and Training, 2010). The mining industry, unlike other industries, is generally not self-perpetuating and does not build upon itself. Mines operate for a limited duration and generally have a production life of five years (the Buffalo Surface Mine would be unusual in this respect).

4.2.1.2 Local Tax Base and Economy

The mining industry directly contributes to the local tax base of Mingo County through real and personal property taxes and the West Virginia State coal severance tax. Surface and subsurface real property values increase when land is active. Property in reserve is valued lower than active property, but higher than property that has been mined. Property values affect the tax base and, therefore, tax revenues. The tax rate on real property is higher for active property than for property in reserve, property that has been mined, and property with inaccessible coal.

The mining industry is also assessed a personal property tax on business equipment. The purchase of mining equipment drives the industry's sizable contribution to the personal property tax base because new equipment is very expensive and depreciates quickly. CONSOL plans to

expend $77.6 million in capital for the Buffalo Mountain Surface Mine. Estimated totals for tax collections as a result of the Buffalo Mountain Surface Mine are $51 million in state and local taxes and $37 million in Federal taxes. Examples of expenditures include trucks, excavators, an upgrade to the coal handling plant, and road construction. While only a portion of this money would be spent locally, some of it would flow into the local economy in the form of wages and the purchase of goods, services, and materials.

Revenues from the mine would help sustain the local property tax base in Mingo County during the duration of its operation. Mingo County also anticipates revenue from the economic activity facilitated by the PMLU of the property (King Coal Highway and adjacent planned development).

The West Virginia State severance tax is a gross receipts tax levied on businesses that sever, extract, and/or produce natural resource products, including coal, in West Virginia. The severance tax base includes the processing and treatment of natural resource products as part of the production process. The tax rate for coal operations, with the exception of deep mines, is 5 percent, which includes a 0.35 percent tax that directly benefits counties and municipalities. In 2008, coal companies contributed approximately $431.8 million to the West Virginia state treasury through coal severance taxes. State agencies use approximately 90 percent of this money to pay for local education, health and judicial services, and infrastructure projects, including improved roads, new bridges, and extended water lines (Gorczyca, 2000). Therefore, coal severance taxes support state projects to improve quality of life and enhance local economic development.

The 0.35 percent coal severance tax is allocated to localities through the *Coal County Revenue Fund*, which consists of 75 percent of the revenues generated from this tax, and the *All Counties and Municipalities Revenue Fund*, which consists of 25 percent of the revenues generated from this tax. Each coal-producing county receives as payment a percentage of the *Coal County Revenue Fund*, which is equivalent to the county's share of total coal production in the State. The amount of each quarterly payment is based on production data for the previous quarter. In contrast to the money distributed through the *Coal County Revenue Fund*, money from the *All Counties and Municipalities Revenue Fund* is distributed to all counties and municipalities in West Virginia, regardless of whether they are coal producing. Money is proportionately distributed based on population (West Virginia Department of Tax and Revenue, 2000).

In 2008, Mingo County received $1,893,670 in severance tax revenue through the *Coal County Revenue Fund* (averaging $505,110 per quarter), and $126,770 through the *All Counties and Municipalities Revenue Fund* (West Virginia State Treasurer's Office, 2010). Additionally, the municipalities in Mingo County (Delbarton, Gilbert, Kermit, Matewan, and Williamson) received distributions through the *All Counties and Municipalities Revenue Fund*.

It is estimated that CONSOL would pay an average of $1,791,707 in annual severance taxes for a total of $26,875,605 for the Buffalo Mountain Surface Mine. Approximately $1,666,287 of the projected total annual severance taxes generated from the Buffalo Mountain Surface Mine would directly benefit the state of West Virginia, while $125,419 would directly benefit counties and municipalities through the *Coal County Revenue Fund* and the *All Counties and Municipalities Revenue Fund*. Although a considerably larger sum is directed to the State, the vast majority of these revenues benefit localities. As previously noted, state agencies use approximately 90 percent of severance tax revenues to pay for local education, health and judicial services, and infrastructure projects. County severance tax revenue during the time that the Buffalo Mountain Surface Mine would be in operation cannot be estimated at this time because it would be dependent on future statistics (i.e., total severance taxes collected throughout the State, the county's share of total coal production in the State, and the county's population proportionate to other West Virginia localities). However, permitting and developing the Buffalo Mountain Surface Mine would help maintain Mingo County's coal severance tax distributions.

With either of the alternatives, taxable land would be converted to transportation right-of-way. This loss of taxable land would result in an initial decrease of property tax revenues. With the Delbarton to Belo Project, however, additional tax revenues would be generated through the West Virginia severance tax on coal reserves. This tax is a gross receipts tax levied when businesses sever, extract, or produce natural resource products. The current tax rate for coal severance is 5.0 percent, of which 0.35 percent is allocated to the *Coal County Revenue Fund*, a special collection allocated directly for counties and municipalities.

The coal severance tax would be expected to generate $26.8 million over a period of approximately 14 years. Over the same period, approximately $1.7 million would be generated

for the *Coal County Revenue Fund*. Mingo County and the cities of Delbarton, Gilbert, Kermit, Matewan, and Williamson would receive annual distributions from the fund.

4.2.1.3 Consideration of Property Ownership

WVDEP Permit No. S-5018-07 provides information on the surface and mineral owners of property within the proposed project area and within 100 feet of the area. These owners have been notified of the Buffalo Mountain Surface Mine Project by certified mail. Information regarding whether mining activities would be located within prohibited distances to public buildings, parks. The surface and mineral property owners located within the proposed mine project area would benefit financially as a result of the proposed mine project. The immediately adjacent property owners are predominantly (17 of 29 owners) the same as those within the proposed surface mine project area.

4.2.1.4 Potential Impacts

<u>Buffalo Mountain Surface Mine</u>

Property owners are identified in Section C of the approved WVDEP Permit No. S-5018-07. There are approximately 780 occupied structures, including individual apartments, located within 0.7 mile of the proposed mine project's blasting areas. Approximately 20 of these structures would be located within 1,000 feet of the mine project area and 420 would be located within 0.5 mile of the mine project area. Residents may experience temporary, short-term direct impacts from the proposed mine project, including noise and vibration during blasting activities and active mining. The proposed mine project would be required to follow the blasting requirements as set forth in Section T of WVDEP Permit No. S-5018-07. Temporary impacts on adjacent property values could result from noise, dust, and viewshed changes due to the mining operations.

The AOC Variance area would encompass approximately 980 ac (approximately 42% of the mine project area). This portion of the mine project area would be converted from forestland to light industry, commercial uses, public services, and residential land uses. This conversion would have long-term noise and viewshed impacts. These impacts may affect adjacent property values though they would decline with maturation of the outslopes. An outslope is a

face of the mine spoil or embankment sloping downward from the highest elevation to the toe. The outslopes are proposed to be planted for forestland. Residents in the area adjacent to the mine project area would experience increased access and system linkage afforded by the highway portion of the PMLU and the economic benefits of the development.

King Coal Highway

Based upon the loss in total assessed value, the associated property tax losses resulting from construction of either alternative would be negligible. In fact, property tax contributions for much of the potentially impacted land would be larger than current levies because the tax rate for active property is higher than for property held in reserve. Furthermore, this loss in total assessed value would be temporary if the Delbarton to Belo Project would be selected and the PMLU plan would be implemented.

Similarly, the loss in total assessed value would also be temporary under the No-Build Alternative if displaced residents and businesses relocate to land that is not currently assessed as active property within the new transportation corridor. If displaced residents and businesses relocate to vacant, but already developed property, however, there would be a slight permanent loss in total assessed value as active property is converted to highway use.

4.2.2 Existing Transportation Network and Navigation

4.2.2.1 Highways

Although the existing transportation network serves the basic needs of Mingo County's residents and businesses, geometric and capacity deficiencies have hindered development and growth (WVDOH 2000). The through-routes in the area are two-lane facilities with 12-foot travel lanes and shoulder widths varying from zero to 12 feet, with the exception of US 119, sections of US 52 that are coterminous with US 119, and parts of the newly constructed King Coal Highway near Red Jacket. Turning lanes are located at some of the major intersections, but many important intersections are still functioning without them. Some of these intersections are currently too narrow to allow for additional lanes. Additionally, major parts of the area's travelways, both on primary and secondary roads, are too narrow and windy to allow for consistently safe operations (WVDOH 1997). Traffic service is also delayed because of coal

trucks and other heavy equipment on the secondary roadways. Speed limits for through-routes vary between 25 and 65 miles per hour (mph).

The major routes in Mingo County include US 119, US 52, WV 65, and WV 49. US 119 generally travels in an east-west direction from the Logan County line to US 52, but in a north-south direction from US 52 to the Kentucky state line. It is a limited-access, four-lane highway its entire length within Mingo County, as well as part of it length as Corridor G. US 119 in the area has some of the highest traffic volumes in Mingo County, ranging from 6,600 ADT (a measure used primarily in transportation planning and transportation engineering; it is the total volume of vehicle traffic of a highway or road for a year divided by 365 days) west of the proposed termini to 8,900 ADT east of the termini (WVDOH 2010a). In terms of providing access between Mingo County and other parts of West Virginia, it is the most important transportation facility in the area, carrying nearly 13,000 vehicles per day at its highest volume location, bisecting the county as its principal north-south route, and connecting the area with other parts of West Virginia and neighboring Kentucky (WVDOH 2010a).

US 52 is generally laid out in an east-west direction from the Wyoming County line to Williamson. From Williamson it is coterminous with US 119 for a short stretch before traveling northward toward Kermit and the Kentucky state line. North of Williamson, US 52 is part of the Tolsia Highway. Besides Kermit and Williamson, US 52 serves the communities of Naugatuck, Delbarton, Varney, Gilbert, and Justice. It functions as both a local service road and one of the principal coal carrying facilities in southern West Virginia. Although coal extraction and its transportation support the major segment of the region's economy, the high volume of coal trucks using US 52 conflicts with local traffic and access. Traffic on US 52 between Delbarton and Williamson exhibits similar, but slightly lower, numbers, carrying between 4,200 ADT and 5,100 ADT. It carries about 13,000 vehicles in Williamson where it is coterminous with US 119 (WVDOH 2010a).

WV 49 generally travels in a north-south direction, parallel to the Tug Fork for much of its route. Its southern terminus is at the Kentucky state line at Delorme. Its northern terminus is at US 52, three miles east of Williamson. WV 49 is the principal connection between Matewan and Williamson, and it carries about 4,300 vehicles at its busiest location in Matewan.

WV 65 generally travels in a north-south direction between Matewan and Naugatuck, but traverses the center of Mingo County rather than along the Tug Fork like WV 49. Other communities it serves include North Matewan, Red Jacket, Delbarton, and Lenore. ADT on WV 65 is 5,400 in Delbarton, 4,100 north of Delbarton, 3,500 at Belo, and 5,200 north of Belo (WVDOH 2010a).

Average travel time in Mingo County is greater than the statewide average. Mean travel time to work in Mingo County in 2010 was nearly 30 minutes. In West Virginia as a whole, it was about five minutes less (USCB 2010).

4.2.2.2 Intermodal Facilities

Airports

The Mingo County Airport was recently relocated to a new air transportation park located at Mystery Mountain near Varney (southeast of Delbarton), approximately five miles from the King Coal Highway Delbarton to Belo Project. The air transportation park was constructed as part of the PMLU plan for White Flame Energy's Surface Mine No. 9 (SMCRA permit S-5020-97). The new Mingo County Airport has a 5,500-foot long main runway, with a safety zone that accommodates an extension of the main runway to 7,000 feet. The new air transportation park will also have 800 ac of flat, developable land adjacent to the runway.

Rail Facilities

Larger coal operations in the area are served by rail, but smaller coal operators and other industrial cargos rely on trucks for transportation. Less than 60 miles to the north is the future site of the proposed Prichard Intermodal Facility. When constructed, the site will consist of a new intermodal facility adjacent to the Norfolk Southern Railroad built in conjunction with the Heartland Corridor. The Heartland Corridor is a major public-private initiative between the FHWA and Norfolk Southern Railroad that will facilitate rail travel between the Norfolk, Virginia port region and Chicago, Illinois. As such, the Prichard Intermodal Facility could provide access to global economic markets. It could result in the creation of 700 to 1,000 jobs and a statewide benefit of $47-69 million (WVPPA 2007).

4.2.2.3 Navigable Waterways

There would be no commercially navigable waterways within the study area.

4.2.2.4 Potential Impacts

Buffalo Mountain Surface Mine

No existing public roads, bridges, schools or other public buildings, rail lines, parks, recreation areas, water supplies, or gas, petroleum, electric, or telecommunications lines would be acquired, relocated, removed, or otherwise substantially affected by the proposed mining operation. The mining operation itself would not require new public roads. The mine would likely draw on existing residents in the region for its employment needs and, as a result, would not create a need for new residential infrastructure or related services. However, the PMLU plan includes the creation of new infrastructure.

The PMLU for the proposed mine project area includes a mixture of light industry, commercial, public services, and residential uses within the AOC Variance area (approximately 980 acres [ac] of the 2,308-ac total mine project area). The AOC Variance area would provide a higher and better use by providing for the line and rough-grade construction of an approximately five-mile segment of right-of-way to be dedicated to and incorporated in the King Coal Highway and providing adjacent developable areas. The addition of the highway infrastructure associated with this PMLU has been identified as an important element of the state highway network, is a congressionally designated high priority segment of a high priority corridor on the NHS, and has been the subject of a number of Congressional funding appropriations. The addition of developable land for industry, commerce, and residences is consistent with Mingo County's Land Use Master Plan.

The rough-grade road bed would be constructed in a manner acceptable to the FHWA and the WVDOH, and the remaining AOC Variance area would be graded to an acceptable grade (+/- 5% slope) to facilitate the availability of future economic development. The preparation of the highway line and rough-grade and subsequent dedication to WVDOH would bring the FHWA and the WVDOH closer to completing a highway segment of independent utility between US 119 and US 52 just north and south of the mine project area. The 196 ac of PMLU designated for public services includes land to be dedicated for the King Coal Highway, but also includes a

proposed utility corridor and could include other facilities such as a school, library, water treatment facility, solid waste disposal facility, public park, pipelines, or other servicing structures. The 106 ac designated for residential land use would include areas such as single family housing, apartment complexes, community recreation areas, retirement communities, resorts, parking in support of the housing, or other facilities related to residences. CONSOL would also leave three access/haul roads intact upon completion of reclamation to provide access to the alternative PMLU areas.

US 52 and WV 65 would be used to transport coal from the proposed mine project. There would be 40 to 60 daily outbound truckloads operating over a 24-hour period on these roads. All coal haulage trucks leaving a mine pit would be properly covered to prevent coal spillage and associated coal dust problems related to transportation. No public roads would be closed, relocated, or modified in conjunction with the proposed mining operation.

There are five haul roads proposed to be constructed to provide haulage and access between mineral removal areas. Additionally, two regrade roads would be constructed during reclamation to access regraded areas. Also, infrequently used access roads would be used to provide access to the sediment control structures and initial access to some of the areas proposed for development prior to construction of haul roads to these areas.

Upon completion, the roadways would be inspected and certified by a registered professional engineer, or other approved persons. All roads used for transportation of coal or overburden would be certified before they would be used for such transportation.

King Coal Highway

Traffic on US 119 currently ranges from 7,200 ADT west of the proposed termini to 8,900 ADT east of the termini. Further south on US 119, between Nolan and Williamson, ADTs between 9,250 and 13,400 are found. Traffic on US 52 between Delbarton and Williamson has between 4,200 ADT and 5,100 ADT. Since 2004, traffic has been decreasing south of Delbarton, but increasing along US 119 and WV 65 north of Delbarton. The growth in traffic can be attributed to residential development along WV 65 and US 119, as well as improved access along US 119.

Of all of the segments of the overall King Coal Highway, the Belo to Delbarton segment would be expected to attract the second-most highest traffic because it would provide the most access to local communities over the 94-mile length of the overall corridor (WVDOH 1997). Based on projections developed for the No-Build Alternative, design year ADT (20 years from opening day) on the proposed Delbarton to Belo segment would range from 11,700 to 12,200 vehicles traveling on the highway per day (WVDOH 2000). Traffic conditions would improve with construction of either alternative because of the added capacity provided from a new highway. Either alternative would function well below capacity and remove traffic from other area roadways. In addition to any new traffic generated from a new highway from its adjacent land use, some traffic would also be diverted from other roads. Construction activities could result in disruptions to local residents and the traveling public. These disruptions would be temporary, localized, and would be limited to the duration of highway construction.

4.2.3 Land Use

4.2.3.1 Land Use Plans

Two local plans are in place to guide development within Mingo County: the Mingo County Land Use Master Plan and the Mingo County Comprehensive Plan Update. The Mingo County Land Use plan was prepared by the MCRA in 2001 for the express purpose of guiding development opportunities, encouraging economic diversification, directing growth, and enhancing the quality of life for all Mingo county residents (MCRA 2001). The plan analyzed past development trends in the county, existing land use, and potential land utilization areas for growth. A key finding of the plan was that less than two percent of the county's area was suitable for future development. The plan went on to suggest that major development in the area could only result in concert with future transportation systems, industrial and coal mining activities, and proposed community development. The following three goals emerged from the planning process:

- To insure beneficial and acceptable future land use patterns as an alternative to returning all post-mine land to approximate original contour.
- To insure that Mingo County achieves economic sustainability from highways and post-mining land uses.
- To provide pleasing visual characteristics.

The Mingo County Comprehensive Plan Update was prepared specifically by the Mingo County Commission in 2007 to guide decision-makers on how to manage changes in population, housing, land use, economic development, recreation, transportation, infrastructure, public services, and historic preservation. The plan documents the goals and strategies necessary to carry Mingo County forward for the next 20 years. It was developed over many months and included a series of committee meetings, stakeholder interviews, and public workshops. It can be viewed as both a policy statement and a capital improvements program. A key component of the county comprehensive plan is to develop strategies that encourage residential development outside of flood-prone areas (MCC 2007).

4.2.3.2 Consistency with Local Land Use Plans

There has been a concerted effort by elected officials and community leaders to use the Mingo County Land Use Master Plan and the Mingo County Comprehensive Plan Update for their intended purposes – as strategic guides for smart growth and future development. As such, the local area has seen new development opportunities occur from the use of creative post-mining strategies, including development of a new airport, a new consolidated high school, new housing plans, and commercial/retail facilities on land that was disturbed by mining operations and transportation projects.

The Delbarton to Belo Project is consistent with local efforts. To some degree, this alternative would guide future patterns of housing and commercial development, allow for development to occur outside the floodplain, increase the availability of developable land, encourage beneficial land use, and allow for the creation of new community infrastructure in concert with surface mining activities and transportation projects.

4.2.4 Farmlands

There are few farms in Mingo County. Currently, there are only about 35 in Mingo County, most of which raise beef or dairy cattle (USDA 2008). Generally, farming in the area is a part-time occupation rather than a sole livelihood. Specific to the location of either alternative, there are no Prime/Unique or Statewide important farmlands (NRCS, 2006). The study area is located in an area dominated by steep terrain that is not suitable for cultivation because of the poor, thin, unstable soils related to the topography.

4.2.5 Social Environment

4.2.5.1 Communities and Neighborhoods

For the most part, residential, commercial, and industrial development in Mingo County has occurred primarily in the narrow valleys. About 20 percent of Mingo County residents live in one of its five incorporated communities, the City of Williamson and the Towns of Delbarton, Gilbert, Kermit, and Matewan (MCC 2007).

The four most populated communities within the study area are the Town of Delbarton and the nearby unincorporated areas of Belo, Bias, and Ruth Trace Road. Although there are many homes and businesses scattered throughout the study area, the predominant landscape feature outside of Delbarton, Belo, and Bias is forested open space. Delbarton, the largest population center in the study area, is a mixture of all land uses typically found in a small city in southern West Virginia, including residential neighborhoods, a compact business district, three parks, schools, a post office, churches, and industrial facilities. Land use within the two smaller towns of Belo and Bias and the area adjacent to WV 65 that connects these two communities is generally residential or industrial.

4.2.5.2 Community Travel Patterns

Based on existing traffic volumes, Mingo County's most important travel corridors include US 119, US 52, WV 65, and WV 80 (WVDOH 2010a). In effect, these routes function as both the principal through-routes and primary arterials of the county. To a lesser extent, WV 49, and County Routes 13, 10, 6, and 8 allow for additional traffic to be collected from more rural areas and feed the area's major roadway system. An analysis of travel patterns and traffic volumes on the county roadway network as part of Mingo County's comprehensive planning process supports this conclusion. The comprehensive plan indicated that there were strong spatial relationships between Williamson (the county seat) and Delbarton and communities to their north located along US 119, US 52, and WV 65 (MCC 2007).

That same analysis showed less interaction between the Town of Gilbert and other parts of Mingo County, but a strong relationship between Gilbert and nearby residential developments. One of the key findings of the Mingo County Comprehensive Plan Update was that there is a

critical need to improve access to rural areas of the county for healthcare, work, and social programs (MCC 2007).

4.2.5.3 Community Facilities and Services

FHWA consulted with local officials to identify public facilities and emergency services within the study area. Police service in the area is provided by the Delbarton Police Department, the Mingo County Sheriff's Department, and the West Virginia State Police. Fire protection services, in the study area, is provided by the Delbarton, Lenore, and Williamson volunteer fire departments, among others. The Lenore Volunteer Fire Department is located outside the immediate study area on WV 65 north of US 119. The Williamson Volunteer Fire Department is also located outside the immediate study area within the Williamson city limits. Other emergency response services are provided by the Mingo County Office of Emergency Services and the Mingo County Ambulance Service. The nearest "outpost" of the Mingo County Ambulance Service is in Delbarton.

Other community facilities located in the study area are the Mingo County Library, a U.S. Post Office, Kiwanis Park, W.H. Compton Park, and the Town Square. Schools located within Delbarton include the recently closed Burch High School, Burch Elementary School, Mingo Career and Technical Center, and the Regional Christian School.

Approximately 80 percent of Mingo County has access to public water. Within the study area, public water service extends from Delbarton north along WV 65 and west along US 52. It is also provided in Belo along US 119 and WV 65. Existing public sewage facilities in the area are limited to the Delbarton area, but more and more areas of the county would be expected to gain access to it as development progresses. Within the study area, sewer service is currently planned for the length of WV 65 and US 119. Some sewer package treatment service is currently available near Belo.

There are also three industrial parks in the county. The Mingo County Wood Products Industrial Park is a $34 million project located adjacent to US 119 at the north end of the county. Situated on a reclaimed surface mine, the 650-ac site is home to Mohawk Flooring, Coal Mac, Inc., and Weatherford Fracturing Technologies. Though the site caters to value-added wood products, future endeavors will not be limited to this industry. The Belo Industrial Park is also adjacent to

US 119, but closer to the center of the county. At two ac, the site is considered small by modern standards but serves light industry. The Air Transportation Park is currently under construction and will include a new airport with a 7,000-foot runway and an additional 800 ac of developable land.

Potential Impacts

There would be no other negative impacts from either alternative to community facilities. Positive impacts to community facilities and emergency services would result from either alternative. By providing an improved roadway through the area, response times for emergency services would decrease and emergency services would be enhanced with either alternative. Specific to the Delbarton to Belo Project, a new utility corridor would be constructed through the area to extend public water lines and wastewater services to improve public.

Mitigation

The mitigation plan for the Buffalo Mountain Surface Mine also includes a wastewater treatment component. As part of the Mitigation Plan, 27 residences along Hell Creek that currently lack sufficient sewage systems would be connected to the Town of Delbarton's wastewater treatment system. This improvement would also likely be realized further upstream in Pigeon Creek when a force main extension along WV 65 is linked to other residences or businesses without functioning sewage systems.

The mouth of Hell Creek is only three miles from the Delbarton sewage treatment plant, and it would be feasible to construct a sewer line, pump station and force main to the plant. The Town of Delbarton owns and operates the Delbarton Sewage Treatment Plant. The plant provides secondary treatment of wastewater, which removes the majority (80-95%) of biochemical oxygen demand and suspended solids. The capacity of the Delbarton Wastewater Treatment Facility is 250,000 gallons per day. It currently serves approximately 400 residences and schools, all from the south of the facility. According to preliminary engineering reports, the calculated dry weather flow from the existing customers should be approximately 95,000 gallons per day. Deterioration in the 37-year old system, however, has led to infiltration of the receiving pipes, placing more demand on the treatment plant than would be necessary if upgrades to the system were in place.

The Town of Delbarton has applied for and received $9.5 million from a combination of federal and state sources, including the Appalachian Regional Commission, USEPA's State and Tribal Assistant Grants program, the West Virginia Small Cities Block Grant program, and the WVDEP. The improvements planned in association with the grant awards include installing more than six miles of sewer pipe, 187 manholes, and 17 grinder pumping stations. This will provide sanitary sewer service to 76 new customers and allow for expansion to the new Mingo County Airport.

The mitigation commitment for the Buffalo Mountain Surface Mine Project would focus on providing sewer services to customers to the north of the facility. By oversizing the force main, future tie-ins to the sewage treatment system would be possible by other residences and businesses. Future tie-ins would include those associated with new development planned as part of the proposed PMLU for the Buffalo Mountain Surface Mine.

4.2.5.4 Business Displacements

There would be three business displacements with the No-Build Alternative, one at this project's southern terminus and two at this project's northern terminus. At the southern end of this project area, the Hatfield and McCoy Recreation Center would be displaced. The Recreation Center is a privately-owned multi-lane bowling alley. It is currently closed. It is located on US 52. In the northern end of this project area, the potential business displacements include a branch office of the Bank of Mingo located in a relatively new building at the intersection of WV 65/US 119 and a small self-storage facility just north of the bank on WV 65.

There would be two business displacements with the Delbarton to Belo Project, one at this alternative's northern terminus and one at this alternative's southern terminus. The potential business displacement at this project's northern terminus is a small office facility located on US 119 just west of the Bank of Mingo. The other potential business displacement includes two vacation rental cabins on the south side of US 52.

<u>Mitigation</u>

Federal and state moneys may only be spent for relocation assistance required by the construction of highway projects. CONSOL would bear the expense of relocations, if any, in

accordance with the pursuit of its mining operations. Businesses being displaced would be offered relocation benefits under the *Uniform Relocation and Real Property Acquisition Policies Act* and applicable West Virginia laws. Assistance would be provided to re-establish displaced businesses within the vicinity of either project area. It would be anticipated that the professional businesses on US 119 could easily find other space, quite possibly at the Belo Industrial Park which is located nearby. Two ac of land with fiber optic lines, electricity, public water service, and sewage facilities are currently available at the industrial park. The rental cabins appear to have been built to serve vacationers using the Hatfield-McCoy Trail or hunters in the area.

4.2.5.5 Residential Displacements

The only residential properties in the immediate project area of either alternative are located at the two proposed termini. There would be 40 residential displacements as a result of the No-Build Alternative, and 10 residential displacements with construction of the Delbarton to Belo Project.

For the most part, the residential displacements would be at the northern end of this project. For the No-Build Alternative, 33 of the displacements would be clustered around Ruth Trace Road, three would be on WV 65 north of US 119, and four would be on US 52. For the Delbarton to Belo Project, all ten displacements would be on Ruth Trace Road.

Figure 4-4 shows the general areas where residential displacements would occur with either alternative. Figure 4-5 shows the specific locations of the residential displacements on Ruth Trace Road that would occur under the Delbarton to Belo Project.

<u>Mitigation</u>

Federal and state moneys may only be spent for relocation assistance required by the construction of highway projects. CONSOL would bear the expense of relocations, if any, in accordance with the pursuit of its mining operations. All properties to be acquired for highway use as a result of either alternative would be purchased in accordance with the *Uniform Relocation and Real Property Acquisition Policies Act*, *Title VI of the Civil Rights Act*, and applicable West Virginia laws. Specifically, the following *Title VI Statement* is offered:

> It is the policy of the WVDOH to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964 and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, sex, national origin, age, or physical or mental handicap in all of their program projects funded in whole or in part by the FHWA. The WVDOH will not discriminate in highway planning, highway design, highway construction, right-of-way acquisitions, or the provision of relocation advisory assistance. This policy has been incorporated in all levels of the highway planning process to ensure that proper consideration may be given to the social, economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the Title VI Program Coordinator, EEO Division, 1900 Kanawha Boulevard East, Building 5, Room 948A, Charleston, WV 25305.

Qualified individuals and families displaced by either alternative would be offered the full extent of benefits and payments provided by these laws. Also under its Title VI authority, the WVDOH will make provisions to assure that persons with a disability displaced by the project would be offered replacement housing that has been fitted to meet their special needs.

A review of the multi-list prepared by Realtor.com showed 17 properties currently available for sale in the vicinity of the project area of either alternative (National Association of Realtors 2013). Included in the area examined are the communities of Delbarton, Chattaroy, Gilbert, Lenore, Matewan, Varney, and Williamson. The availability of those properties is noted in Table 4-6. The classified section of a recent edition of the *Williamson Daily News Tribune* (Williamson Daily News Publishing Company 2011) showed that there were only a few houses or apartments for rent in the area.

Table 4-6
Availability of Residential Properties

Price Range	Number of Houses	Location
$0 - $50,000	6	Williamson
$50,001 – $75,000	1	Williamson
$75,001 – $100,000	1	Williamson
$100,001 - $125,000	3	Williamson
$125,001 - $150,000	3	Gilbert, Lenore, Williamson
Over $150,000	3	Williamson
Total	**17**	

Source: NAR 2013

While it would be likely that the current listings would not be available at the time of acquisition for either alternative, the information presented represents a cross-section of what is typically

available in the area. Therefore, it is a reasonable basis for projecting the probability of available units at the time of property acquisitions. In the event that housing would be insufficient for the needs of the persons displaced, *Housing of Last Resort* would be used.

During most transportation projects, there is adequate replacement housing available. However, when a housing shortage does occur, *Housing of Last Resort* elements (FHWA 2001) provide several options to create a suitable replacement property, including:

- Purchasing an existing comparable residential property and making it available to the displaced person in exchange for the displacement property.
- The relocation and rehabilitation (if necessary) of a dwelling purchased from the project area by the Agency and making it available to the displaced person in exchange for the displacement property.
- The purchase, rehabilitation, and/or construction of additions to an existing dwelling to make it comparable to a particular displacement property.
- The purchase of land for the construction of a new replacement dwelling comparable to a particular displacement property when comparables are not available.
- The purchase of an existing dwelling, removal of barriers, and/or rehabilitation of the structure to accommodate a handicapped displaced person when suitable comparable replacement dwellings are not available.
- A replacement housing payment in excess of the maximum $5,250 or $22,500 payment limits.
- A direct loan which will enable the displaced person to construct or contract for the construction of a decent, safe, and sanitary replacement dwelling.

4.2.5.6 Community Cohesion

A community is part of a larger region, having a special characteristic or group of characteristics that makes it different from the surrounding area. In its simplest form, it is a group of individuals having common ties and a common identity. Communities can have clear boundaries delineated by existing municipal or physical limits, or less distinct boundaries defined by socioeconomic factors, demographic characteristics, or social and psychological attitudes.

In past environmental studies, community cohesion has been defined as the interaction among individuals, groups, and institutions. Community cohesion manifests itself as the perception of

belonging to a group or having a close bond to a particular area. This perception of a strong community bond is commonly referred to as a “sense of place,” allowing cohesion to be expressed through the patterns of "daily social interaction, the use of local facilities, participation in local organizations, and involvement in activities that satisfy the population's economic and social needs" (FHWA 1996). Although no direct measurement of community cohesion is possible, any impacts potentially caused by a transportation project could interfere with the accessibility of facilities and services. Impacts that cause the displacement of residents and businesses could also result in disruption to community cohesion.

To determine if the alternatives would impact community cohesion, several activities were undertaken, including an analysis of U.S. Census reports, an analysis of potential residential and commercial displacements, performance of windshield surveys, examination of aerial photography, identification of community facilities, conducting of local interviews, and a review of the comprehensive plan. All of the information was consolidated to identify potential disruptions to the local community, including the disruption of existing transportation patterns and the creation of physical barriers.

The No-Build Alternative would displace 40 homes in the Ruth Trace neighborhood, a small community of about 50 homes located adjacent to US 119 in the north end of this project area. There would be 10 residential displacements in the Ruth Trace neighborhood with the Delbarton to Belo Project.

4.2.6 Environmental Justice

Executive Order 12898 of February 11, 1994, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires that the proposed alternatives be assessed to determine whether or not they would have a disproportionately high impact on minority or low-income populations within the area (OPUSA 1994). There are three fundamental principles at the core of environmental justice:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.

- To prevent the denial of, reduction in, or significant delay in, the receipt of benefits by minority and low-income populations.

In brief, the objective of Executive Order 12898 is to identify whether proposed federal actions would have disproportionately high and adverse impacts to minority and low-income populations, and also to determine whether these populations would share equally in the benefits of proposed actions.

4.2.6.1 Existing Conditions

An analysis of reasonably foreseeable adverse social, economic, and environmental impacts was conducted early in the alternative development. The analysis utilized information from the following U.S. Census units: all of Mingo County; Mingo County Census Tract 9573, Block Groups 1 and 2; and the City of Delbarton. Information for these units is found in Table 4-7.

Table 4-7
Demographic Information Used for Environmental Justice Screening

Block Group	Total Population	White Population	Minority Population	Percent Minority	Persons with Incomes Below Poverty Level	Percent Below Poverty Level[1]
CT 9573, BG 1	1,666	1,649	17	1.0	399	34.5
CT 9573, BG 2	1,171	1,150	21	1.8	212	26.4
Total BGs 1 & 2	2,837	2,799	38	1.3	611	31.2
Delbarton	563	558	5	0.9	158	33.3
Mingo County	26,839	26,048	791	2.9	--	29.5

Source: USCB 2000, 2010
[1]Based on 2000 Census due to 2010 data suppression. Overall, poverty has lessened in Mingo County since 2000. Thus, environmental justice populations, in terms of income, may be overestimated.

The analytical methodology employs a “quick-technique” comparative screening analysis measuring potentially impacted populations to determine if an environmental justice population would see a disproportionate impact when compared to the non-environmental justice populations. In theory, this methodology identifies a threshold for the study area and compares block group data to that threshold. If block group data exceed the threshold, the potential for disproportionate effects to occur on that block group is judged to be present.

Following the initial screening, the analysis showed that neither of the block groups in the study area nor Delbarton exceeded the thresholds for minority populations in Mingo County. In Mingo County, the threshold is 2.9 percent. In CT 9573, BG 1 it is 1.0 percent; in CT 9573, BG 2, it is 1.8 percent; and in the combined study area (BGs 1 and 2 together), it is 1.3 percent. It is even less in Delbarton at 0.9 percent. All of these percentages are lower than the county percentage of 2.9, indicating that there would unlikely to be an environmental justice impact to minority populations.

Although there would be no impact to minority populations, there could be an impact to low-income individuals. When taken as a whole, the study area exceeded thresholds for low-income populations in Mingo County. In Mingo County, the threshold is 29.5 percent (correcting to data from the 2010 Census that are available, it is 21.6%). For the study area, it is 31.2 percent. Although poverty is high in both block groups of the study area, only BG 1 exceeds the county threshold for the year 2000. Delbarton also exceeds the county threshold, but would not be directly impacted by either alternative. Within BG 1, the only populated area in the immediate vicinity of either alternative is along Ruth Trace Road (shown on Figure 4-6).

Individual block statistics are not available for this area. Without the appropriate U.S. Census data, it is impossible to confirm whether or not environmental justice populations are living in the area, unless specific household surveys were conducted. It is appropriate, however, to request information from knowledgeable people in the area to help identify minority groups or low-income individuals that could potentially be impacted by a project. Typically, project planners request assistance from local public officials, social service workers, and local church administrators to help with this effort. Local officials noted that the families living along nearby WV 65 are generally middle-income and upper middle-income. They also indicated that there could be some low-income families living around Ruth Trace Road. To verify this at a very preliminary level, a windshield survey of the neighborhood was conducted. The visual condition of the outside of some of the houses in the neighborhood seemed to confirm that there could be a potential to impact low-income individuals living in the neighborhood. No further work was done at this point to determine conclusively if low-income individuals live in the area.

As presented in Table 4-8, Mingo County's unemployment rates are similar to that of the state (0.8% difference in 2007 and 0.9% difference in 2009) and the other southern coalfield counties.

For both study years, 2007 and 2009, Wyoming County had the lowest unemployment rate (6.1 and 10.3, respectively), while Mingo County's rate was 5.7 and 9.3 for these years.

Table 4-8
2009 Unemployment Rates for Civilian Labor Force

Area	2007 Average Unemployment Rate	2009 Average Unemployment Rate
West Virginia	4.9	8.0
Boone County	4.6	8.0
Lincoln County	5.4	10.1
Logan County	5.2	8.3
Mingo County	5.7	9.3
Raleigh County	4.4	7.4
Wyoming County	6.1	10.3

WVBEP, 2010

Table 4-9 provides the average annual wage for the state and Mingo County, as well as the surrounding southern coalfield counties. As indicated, Mingo County's average annual wages are higher than that of the state (approximately 24.3% higher) and most of the southern coalfield counties; only Boone County has a higher average annual wage ($49,665) as compared to Mingo County ($44,723) for these demographic areas.

Table 4-9
2008 Average Annual Wages

Area	2008 Average Annual Wage
West Virginia	$35,985
Boone County	$49.665
Lincoln County	$32,186
Logan County	$36,085
Mingo County	$44,723
Raleigh County	$35,430
Wyoming County	$40,112

WVBEP, 2010

Table 4-10 provides a summary of poverty and minority populations for the state and region's counties. As shown, the percentage of the population made up of minorities is substantially less in all of the counties than the percentage at the state level, with the exception of Raleigh County. Although minorities represent slightly greater percentages in Logan and Mingo

counties than the other surrounding counties, these percentages are still well below the state level. Boone, Lincoln, and Wyoming counties have the lowest minority populations of the coalfield counties (31 counties identified by the West Virginia Office of Coalfield Community Development where coal production is an important part of the local community).

Table 4-10
Demographics

Area	Percent Minority (Census 2000)	Percent Minority (Census 2008)	Percent Below Poverty (Census 2000)	Percent Below Poverty (Census 2008)
West Virginia	5.6	5.5	17.9	17.4
Boone County	1.5	1.8	22.0	21.3
Lincoln County	1.0	1.2	27.9	24.4
Logan County	3.8	3.7	24.1	23.1
Mingo County	3.8	3.8	29.7	24.6
Raleigh County	11.6	10.1	18.5	19.6
Wyoming County	1.4	1.8	25.1	22.3

Sources: U.S. Census, 2000 and 2008.

Racial minorities account for a smaller percentage of Mingo County's population (3.8%) than they do at the state level (5.5%). Hispanic/Latino minority populations account for a similar percentage of Mingo County's population (roughly 0.6%) than they do at the state level (1.1%). Within Mingo County, the minority populations present are greater than those in the other surrounding coal producing counties, with the exception of Raleigh County, but less than that of the state level (U.S. Census Bureau, 2008).

With regard to the percentage of population below the poverty level, the state had a lower poverty rate than the southern coalfields counties (17.4% at the state level versus 19.6-24.6% among the counties listed in Table 4-10, all of which are considered coalfield counties located in southern West Virginia). Of the southern coalfield counties, Mingo County had the greatest percentage of the population considered impoverished in the 2000 Census, a trend that has continued in Census data to date. School lunch program data reveal that slightly more than half (53.4%) of the students in all Mingo County schools are eligible for free or reduced cost lunches (National Center for Education Statistics, 2008). There are seven elementary schools in Mingo County, and all of them are Title 1 schools, meaning that more than half of the students are from low-income families (West Virginia Department of Education, 2010).

In Mingo County, low-income populations are found distributed throughout, but the southern and northern ends of the county have higher percentages of the population below poverty, while the middle of the county has somewhat lower percentages below poverty.

The study area lies within a large, multi-county region that is somewhat more impoverished than the rest of the state, but does not have minority populations that could be disproportionately impacted by either alternative to the project. The study area is adjacent to neighborhoods that have limitations such as poorly functioning or absent sewage treatment systems. However, because of the wide distribution of pockets of impoverished populations throughout the region of the state with available and high quality coal reserves, avoiding impacts adjacent to these communities with all coal mining activities would be impossible while maintaining the source of jobs and revenue they provide. If the project results in the creation of new jobs locally, some of the regional poverty could be reduced.

4.2.6.2 Potential Impacts

The No-Build Alternative and the Delbarton to Belo Project could impact environmental justice populations in the Ruth Trace, but the extent of environmental justice populations living in the area is still uncertain. A considerable segment of Mingo County has incomes below the poverty level and based on the demographics of Mingo County, it is suspected that some of those individuals live in the Ruth Trace area. The potential impact to low-income individuals would be both positive and negative. Positive in the fact that it would create new economic opportunities for the area, negative in that some residents who may have low incomes could be displaced. Mining activities and the subsequent construction of a new highway facility would add immediate employment opportunities in an area that is suffering from a lack of employment. More importantly, the post-mining aspects of a joint-use project would improve the local economy through various means. It would be expected that post-mining development would create additional jobs in the retail services, manufacturing, distribution, and residential construction segments. Cotiga Land Development Company (Cotiga), the surface owner of the majority of the proposed Buffalo Mountain Surface Mine, has already expended capital on similar post-mining development just south of the study area. In association with the Delbarton to Belo Project, Cotiga has already committed to the development of these different industries listed above as part of the PMLU of the Buffalo Mountain Surface Mine. Economic productivity

gains of $85 million have been projected (Hicks and Burton 2007). These benefits should accrue to environmental justice populations and non-environmental justice populations equally.

The analysis of environmental justice conducted as part of the mine permit application process expanded the geographic scope to include five adjacent and nearby counties. It concluded that there would be no environmental justice populations that would be disproportionately impacted by the mine project and that the economic benefits of the mine project would "positively affect low-income residents who may be suffering through unemployment or underemployment" (CONSOL 2012). Environmental justice populations (i.e., low-income individuals) may be impacted at the northern terminus of the highway portion of the project.

In summary, the direct and indirect impacts of the mine would not be anticipated to have disproportionately high or adverse impacts to low income or minority populations. As the primary socioeconomic impacts of the proposed mine project would be economic benefits, both alternatives would be anticipated to positively affect low-income residents who may be unemployed or underemployed. The positive impacts of both alternatives on the local tax base may also help improve government services or reduce the tax burden for low-income populations.

4.2.6.3 Avoidance, Minimization, and Mitigation

WVDOH right-of-way (R-O-W) acquisition is contingent upon completion of the rough-grade road bed project by CONSOL and dedication of the R-O-W. As part of its R-O-W acquisition, the WVDOH would identify community and church groups in the area that could assist in identifying any low-income populations within the study area. With this assistance, the WVDOH would work to assure that low-income individuals have full access to information on the project and understand the potential impacts from construction and operation of a new highway facility.

As either alternative to the project progressed, positive benefits would be expected that could increase family incomes and elevate the local standard of living. These benefits include local employment opportunities and improved connectivity to other parts of southern West Virginia where there are additional employment opportunities.

If displacements of low-income individuals occur, they would also be mitigated by the following measures:

- Offering all displaced persons relocation advisory assistance and the appropriate monetary relocation benefits provided by law;
- Offering all displaced persons comparable decent, safe, and sanitary housing that is within their financial means and in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*;
- Developing noise mitigation strategies, if they are warranted, feasible, and reasonable; and,
- Maintaining safe pedestrian access during construction.

A major feature of the environmental justice analysis for this mine project was to ensure the full and fair participation by all potentially affected communities in the decision-making process. During the design of the mining operation and acquisition of permits, public notices were published, as required by mining regulations for the surface mine application, Section 401, and Section 402 (NPDES) permits, as well as for the Section 404 permit application. The public was also provided an opportunity to comment to the appropriate agency.

During the mine project development process, CONSOL also took care to avoid impacts to adjacent neighborhoods. Best management practices (BMP), a requirement associated with the approval of the mine under SMCRA, would be practiced to reduce and avoid effects from blasting. The Buffalo Mountain Surface Mine Project would generate tax revenues for government programs aimed at assisting education and providing community services utilized by lower income populations in the region. The Delbarton to Belo Project would indirectly benefit low income populations through generated revenues, particularly coal severance tax revenues, which are used by state and local governments for various services. Also, the PMLU, planned in coordination with local officials and landowners, would provide much needed jobs to the region on both a short-term and long-term basis in association with the planned development by Cotiga.

The mitigation plan associated with the proposed mining project would directly provide water quality improvement and potential health benefits to a community adjacent to the mine project area, and could provide infrastructure improvements to the town of Delbarton. As proposed, public wastewater treatment would be provided for 27 residents along Hell Creek, where

currently wastewater either enters the stream untreated or is treated by often poorly functioning on-site systems (e.g., septic tanks). These benefits could be realized in the future along more of Pigeon Creek upstream of Hell Creek as more wastewater straight pipes along WV 65 could be linked to the new extension of the Delbarton Wastewater Treatment Plant.

4.2.7 Needs and Welfare of the People

Presidential Executive Order 12898 (February 11, 1994) states that disproportionately high and adverse human health and environmental effects to low-income and minority populations must be identified and taken into consideration for Federal projects (in this case a permittable action) if impacts to these communities are disproportionately high. Section 101(b) of NEPA requires that measures be taken to ensure that aesthetically pleasing surroundings be retained for all Americans.

The alternatives would not result in disproportionate impacts to low-income or minority populations. Adjacent to the mine project area, landowners and other individuals who may be accustomed to using the surrounding area for recreation may experience temporary negative effects from noise and dust and long-term effects from changes to land use and the viewshed.

As the primary socioeconomic impacts of the Delbarton to Belo Project would be economic benefits, it would be anticipated to positively affect low-income residents who may be unemployed or underemployed. The region would additionally benefit from the post-mine land uses that have been planned in coordination with the MCRA, such as the post-mining development planned by Cotiga (light industry, commercial services, residential developments). The PMLU facilitates the development of a portion of the King Coal Highway Project while enhancing opportunities for economic development.

4.2.8 Parks and Recreation

The study area was examined for existing parks, recreational areas, and wildlife refuges during site investigations and by reviewing the USGS Delbarton WV-KY, Myrtle WV, and Naugatuck WV-KY 7.5 minute quadrangles (USGS 1976, 1996, and 1997, respectively) and the *West Virginia Atlas & Gazetteer* (DeLorme 1997). The Mingo County Comprehensive Plan (Mingo County Commission 2007) was also reviewed and local officials contacted.

4.2.8.1 Local Parks, Wildlife Refuges, and Water-Related Recreation

Upon review of the study area during site investigations and the review of project information and mapping, it was determined that no publicly-owned parks or wildlife refuges are found within the study area boundaries. The study area is located primarily near the ridge tops of mountains, where the absence of water precludes water dependent recreational opportunities. There are no public water-related recreation opportunities within the study area.

4.2.8.2 Trails

Parts of the Hatfield-McCoy Trail are located within the project area and would be impacted by either of the alternatives. The Hatfield-McCoy Trail is an off-road vehicle trail system governed by the Hatfield-McCoy Regional Recreation Authority. It was created by the West Virginia Legislature to generate economic development in nine southern West Virginia counties, including Mingo County. The trail system covers more than 500 miles of off-road trails and is utilized by riders of all types of off-highway vehicles, including ATVs, off-highway motorcycles, and mountain trail bikes. Plans call for the trail system to grow by another 1,500 miles. While some of the trails are located on public land, most of them traverse private property. No land has been directly purchased for the system (Marshall University 2006) nor is the system considered to be publically-owned. Rather, the Hatfield-McCoy Regional Recreation Authority, a privately-operated entity, has entered into a series of leases to establish and maintain the trails. Although the trail system is open to the public, an access permit must be purchased to utilize any part of the trail system. Approximately 24,000 access permits are sold each year.

The system consists of five independent trail segments: Browning Fork, Buffalo Mountain, Dingess Run, Little Coal, and Pinnacle Creek. Trail 14 of the Buffalo Mountain Trail System begins on the south side of US 52, just west of the either alternative's southern terminus, and serves as a connector between Delbarton and the rest of the Hatfield-McCoy Trail system.

4.2.8.3 Private Recreation Areas

The Hatfield-McCoy Trail system is the only private recreation areas in the immediate study area, although with permission, some owners of large tracts of forested land allow fishing and hunting on their property. The nearest private recreational areas to the study area are the Tug

Valley Country Club, located about 8 miles southeast of Williamson, and the Twisted Gun Golf Course, which is located about 15 miles southeast of Delbarton.

4.2.8.4 Potential Impacts

Approximately 4,718 feet of the Hatfield–McCoy Trail would be impacted by the No-Build Alternative and 6,060 feet of the trail would be impacted by the Delbarton to Belo Project. The Rev. Compton Trailhead, consisting of a visitors' information center and a parking lot, would also be impacted by the Delbarton to Belo Project. The trailhead also serves Trail 15, south of US 52. Trails 14 and 15 are shown on Figure 4-7.

The Delbarton to Belo Project would also affect recreation once mining has been completed and the alternative PMLU has been implemented. The added infrastructure would likely increase the public's utilization of the recreational opportunities in the region by providing easier access on the King Coal Highway and increased population associated with new jobs anticipated in association with the PMLU development by Cotiga. As such, the project may have a positive long-term impact on recreation in Mingo County, as well as the surrounding counties.

4.2.8.5 Avoidance, Minimization, and Mitigation

Relocation of the trailhead facilities would be required if either of the alternatives would be constructed. If impacted, the WVDOH would incorporate a new trailhead into the design of the proposed roadway. The southernmost section of Trail 14 and parts of an adjacent section of Trail 15, south of US 52, would also be impacted. Displaced sections of the trail within the mine permit area would be incorporated into the PMLU plan. The Hatfield-McCoy Regional Recreation Authority has already agreed to work with local and state agencies to minimize potential impacts to the Hatfield-McCoy Trail (April 14, 2011).

4.2.9 Visual Environment and Aesthetics

4.2.9.1 Existing Conditions

The study area is located within southern West Virginia. It is characterized by moderately to very steep slopes, narrow and rocky ridge tops, and V-shaped hollows. Elevations range from

approximately 1,000 to 1,910 feet. The study area is located approximately one-half mile from Delbarton. There are pockets of residential development areas nearby along US 119, US 52, and WV 65. The adjacent residential development areas are almost exclusively restricted to the valley floors and narrow floodplains.

There are six small, family cemeteries along Pigeonroost Creek. The views of the mine project area from several of these cemeteries would be obstructed because of the thick brush and topography of the area. The edges of the proposed mining operations may be visible from any of the cemeteries particularly in the fall and winter when deciduous leaves have fallen. None of these cemeteries were found to be eligible for listing on the NRHP. There are five other cemeteries located to the east of the mine project area, seven cemeteries to the south, one cemetery to the southeast, one cemetery to the southwest, and three cemeteries to the south-southwest. These cemeteries range in distances of 0.2 to over 0.7 mi from the proposed mine project area.

4.2.9.2 Potential Impacts

Buffalo Mountain Surface Mine

The PMLU plan includes preparation for public services, light industrial/commercial, and residential development. As such, the high peaks of the mine project area would be eliminated and not returned to AOC. This would permanently modify some views of the mine project area.

Generally, views of the mine project area from many of the surrounding residences and roads would be of the vegetated edges of the mine project area. The viewsheds of several structures along Conley Branch (CB) would include a valley fill, the viewsheds of several structures along Ruth Trace Branch, and part of the AOC Variance area near US 52. Impacts to the views from most adjacent locations, including travelers along local roadways, would be temporary in nature. Residents and travelers along US 52 and WV 65 would see trucks hauling coal throughout the day, with a maximum of 60 trucks a day throughout the 13.5 years of coal extraction.

In a letter of November 13, 2006, the WVDCH concurred with the assertion by CONSOL that “the mountainous topography and dense tree line this [mine] project will have no effect to architectural resources that are eligible for or listed in the National Register of Historic Places.”

The views of the mine project area from several of the nearby cemeteries would be obstructed because of the thick brush and topography of the area. The edges of the mining operations could be visible from any of the cemeteries particularly in the fall and winter when deciduous leaves have fallen. The viewsheds of the Dempsey Cemetery, the Evans Cemetery, and the Martin Cemetery would have clearer lines of sight to the edges of the mine project area. None of these cemeteries were found to be eligible for listing on the NRHP. Other cemeteries could also experience temporary disruption to their viewsheds due to the mining operations along the edges of the mine project area.

King Coal Highway

The FHWA guidelines were utilized for analyzing impacts to visual resources from the proposed new highway (FHWA 1990). The existing visual character of the area offers views of forested hillside, mountain ridge tops, and valley floors. Qualitative judgment rather than quantitative measurement was used to determine the level of change that would be introduced by the completed highway construction.

Either alternative to the project would create a new highway in a corridor where none currently exists. Roadway elements potentially impacting the existing visual characteristics of the area include the line and grade, the number and width of travel lanes, the width of the roadway's shoulders, and the type of material used for the pavement. Although the steep topography and forested edges of the area offer considerable opportunity to shield the new roadway from the surrounding area, there would be several locations where the road could be seen from the surrounding area. There would be new areas along the roadway where new vistas could be opened for the motoring public. From certain vantage points, both of the alternatives would involve changes in the existing viewshed. Either of the alternatives could still offer views of the surrounding forests and the adaptive re-use of land disturbed by surface mining operations.

4.2.9.3 Avoidance, Minimization, and Mitigation

All coal haulage trucks leaving an active mining area would be properly covered to prevent coal spillage and associated coal dust problems related to transportation. No public roads would be closed, relocated, or modified in conjunction with the proposed mining operation.

Reclamation and planting plans would be executed, as soon as practicable with the proposed mining phase in order to return the outslope areas and fill faces to their pre-mining land use/land cover of forestland. The proposed reclamation and planting plan on the majority of the proposed mining area has been approved under SMCRA. Consol would establish forestland on the outslope areas and the completed mining fills. This would result in the majority of the mine project area likely to be visible by the residents and travelers being returned to its pre-mining land use/land cover over the long-term; the re-growth would blend in with the surrounding forest area. WVDEP Permit No. S-5018-07 provides detail on the revegetation plan for the proposed mine project area. The SMCRA-approved planting plan calls for returning the edges of the mine project area (including the valley fills) to a forested landscape. The exceptions to the forested edge plantings would be:

- One stretch of the northwestern portion of the mine project area, which would be planted with grasses and developed for commercial/retail space; the view to this mine project area would be hidden by adjacent peaks;
- Haulroad No. 2 , to be located off the northern border of the mine project area, which would remain in place after reclamation for accessing the areas planned for future development within the AOC Variance area; this haulroad may be visible to some locations along Ruth Trace Branch and for a very brief portion of US 119 from the north;
- One short stretch of the southwestern portion of the mine project area, which would be planted with grasses and developed for commercial/retail space; this portion of the mine project area would be located up an unoccupied hollow; however, the mine project area may be visible by travelers and locations along a short stretch of US 52;
- Haulroad Nos. 1 and 3 to be located off the western border of the mine project area, which would remain in place after reclamation for accessing the areas planned for future development within the AOC Variance area; these haul roads may be visible by travelers and locations along a short stretch of US 52 and along CR 14/10; and
- The areas to the north and south of where the King Coal Highway right-of-way would enter and exit the mine project area under the Delbarton to Belo Project; the viewsheds of some locations along Ruth Trace Branch would experience permanent impacts where their views include the elevated area that would be graded to facilitate the construction of the King Coal Highway at the northern end of the mine project area, and the viewsheds of travelers and locations to the south and southeast of the mine project area would experience permanent impacts where their views include the elevated area that would be graded to facilitate construction of the King Coal Highway at the southern end of the mine project area under the Delbarton to Belo Project.

In terms of the proposed roadway, there are opportunities for secluding it through hillside cuts, buffer zones, vegetation, and natural screening. Much can be done in this manner to restore the visual character of the area. The visual quality of the proposed roadway would be improved by "blending" design of the rough-grade roadbed with the landscape, through the use of plantings, natural vegetation, and other visually attractive enhancements. Special consideration in the design would ensure that the mine project has a high visual quality.

4.3. Natural Environment

4.3.1 Vegetation and Wildlife

4.3.1.1 Land Cover and Habitat

The study area lies within the Cumberland and Allegheny Plateaus of the Appalachian mixed mesophytic forest ecoregion. A large portion of the land in the study area has slopes of 10 percent or greater with much land over 20 degrees. The area is isolated and undeveloped because of existing topographic features. Past land uses of the study area include timbering, gas exploration, underground and surface mining, and wildlife habitat.

During the half-century between 1870 and 1920, the forests of West Virginia were subjected to such intensive logging that by the end of this period the original forests had been essentially eliminated (Clarkson 1964 and 1968). Extensive forest fires, fueled by large amounts of logging slash, also destroyed large areas of virgin timber. As a result of the extensive logging and frequent fires that occurred throughout the forest region during this period, the present day forest vegetation is mostly a mosaic of second- and third-growth forest communities (Stephenson 1993).

Two distinct vegetative communities have been identified in the region, oak forests and cove hardwoods. The most extensive land cover type in the county is oak forest, generally associated with the ridge tops and south end of southwest slopes. The cove hardwoods, on the other hand, are generally found in the valleys and north facing slopes (WVDOH 2000).

The mixed deciduous forests in the area consist of three strata: canopy, understory, and herbaceous ground cover. The canopy stratum consists of mixed-aged stands with occasional

large diameter trees with no old-growth forest remaining. Within each watershed, there are three forest types including, oak-hickory, northern hardwoods and bottomland hardwoods. The oak-hickory and northern hardwoods forest types are commonly found on the ridges and valley slopes of each watershed, and the bottomland hardwoods forest type is typically found on the valley floor (USDA 1913).

The oak-hickory cover type is found generally along the drier southeast to southwest facing slopes. Dominant tree species include white oak (*Quercus alba*), chestnut oak (*Quercus prinus*), scarlet oak (*Quercus coccinea*), black oak (*Quercus velutina*), hickories (*Carya spp*.), black gum (*Nyssa sylvatica*), and red maple (*Acer rubrum*). Virginia pine (*Pinus virginiana*), pitch pine (*Pinus rigida*), chestnut oak (*Quercus prinus*), and scarlet oak (*Quercus coccinea*) may be found along the ridge top (USDA 1913).

The northern hardwoods cover type is found generally along the moist, partially shaded and well-drained northwest to northeast facing slopes. Dominant tree species consist primarily of tulip poplar (*Liriodendron tulipifera*), red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), basswood (*Tilia americana*), cucumber tree (*Magnolia accuminata*), black birch (*Betula lenta*), eastern hemlock (*Tsuga canadensis*), and scattered white oak (*Quercus alba*) (USDA 1913).

The bottomland hardwoods cover type is generally found within the stream floodplains and along the stream bank. Eastern sycamore (*Platanus occidentalis*), black walnut (*Juglans nigra*), basswood (*Tilia americana*), and willows (*Salix spp*.) are the dominant tree species. Associated woody plants in bottomlands also include witch-hazel (*Hamamelis virginiana*), spicebush (*Lindera benzoin*), hazelnut (*Corylus americana*), pawpaw (*Asimina triloba*), red elm (*Ulmus rubra*), and American elm (*Ulmus americana*) (USDA 1913).

Co-dominant, intermediate, and understory woody plants include flowering dogwood (*Cornus florida*), hawthorns (*Crataegus spp*.), black cherry (*Prunus serotina*), red bud (*Cercis canadensis*), mountain laurel (*Kalmia latifolia*), great rhododendron (*Rhododendron maximus*), mountain magnolia (*Magnolia fraserii*), musclewood (*Carpinus caroliniana*), and ironwood (*Diospyrus virginiana*). Non-woody shrubs and lateral climbing species include greenbrier (*Smilax spp*.), blackberry (*Rubus spp*.), honeysuckle (*Lonicera spp*.), grape vine (*Vitis spp*.), and poison ivy (*Toxicodendron radicans*). The herbaceous layer consists of various flowering plants

including golden ragwort (*Scencio aureus*), nettles (*Laportea spp*.), violets (*Viola spp*.), goldenrods (*Solidago spp*.), and various woodland grass, sedge, and rush species (USDA 1913).

While most ridge tops and adjacent upper slopes of the mine project area were logged within the last 50 years, most of the proposed mine project area is currently forested. There has also been previous surface and underground mining activity within the mine project area. The Coalburg, Buffalo, and Winifrede seams have been underground mined within the southwestern portion of the mine project area. The surface disturbance was due to WVDEP Permit No. S-0094-85 which overlapped the northwestern edge of the mine project area. WVDEP Permit No. S-0094-85 entailed auger and contour mining within an approximately 11-ac permit area which has been completely released.

A wide range of terrestrial wildlife is found within the mine project area. Wildlife resources include as many as 50 mammalian species, over 100 species of birds, and over 80 species of reptiles and amphibians (WVDOH 2000). The majority of species utilizes the mine project area's forests as habitat, but reclaimed mine surface areas also support a wide variety of animal species.

Mammalian species that have the potential to be found in the study area include the northern bat (*Myotis septentrionalis*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), white-footed mouse (*Peromyscus leucopus*), short-tailed shrews (*Blarina brevicauda* and *B. carolinensis*), eastern chipmunk (*Tamias striatus*), eastern gray squirrel (*Sciurus carolinensis*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and white-tailed deer (*Odocoileus virginianus*).

Common reptiles and amphibians of the study area include the eastern hognose snake (*Heterodon platyrhinos*), five-lined skink (*Eumeces fasciatus*), southern two-lined salamander (*Eurycea cirrigera*), spring salamander (*Gyrinophilus porphyriticus*), dusky salamanders (*Desmognathus* sp.), American toad (*Bufo americanus*), and spring peeper (*Hyla crucifer*).

Frequently encountered bird species within the study area include the red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), tufted titmouse (*Parus bicolor*), wood thrush (*Hylcichla mustelina*), Carolina chickadee (*Parus carolinensis*), ovenbird

(*Seiurus aurocapillus*), blue jay (*Cyanocitta cristata*), and northern cardinal (*Cardinalis cardinalis*).

There are two wildlife management areas (WMA) in Mingo County, the Laurel Lake WMA and the R.D. Bailey Lake. The Laurel Lake WMA is nearly 13,000 ac and the R.D. Bailey Lake area is just over 17,000 ac. WMAs are lands set aside to manage and conserve habitat for the benefit of all species (WVDF 2010).

Mingo County is also part of a proposed seven-county elk management plan. There are few free-roaming elks in the state, but the West Virginia Division of Natural Resources (WVDNR) is currently studying their re-introduction. Elks are currently protected from hunting in West Virginia. If the plan moves forward, the seven-county region will include Mingo, Boone, Lincoln, Logan, McDowell, Wayne, and Wyoming counties (WVDNR 2011).

4.3.1.2 Potential Impacts

Buffalo Mountain Surface Mine

The contiguous nature of the study area's forestland would be impacted by the proposed mine project during the mining phase. There are no known unique habitats within the proposed mining area, however.

Construction of the valley fills and the permanent access/haulroads and the mine project's mineral removal activities (mine-through) would also eliminate aquatic habitat that currently exists in the immediate area where fill material would be disposed. Construction of other access roads and the ponds would temporarily fill such habitat. The mining project would result in the permanent discharge of fill material into approximately 39,285 lf (4.429 ac) of perennial, intermittent and ephemeral streams. Additionally, the mining project would result in the temporary discharge of fill material into approximately 9,215 lf (1.519 ac) of perennial, intermittent and ephemeral streams. Approximately 14.7 percent of the total proposed impacts to waters of the U.S. associated with the discharge of fill material would be in ephemeral streams.

King Coal Highway

Both alternatives would cause impacts to vegetation and wildlife habitat. Impacts to vegetation and wildlife habitat are shown in Table 4-11.

Table 4-11
Vegetation and Wildlife Habitat Impacts

Land Cover Type	No-Build Alternative		Delbarton to Belo Project	
	Area/Length	Percentage	Area/Length	Percentage
Developed	56 ac	6.4	82 ac	3.2
Forested	805 ac	93.6	2,520 ac	96.8
Total Land	861 ac	100	2,602 ac	100
Water	32,217 lf	N/A	47,385 lf	N/A

Impacts to forest vegetation and its associated wildlife habitat will be large for any build alternative, affecting approximately 94-97 percent of the project area. For the Delbarton to Belo Project, approximately 47,385 feet of streams will be permanently filled and 9,215 of streams will be temporarily filled.

4.3.1.3 Avoidance, Minimization, and Mitigation

Through reclamation, approximately 58 percent of the mine project area (1,328 ac) would be returned to forestland, while the remaining areas would be converted to a mixture of light industry, commercial development, public services, and residential development (approximately 980 ac).

A temporary vegetative cover would be established, as contemporaneously as practicable, with backfilling and grading until a permanent cover can be established. Trees would be planted throughout the area with limited placement within the AOC Variance area, as prescribed in the planting plan. Large areas of undisturbed forest would coexist with areas proposed for mining. These adjacent, undisturbed forested areas would encourage an increase in the wildlife population and restore a large portion of the mine project area to the pre-mining land use of Forestland over time. The PMLU would allow for the wildlife in the surrounding forested area to utilize portions of the AOC Variance area. Within the AOC Variance area, there would be tracts planted with grasses and legumes that may provide forage and grazing areas for deer, rabbits, and other small animals.

The WVDOH is not obligated to directly compensate for the loss of forest habitat; however, if property with unique habitat in the termini areas outside the mining project would be identified during highway project development, the WVDOH would consider purchasing these properties from willing sellers. In addition to the purchase of properties with unique habitat, the WVDOH has also committed to purchase uneconomical land remnants in the termini areas, such as parcels that would be landlocked as a result of the final alignment design. Collectively, these measures would serve as mitigation for the loss of terrestrial forest habitat. During the reclamation of the Buffalo Mountain Surface Mine, approximately 1,300 ac within the mine permit area would be returned to forest, restoring much of the wildlife habitat temporarily lost during mining operations. An additional 944 to 980 ac would be used for future development opportunities, including light industry, commercial development, public services, and residential development.

Mitigation for impacts to vegetation and wildlife outside the mining area would also include the placement of temporary protective fencing around sensitive areas to protect these areas during construction. An approved Erosion and Sedimentation Control Plan would be implemented to minimize impacts to the water quality and habitat of the mine project area streams. All disturbed areas would be revegetated (utilizing a native seed mixture) upon completion of construction.

4.3.2 Rare, Threatened, and Endangered Species

Threatened and endangered wildlife and plant species are protected under Section 7 of the federal *Endangered Species Act* of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). In West Virginia, there is no state threatened and endangered species legislation. Therefore, the species listed as either threatened or endangered in West Virginia are those listed by the USFWS as federally threatened and endangered species. Fifteen species of animals and six species of plants occurring in the state are currently listed by the USFWS as either threatened or endangered. Coordination with the USFWS, WVDNR, and the WVDEP occurred during preparation of the King Coal Highway 2000 FEIS, the Buffalo Mountain surface mining application and the scoping process associated with this SEIS.

Endangered species are defined in the ESA as “any species which is in danger of extinction throughout all or a significant portion of its range other than species of the Class Insecta as determined to constitute a pest whose protection under the provisions of the Act would present

an overwhelming and overriding risk to man." A threatened species is "any species which is likely to become an endangered species in the foreseeable future throughout all or a significant portion of it range." The term species, as defined in the ESA includes "subspecies of fish or wildlife or plants, and any distinct population of vertebrate fish or wildlife which interbreeds when mature."

4.3.2.1 Indiana Bat

The federally-listed endangered Indiana bat (*Myotis sodalis*) potentially inhabits the study area. The Indiana bat is a small brown bat with a wingspan of approximately 9-11 inches. West Virginia is on the edge of its range, but significant numbers hibernate in West Virginia caves, mine portals.

4.3.2.2 Virginia Big-eared Bat

The federally-listed endangered Virginia big-eared bat (*Corynorhinus townsendii virginianus*) also potentially inhabits the study area. According to the WVDNR, the Virginia big-eared bat is a moderate-sized bat that also uses West Virginia caves for hibernaca. More Virginia big-eared bats occur in West Virginia than in any other state (WVDNR 2012).

4.3.2.3 Existing Conditions and Survey Results

<u>Buffalo Mountain Surface Mine</u>

According to USFWS guidance on coordination for the Indiana bat (USFWS 2007), upon request, the WVDEP, during the SMCRA application process, notifies project applicants if a proposed project is within two miles of a known maternity roost or within five miles of a known hibernaculum. If it is not, the applicant is required to prepare a winter habitat and mine and cave assessment report. If it is, the applicant may then either assume the presence of the Indiana bat and prepare a protection and enhancement plan, or conduct a mist net survey and prepare a summer habitat and mist net survey report to provide to WVDEP and USFWS for further coordination, if necessary.

The mine project area is not within two miles of a known maternity roost or within five miles of a known hibernaculum. Thus, a survey of winter bat habitat was conducted in 2007, and a summer habitat and mist net survey was conducted in 2011. No federally-listed endangered species were captured. The WVDEP concluded that no federally-listed endangered and threatened species would be expected to be impacted by the mine project (September 8, 2011). However, because a number of bats were caught at Portal No. 2 during harp trapping (a method of capture during mist net surveys), the WVDEP recommended that Portal Closure Protocol (USFWS 2007) be followed in closing this portal. The portal closure procedures have been incorporated into WVDEP Permit No. S-5018-07.

King Coal Highway

It was determined that the federally listed endangered Indiana myotis and Virginia big-eared bat potentially inhabit the project area. As part of CONSOL's permit application for the surface mine, a summer habitat and mist net survey were completed in 2006 and surveys of winter bat habitat were conducted in October 2007. Those surveys were conducted specific to programmatic agreements between WVDEP and USFWS. The USFWS formally requested that a mist net survey and open portal investigation be conducted within the two highway project termini areas. According to the USFWS *Indiana Bat Recovery Plan*, First Revision (2007) and personal communication with the USFWS in Elkins, a minimum of six net sites were required for the WVDOH survey, four within the northern terminus and two within the southern terminus. A Study Plan detailing protocols to be used and approximate locations for the six mist net sites was submitted to the USFWS on July 22, 2011. A concurrence letter from the USFWS was signed on July 26, 2011.

In July and August 2011, the WVDOH conducted separate surveys within the study area on the two highway termini areas. The WVDOH followed its mist netting efforts with an acoustical and net portal survey at one location in mid-October 2011. No federally listed endangered species were captured during any of these efforts.

4.3.2.4 Potential Impacts

No federally-listed species have been found or are thought to be present in the study area. Therefore, no impacts to federally-list species would be anticipated.

4.3.3 Floodplain Values

4.3.3.1 Existing Conditions

Floodplain and floodway protection is required by Executive Order 11988, *Floodplain Management of 1977* (44 CFR 9), as amended; *National Flood Insurance Act of 1962* (42 USC 4124); and U.S. Department of Transportation Order 5650.2, *Floodplain Management and Protection*. Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The National Flood Insurance Program provides flood insurance for structures and contents in communities that adopt and enforce an ordinance outlining minimal floodplain management standards and established flood insurance rates for structures inside flood hazard areas.

If the proposed project is located within a floodplain, a detailed analysis should be included in the environmental document, as specified in USDOT Order 5650.2. Designated floodplains within Mingo County are located along the Tug Fork and the Guyandotte rivers. They also occur along Buffalo Creek, Gilbert Creek, Horsepen Creek, Laurel Fork, Marrowbone Creek, Matte Creek, Moses Fork, Pigeon Creek, Rockhouse Fork, Stafford Branch, Trace Fork, and the West Fork of Twelvepole Creek (FEMA 2011). Floodwalls have been built in Williamson and Matewan.

Several major floods have occurred along the Tug Fork and Guyandotte River. The flood of record for the Tug Fork occurred in April 1977 when the river crested at 52.26 feet and the flood of record for the Guyandotte occurred in March 1963 when the river crested at 34.9 feet. Both of these floods were over flood stage (FEMA 2011). Because most residential areas in Mingo County are located in narrow valleys, and the mountainous terrain is conducive to rapid runoff, flooding has historically been a critical problem for residents. Flooding sources and their locations are shown in Table 4-12.

Table 4-12
Flooding Sources in Mingo County

Flooding Source	Location	Drainage Area (sq. miles)
Buffalo Creek	Confluence with Tug Fork	7.05
Gilbert Creek	Confluence with Guyandotte	31.1
	85 feet upstream of confluence with Skillet Creek	28.4
	10 feet upstream of confluence with Horsepen Creek	12.5
	170 feet upstream of confluence with Adams Fork	9.4
Guyandotte River	WV 80 Bridge	675.0
	360 feet upstream of confluence with Cane Brake	668.0
	65 feet upstream of CR 52/4 Bridge	571.0
	1,545 feet upstream of confluence with Little Huff	535.0
Horsepen Creek	Confluence with Gilbert Creek	15.3
	142 feet upstream of confluence with Browning Fork	7.9
	996 feet upstream of confluence with Smith Branch	6.0
Laurel Fork	Confluence with Pigeon Creek	32.9
	585 feet upstream of confluence with Right Fork	22.13
	390 feet upstream of Laurel Lake Dam	10.86
Marrowbone Creek	Confluence with Tug Fork	22.6
	70 feet upstream of confluence with Left Fork	17.7
	1,915 feet downstream of confluence with Nelly Branch	13.0
Mate Creek	Confluence with Tug Fork	16.0
	900 feet upstream of confluence with Rutherford Branch	14.0
	500 feet upstream of confluence with Mitchell Branch	10.4
Pigeon Creek	Confluence with Tug Fork	142.0
	140 feet upstream of confluence with Laurel Fork	95.5
	585 feet upstream of Trace Fork Creek	66.5
	865 feet upstream of confluence with Rockhouse Fork	24.9
	405 feet upstream of confluence with Ferrell Branch	19.6
	770 feet upstream of confluence with Oldfield Branch	13.9
	135 feet upstream of confluence with Little Laurel Branch	10.5
Rockhouse Fork	Confluence with Pigeon Creek	16.2
	910 feet upstream of confluence with Curry Branch	13.4
	155 feet upstream of confluence with Big Pigeonroost Branch	9.1
Trace Fork	Confluence with Pigeon Creek	20.8
Tug Fork	2,100 feet downstream 9 of confluence with Marrowbone Creek	1,888.5
	1,295 feet upstream of the confluence with Pigeon Creek	1,038.6
	885 feet upstream of confluence with Buffalo Creek	936.5
	345 feet downstream of Norfolk and Western Railway Bridge	872.0
	250 feet upstream of confluence with Peter Creek	754.3
	205 feet downstream of confluence with Knox Creek	641.0
	150 feet upstream of confluence with Ben Creek	599.9
West Fork of Twelvepole Creek	760 feet downstream of confluence with Shaft Branch	7.5
	755 feet upstream of CR 3/12 Bridge	1.53

Source: FEMA 2011

Three levee/flood wall systems have been constructed in Mingo County, two at Williamson and one at Matewan. The R.D. Bailey Lake and Dam has also been constructed to assist with flood reduction on the Guyandotte River. The lake is located near Gilbert and straddles the county line between Mingo and Wyoming.

4.3.3.2 Potential Impacts

This floodplain analysis was conducted in accordance with the requirements of *Executive Order 11988*, *Floodplain Management*, FHPM 6-7-3-2 (OPUSA 1977), *Location and Hydraulic Design of Encroachments on Floodplains* (FHWA 1978), and United States Department of Transportation 5650.2, *Floodplain Management and Protection* (1979). Federal guidelines require the use of available National Flood Insurance Program maps to determine and evaluate the effect the proposed action may have on 100-year floodplains and the risk of flooding. Upon review of Flood Insurance Rate Maps for Mingo County (FEMA 1980), FEMA noted that there are no regulated floodways in the immediate vicinity of the study area (Figure 4-8).

The No-Build Alternative would not impact any floodplains. The Delbarton to Belo Project would not directly impact any floodplains either, but there is a considerable amount of concern within the local community that this alternative could increase flooding potential farther downstream from the project area associated with this alternative.

As part of the SMCRA review process for the mine project, the applicant conducted a surface water runoff assessment (SWROA). The SWROA indicated that peak discharges during and after mining would be lower than pre-mining conditions for a 25-year/24-hour storm event (CONSOL 2012). Consequently, there would be no net increase in peak flow for the area as a result of the Delbarton to Belo Project, and the chance of flooding remains unaffected by this alternative. The WVDOH is also currently conducting additional analyses to determine whether this alternative would have impacts farther downstream.

4.3.4 Flood Hazards

During the WVDEP permitting process for the Buffalo Mountain Surface Mine, CONSOL conducted analysis and considered the construction of on-bench and in-stream drainage control structures and valley fills, and the concurrent reclamation and revegetation of disturbed areas

as these activities relate to potential flood hazards. The alternatives analysis included planning all valley fills for bottom-up construction, which allows for planting of the fill surface during its construction, and design of an NPDES outlet scheme to allow surface waters to remain in their same hydrologic watershed and reduce chances of blow-outs (failure of water management structures).

As part of the SMCRA mine review and permitting process, a CHIA (Cumulative Hydrologic Impact Assessment) was prepared by the WVDEP. The CHIA is a document/analysis that is prepared by the SMCRA permit review staff of the WVDEP and is included in the permit recommendation/issuance/findings documents. The CHIA incorporates all previous and planned/permitted mining activities as related to the hydrologic impacts to the waters of the U.S. downstream of the SMCRA permit area. The WVDEP's CHIA prepared for Buffalo Mountain Surface Mine cumulatively evaluated the Miller Creek and Buffalo Creek watersheds and the lower reaches of the Pigeon Creek watershed. The CHIA concluded that "by following the [SMCRA] permit conditions...there should be no material damage caused by the mining of this permit" (WVDEP 2011). The WVDEP's buffer zone analysis (BZA) determined that no adverse impacts to the quality or quantity of the flows of the receiving streams below the proposed fills would be anticipated (WVDEP 2009a). The BZA is conducted to determine, within 100 feet of intermittent or perennial streams, whether WVDEP would authorize such operations only upon finding that surface mining activities would not adversely affect the water quantity and quality or other environmental resources of the stream and would not cause or contribute to violations of applicable State or Federal water quality standards. Otherwise activities within this 100 feet buffer would be prohibited under SMCRA.

Additionally, the results of the SWROA indicated that the peak discharges for both the "during mining" and "post-mining" conditions would be lower than or equal to that of the "pre-mining" conditions for the proposed mine project during a 25-year/24-hour storm event (see Attachment J-6 in Appendix C of the SMCRA permit). In general, the increased infiltration and storage capacities of the backstack areas and the valley fills would allow the alluvial/valley floor aquifer system, which is the only usable aquifer system in the area, to recharge more effectively and into drier periods of the year.

4.3.5 Wetlands

West Virginia has fewer wetlands than many states, primarily because of its rugged topography (WVU 2001). Types of wetlands occurring in West Virginia are aquatic, bogs, marshes, swamps, riparian (streamside), seeps, and wet meadows (WVU 2001). All typical wetland types in West Virginia are encountered in the study area, but topography and development have restricted their occurrence. Typical wetlands are small and adjacent to streams. Many of the wetlands have developed in old strip mine pools or within transportation rights-of-way. Overall, the study area's wetlands provide limited aquatic and wildlife habitat (WVDOH 2000).

There are approximately 109 ac of wetlands in Mingo County. The county ranks 52nd of West Virginia's 55 counties in terms of wetland acreage. Less than 0.04 percent of Mingo County's land mass is covered in wetlands (USFWS 1996a). Wetland classifications and their acreages in the county include Open Water at 52 ac, Palustrine Emergent at 5 ac, Palustrine Scrub Shrub at 2 ac, Palustrine Forested at 26 ac, and Riverine at 24 ac (USFWS 1996b).

4.3.5.1 Existing Conditions

The sources for the information used in the wetlands investigation included the USDA *Soil Data Mart* (2010) and the USFWS *National Wetland Inventory* mapping (USFWS 2007; WV GIS Technical Center 2010). Potential wetland habitats were identified based on visual changes in vegetation and signs of hydrology. Wetlands were delineated according to the Corps Wetlands Delineation Manual (Corps 1987) and classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979).

Field investigations for areas within the mine permit area were performed at various times between 2006 and 2008. A jurisdictional determination of wetlands was made for wetlands within the mine permit area (there was only one, W3) on September 18, 2008. For areas outside the Buffalo Mountain Surface Mine permit area, field investigations occurred during November 2010. A jurisdictional determination of wetland boundaries outside the mine permit area, but within the highway termini areas (W4, W5, and W6) will be completed with the Corps prior to construction of the mining project.

4.3.5.2 Potential Impacts

The No-Build Alternative would impact two wetlands totaling 0.9 ac (shown as W4 and W5 in Table 4-13 and Figure 4-9). The Delbarton to Belo Project would impact four wetlands, one within the mine permit area and three within the highway termini areas), totaling 0.14 ac. The wetlands are shown on Figure 4-9. All four of these wetlands are classified as palustrine emergent (PEM). Palustrine wetlands include all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens.

Table 4-13
Potential Wetland Impacts

Wetland	Type	Size (ac)	Location	Notes
W3	PEM	0.02	In mine permit area	Located at the head of UNT 10 of the Right Fork of Hell Creek (RFHC)
W4	PEM	0.04	Outside mine permit area	Located on abandoned road bed above US 52
W5	PEM	0.05	Outside mine permit area	Located at the head of Buffalo Creek
W6	PEM	0.03	Outside mine permit area	Located along Little Road Branch
Total		0.14		

The wetlands proposed to be filled contain woody plants and provide a number of beneficial values and functions. These wetlands provide enhanced benefits through flood flow alteration, sediment trapping, nutrient filtering, and wildlife or aquatic habitat.

4.3.5.3 Avoidance, Minimization, and Mitigation

Mitigation strategies and commitments for proposed discharges of fill material into wetlands are included within the compensatory mitigation plan developed by CONSOL for the Buffalo Mountain Surface Mine Project. During final design, measures would be identified that would minimize any temporary and permanent impacts to wetland resources outside the mine permit area (i.e., W4, W5, W6).

4.3.6 Watersheds and Streams

The aquatic resources proposed for the discharges of fill material in association with the Buffalo Mountain Surface Mine are tributaries of/and Ruth Trace Branch, tributaries of/and Right Fork of Conley Branch (RFCB), Left Fork of Conley Branch (LFCB), tributaries of/and RFHC, tributaries

of/and Left Fork of Hell Creek (LFHC), tributaries of/and Pigeonroost Creek, tributaries of/and Unnamed Tributary (UT) of Pigeon Creek, UT of Stonecoal Branch, and tributaries of Miller Creek, all of the Tug Fork River of the Big Sandy River. The Corps reviewed the aquatic resources within the Buffalo Mountain Surface Mine study area in early 2008. A determination of waters of the U.S. present within the Buffalo Mountain Surface Mine study area was documented by a verification letter issued on September 18, 2008.

Surface water resources within the region are generally limited to first, second, and third order streams that empty into the Tug Fork or Guyandotte rivers. The region falls completely within the Tug Fork and Guyandotte River watersheds. Pigeon Creek is the largest tributary of the Tug Fork with a 142-square mile drainage area.

Past mining practices within the Tug Fork watershed have altered hydrology, accelerated erosion and sedimentation, discharged metals into water bodies, and reduced water quality. Similar actions have affected the Guyandotte watershed, but agricultural activities have also contributed to a degradation of water quality there. Both watersheds have also been impacted by pollution from raw sewage (WVDOH 2000).

Streams in the study area were assessed in mid-spring and late autumn 2006. Additional research was conducted during 2007 to assess stream habitat. The mining alternatives previously assessed (refer to Chapter 3 of this SEIS) would potentially impact the watersheds of the following streams:

- Ruth Trace Branch and its unnamed tributaries
- Conley Branch and its unnamed tributaries
- Hell Creek and its unnamed tributaries
- UT of Pigeon Creek and its unnamed tributaries
- Pigeonroost Creek and its unnamed tributaries
- UT of Stonecoal Branch of Pigeon Creek
- Miller Creek

A total of 75 stream channels totaling 93,996 lf were delineated within the study area. Twenty streams had perennial segments (CONSOL 2008). The watersheds are summarized in Table 4-14.

Table 4-14
Mine Project Area Watersheds

Watershed		Number of Streams	Stream Length (lf)	Number of Wetlands
Ruth Trace Branch		16	15,639	1
Conley Branch	Right Fork	8	8,924	--
	Left Fork	2	6,490	--
Hell Creek	Right Fork	14	19,169	2
	Left Fork	18	19,780	--
UT of Pigeon Creek		2	5,732	--
Pigeonroost Creek		9	11,565	--
UT of Stonecoal Branch		1	1,110	--
Miller Creek		5	5,587	--
Total		75	93,996	3

The Buffalo Mountain Surface Mine project area lies predominantly (85% of total proposed mine project area) within the watershed of Pigeon Creek, a tributary to the Tug Fork River of the Big Sandy River, and approximately 15 percent within the watersheds of Miller Creek and Buffalo Creek, which directly drain into the Tug Fork River. All streams within the mine project area are part of either the Pigeon Creek or Miller Creek watersheds. The area is dominated by mixed hardwood forest along steep slopes of well-draining soils.

Benthic studies on potentially impacted waters of the U.S. were conducted within and downstream of the proposed surface mine project area (Baker, 2007a and 2007b). Collection and analysis of benthic macroinvertebrate specimens took place in the Spring and Fall 2006 seasons and followed the methodologies presented in USEPA's RBP (Barbour *et al.* 1999), and the site locations for the benthic samples were based upon the USEPA's *Interim Chemical/Biological Monitoring Protocol for Coal Mining Permit Applications* (Hoffman, 2000). The scope of the investigations was to characterize the benthic macroinvertebrate communities in selected segments of waters of the U.S. within and downstream of the proposed mine project area. Baseline benthic survey points were located in waters within and adjacent to the study area within the Tug Fork River watershed. Based on the USEPA guidance indicated above, 45 stations were identified.

Field sampling during the spring index period demonstrated that one of the stations on Pigeon Creek consisted of a long and deep pool, and was not suitable for benthic macroinvertebrate sampling; therefore, only 44 stations were established and sampled. They were distributed among the watersheds, overlapping and adjacent to the mine project area as follows:

- A total of 38 stations within the Pigeon Creek watershed, including: Pigeon Creek (9), Ruth Trace Branch (2), Conley Branch (8), RFHC (7), Hell Creek/LFHC (8), UT to Pigeon Creek (2), and Pigeonroost Creek (2);
- Five stations within the Miller Creek watershed; and
- One station on Buffalo Creek.

The stations established during spring index field studies were revisited by CONSOL and benthic macroinvertebrate communities were sampled during the fall index period. Station location was recorded by global positioning system (GPS), and elevations were taken from USGS 7.5 minute topographic quadrangle maps. Representative photographs were taken of each sampling station.

Location and spatial relationship to the proposed operations are identified in Table 4-15.

Table 4-15
Benthic Macroinvertebrate Sampling Stations

Station ID	Latitude	Longitude	Elevation (above MSL)	Site Description
PC-1	N 37-46-34	W 82-08-14	642 ft	Pigeon Creek downstream of mouth of Ruth Trace Branch.
PC-3	N 37-45-47	W 82-07-22	668 ft	Pigeon Creek downstream of mouth of Conley Branch.
PC-4	N 37-45-45	W 82-07-14	662 ft	Pigeon Creek upstream of mouth of Conley Branch.
PC-5	N 37-44-43	W 82-06-25	681 ft	Pigeon Creek downstream of mouth of Hell Creek.
PC-6	N 37-44-45	W 82-06-11	690 ft	Pigeon Creek upstream of mouth of Hell Creek and downstream of mouth of UT Pigeon Creek.
PC-7	N 37-44-40	W 82-05-56	691 ft	Pigeon Creek upstream of mouth of UT Pigeon Creek.
PC-8	N 37-43-21	W 82-05-04	725 ft	Pigeon Creek downstream of mouth of Pigeonroost Creek.
PC-9	N 37-43-20	W 82-05-03	727 ft	Pigeon Creek upstream of mouth of Pigeonroost Creek.
PC-10	N 37-46-45	W 82-08-19	646 ft	Pigeon Creek upstream of mouth of Little Road Branch.
RTB-1	N 37-45-42	W 82-08-24	861 ft	Ruth Trace Branch approximately 5,000 ft upstream of confluence with Pigeon Creek.
RTB-2	N 37-45-35	W 82-08-27	922 ft	Ruth Trace Branch approximately 5,800 ft upstream of confluence with Pigeon Creek.
CB-1	N 37-45-26	W 82-07-28	714 ft	Conley Branch (CB) approximately 2,100 ft upstream of confluence with Pigeon Creek.

Table 4-15 (continued)
Benthic Macroinvertebrate Sampling Stations

Station ID	Latitude	Longitude	Elevation (above MSL)	Site Description
CB-2	N 37-45-14	W 82-07-48	788 ft	Conley Branch approximately 4,000 ft upstream of confluence with Pigeon Creek.
CB-3	N 37-44-54	W 82-07-49	913 ft	UT3 of Conley Branch approximately 6,000 ft upstream of Pigeon Creek.
CB-4	N 37-44-46	W 82-07-49	1,000 ft	UT3 of Conley Branch approximately 6,800 ft upstream of Pigeon Creek.
CB-5	N 37-44-57	W 82-08-05	917 ft	Conley Branch approximately 6,300 ft upstream of confluence with Pigeon Creek.
CB-6	N 37-44-57	W 82-08-17	994 ft	Conley Branch approximately 7,200 ft upstream of confluence with Pigeon Creek.
LFCB-1	N 37-45-05	W 82-07-17	879 ft	LFCB approximately 7,200 ft upstream of Pigeon Creek.
LFCB-2	N 37-44-57	W 82-07-17	965 ft	LFCB approximately 7,900 ft upstream of Pigeon Creek.
RFHC-1	N 37-44-05	W 82-07-08	829 ft	RFHC approximately 3,800 ft upstream of confluence with Hell Creek.
RFHC-2	N 37-43-59	W 82-07-13	853 ft	RFHC approximately 4,500 ft upstream of confluence with Hell Creek.
RFHC-3	N 37-43-45	W 82-07-15	934 ft	RFHC approximately 6,000 ft upstream of confluence with Hell Creek.
RFHC-4	N 37-43-37	W 82-07-17	990 ft	RFHC approximately 7,000 ft upstream of confluence with Hell Creek.
RFHC-5	N 37-43-50	W 82-07-27	966 ft	UT3 of RFHC approximately 700 ft upstream of mouth.
RFHC-6	N 37-44-09	W 82-07-23	933 ft	UT2 of RFHC approximately 1,000 ft upstream of mouth.
RFHC-7	N 37-44-13	W 82-07-32	1,000 ft	UT2 of RFHC approximately 1,700 ft upstream of mouth.
HC-1	N 37-44-33	W 82-06-29	714 ft	Hell Creek just downstream of LFHC, approximately 1,200 ft upstream of confluence with Pigeon Creek.
LFHC-1	N 37-44-28	W 82-06-30	722 ft	LFHC just upstream of Hell Creek, approximately 1,600 ft upstream of Pigeon Creek.
LFHC-2	N 37-43-25	W 82-06-43	996 ft	LFHC downstream of UT1 of LFHC, approximately 10,600 ft upstream of Pigeon Creek.
LFHC-3	N 37-43-06	W 82-06-41	1,070 ft	LFHC upstream of UT1 of LFHC, approximately 12,500 ft upstream of Pigeon Creek.
LFHC-4	N 37-42-57	W 82-06-37	1,124 ft	LFHC downstream of confluence with UT10 of LFHC, approximately 13,300 ft upstream of Pigeon Creek.
LFHC-5	N 37-42-46	W 82-06-44	1,156 ft	LFHC upstream of confluence with UT10 of LFHC, approximately 14,400 ft upstream of Pigeon Creek.
LFHC-6	N 37-42-46	W 82-06-40	1,165 ft	UT10 of LFHC approximately 1,100 ft upstream of LFHC-4 and 14,400 ft upstream of Pigeon Creek.
LFHC-7	N 37-43-23	W 82-06-52	1,031 ft	UT1 of LFHC approximately 700 ft upstream of LFHC-2 and 11,300 ft upstream of Pigeon Creek.
UTPC-1	*N 37-44-19*	*W 82-05-52*	*888 ft*	*UTPC approximately 2,000 ft upstream of confluence with Pigeon Creek.*
UTPC-2	N 37-44-15	W 82-05-47	951 ft	UTPC approximately 2,500 ft upstream of confluence with Pigeon Creek.
PRC-1	N 37-43-03	W 82-06-01	940 ft	PRC approximately 5,800 ft upstream of confluence with Pigeon Creek.

Table 4-15 (continued)
Benthic Macroinvertebrate Sampling Stations

Station ID	*Latitude*	*Longitude*	*Elevation (above MSL)*	*Site Description*
PRC-2	N 37-42-52	W 82-06-05	1,025 ft	PRC approximately 6,800 ft upstream of confluence with Pigeon Creek.
MC-1	N 37-44-25	W 82-08-12	999 ft	MC downstream of UT5 of MC.
MC-2	N 37-44-21	W 82-08-12	1,027 ft	MC upstream of UT5 of MC, approximately 500 ft upstream of MC-1.
MC-3	N 37-44-24	W 82-08-10	1,000 ft	UT5 of MC, near the confluence with Miller Creek, approximately 250 ft upstream of MC-1.
MC-4	N 37-44-25	W 82-08-06	1,030 ft	UT5 of MC approximately 300 ft upstream of MC-3.
MC-5	N 37-44-57	W 82-09-26	835 ft	MC just west of mine project area, approximately 1.5 miles downstream of MC-1.
BC-1	N 37-42-22	W 82-08-17	820 ft	BC approximately 1.1 miles west of the US 52 and CR 14 junction.

The methodology used in these studies is further detailed in the results documents (Baker 2007a and 2007b). The summary findings of the surveys are presented in Table 4-16 for the bio-stations within and adjacent to the proposed mine project area. The summary benthic macroinvertebrate metrics as presented in Table 4-16 include the following for each station:

- Total number of individuals;
- Total number of taxa;
- Total number of pollution sensitive taxa. The pollution sensitive taxa consist primarily of EPT or taxonomic Orders of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) generally consist of pollution intolerant, high water quality indicator species;
- Percent of individuals that are pollution sensitive;
- Percent of the total that is accounted for by the most dominant taxa;
- Percent of total that is accounted for by Chironomidae (midges). These organisms are tolerant of pollution;
- Hilsenhoff Biotic Index (HBI). Values range from 0 to 10. This metric uses tolerance values and abundance of organisms to estimate overall pollution. It is designed to evaluate organic pollution and would be expected to increase in response to increased perturbation within the aquatic ecosystem; and

- West Virginia Stream Condition Index (WVSCI). This metric was designed by Tetra Tech, Inc. using a database developed by WVDEP (Barbour *et al*. 2000). It was developed so that a single score can be determined from the six metrics (described above) for each location based on West Virginia reference values. Having metric values equal to the WVSCI reference would result in the score of 100. Scores of 78-100 are considered "Very Good"; scores of 68-78 are considered "Good"; scores of 45-68 are considered "Fair," with scores between 61 and 68 sometimes referred to as being in the "Gray Area"; scores of 22-45 are considered "Poor"; and, scores lower than 22 are considered "Very Poor."

Table 4-16
Summary of Benthic Macroinvertebrate Metrics

Sampling Station ID	Sampling Season	Total No. Individuals	Total No. Taxa	EPT Taxa	Percent EPT	Percent Chironomidae	Percent Two (2) Dominant Taxa	Hilsenhoff Biotic Index	WVSCI Total Score
PC-1	Spring	169	6	2	4	85	90	5.8	23
	Fall	28	6	4	57	32	79	4.9	61
PC-3	Spring	125	10	4	8	78	84	5.8	32
	Fall	25	6	2	28	52	76	4.7	39
PC-4	Spring	19	4	0	0	37	84	5.4	29
	Fall	17	6	3	41	41	71	4.7	46
PC-5	Spring	23	3	1	4	65	96	5.9	21
	Fall	56	7	3	16	73	86	5.6	31
PC-6	Spring	164	12	2	16	57	69	5.6	41
	Fall	18	6	2	17	67	78	5.5	32
PC-7	Spring	169	6	2	4	85	90	5.8	23
	Fall	29	3	1	28	69	97	5.7	25
PC-8	Spring	181	5	1	1	94	96	5.9	17
	Fall	51	5	1	27	63	90	5.5	30
PC-9	Spring	363	12	2	1	91	94	5.9	25
	Fall	25	2	1	4	96	100	6	14
PC-10	Spring	14	5	1	7	57	79	5.6	30
	Fall	123	8	3	37	49	80	4.9	43
RTB-1	Spring	180	18	11	86	3	46	2.9	91
	Fall	55	11	9	95	0	38	2.9	87
RTB-2	Spring	178	12	10	96	0	52	2.4	87
	Fall	32	9	7	72	25	47	3.5	71
CB-1	Spring	148	10	4	52	39	72	5	52
	Fall	2	1	0	0	100	NC	6	NC
CB-2	Spring	113	13	7	68	21	53	3.5	72
	Fall	0	0	0	NC	NC	NC	NC	NC

Table 4-16 (continued)
Summary of Benthic Macroinvertebrate Metrics

Sampling Station ID	Sampling Season	Total No. Individuals	Total No. Taxa	EPT Taxa	Percent EPT	Percent Chironomidae	Percent Two (2) Dominant Taxa	Hilsenhoff Biotic Index	WVSCI Total Score
CB-3	Spring	147	16	12	89	3	56	1.8	91
	Fall	21	8	6	86	10	52	3.1	73
CB-4	Spring	43	13	10	91	2	37	2.4	90
	Fall	59	13	8	73	3	37	3.2	82
CB-5	Spring	61	9	7	90	0	49	2.5	80
	Fall	164	19	13	88	4	32	2.9	98
CB-6	Spring	26	10	7	77	4	31	3.1	81
	Fall	46	13	8	50	17	33	3.8	76
LFCB-1	Spring	46	12	7	80	2	41	3.2	81
	Fall	77	10	8	81	6	52	3.9	75
LFCB-2	Spring	14	10	7	71	14	29	3.5	78
	Fall	180	20	14	83	6	40	3.5	96
RFHC-1	Spring	63	15	8	81	3	43	2.6	85
	Fall	11	6	5	91	9	64	3.9	67
RFHC-2	Spring	70	8	6	79	0	41	3.2	76
	Fall	29	12	9	86	7	36	3.6	83
RFHC-3	Spring	144	16	12	90	0	49	3.5	90
	Fall	16	7	6	69	0	56	3.4	69
RFHC-4	Spring	74	17	12	92	0	43	3.2	93
	Fall	43	12	10	77	5	37	3.5	84
RFHC-5	Spring	137	18	13	66	12	37	3.3	90
	Fall	37	12	9	68	8	43	3.6	79
RFHC-6	Spring	133	19	12	90	2	56	3.1	91
	Fall	23	10	7	83	4	43	3.1	79
RFHC-7	Spring	81	17	10	77	1	40	3.7	87
	Fall	79	13	9	92	3	48	2.9	85
HC-1	Spring	49	8	3	63	29	57	4.4	58
	Fall	67	9	6	93	1	82	3.2	69
LFHC-1	Spring	89	10	5	70	11	66	4.7	63
	Fall	126	13	6	82	4	74	3.6	71
LFHC-2	Spring	25	9	8	84	0	52	3	78
	Fall	80	14	12	85	13	31	3.4	90
LFHC-3	Spring	59	13	11	90	0	44	2.9	89
	Fall	47	11	6	57	13	45	3.7	71
LFHC-4	Spring	81	14	10	95	0	43	3.5	88
	Fall	53	13	8	83	4	58	4.3	76

Table 4-16 (continued)
Summary of Benthic Macroinvertebrate Metrics

Sampling Station ID	Sampling Season	Total No. Individuals	Total No. Taxa	EPT Taxa	Percent EPT	Percent Chironomidae	Percent Two (2) Dominant Taxa	Hilsenhoff Biotic Index	WVSCI Total Score
LFHC-5	Spring	46	14	11	83	0	37	3.7	88
	Fall	67	16	10	75	16	30	3	88
LFHC-6	Spring	55	15	11	89	0	49	3.8	87
	Fall	19	7	5	89	0	63	3.8	69
LFHC-7	Spring	57	17	12	60	14	30	3.8	87
	Fall	166	18	10	86	3	52	3.6	86
UTPC-1	Spring	54	13	9	61	22	56	3.3	73
	Fall	49	16	12	65	16	33	3.6	86
UTPC-2	Spring	77	15	11	92	1.3	42	2.3	93
	Fall	41	10	7	88	7	34	3	82
PRC-1	Spring	232	25	15	78	3	28	3.4	100
	Fall	107	18	12	81	11	32	3.6	92
PRC-2	Spring	158	18	13	89	3	43	3	95
	Fall	14	7	6	79	21	43	3.2	72
MC-1	Spring	220	17	12	94	1	68	3	87
	Fall	29	11	8	76	10	45	3.7	77
MC-2	Spring	43	12	9	86	0	53	2.5	83
	Fall	33	9	7	85	9	45	2.8	78
MC-3	Spring	50	16	10	70	6	40	2.8	86
	Fall	40	12	7	35	10	48	4.1	67
MC-4	Spring	44	13	8	64	14	34	2.7	81
	Fall	17	11	6	65	6	35	3.2	77
MC-5	Spring	121	19	12	82	4	48	3.1	91
	Fall	145	16	12	77	3	55	4.1	84
BC-1	Spring	132	15	5	47	30	52	5	64
	Fall	48	6	2	71	19	71	4.5	54

Notes: EPT = Ephemeroptera, Plecoptera, and Trichoptera; HBI = Hilsenhoff Biotic Index; WVSCI = West Virginia Stream Condition Index
Source: Baker, 2007a and 2007b

4.3.6.1 Ruth Trace Branch

Ruth Trace Branch (RTB) is a tributary of Pigeon Creek, and has a drainage area of 572 ac. The Ruth Trace Branch watershed is a linear watershed that is characterized by steep to very steep (slopes ranging from 60 to 80%) valley walls with a very narrow valley floor for most of its length.

Habitat Assessment Value (HAV) scores in the RTB and its tributaries ranged from 68 to 145. Generally, these scores reflected moderate to poor in-stream habitat and moderate substrate embeddedness. HAV scores originate from the USEPA's RBP (Barbour *et al*. 1999) for streams.

The results of CONSOL's assessment of this watershed indicated that the majority of RTB was unaltered (or affected by anthropogenic activities) (80%). Approximately 20 percent of RTB was incised. Ruth Trace Branch's watershed slope is unaltered (reflects the lack of anthropogenic alterations to the natural slope of the headwater watershed) in the proposed mine project area, based on CONSOL's assessment. The stream channel had a slope of greater than four percent. Seventeen of the 19 tributaries of RTB were located within the proposed mine project boundary. Three tributaries exhibited some incision, which ranged from five to ten percent of the channel.

The average sediment size in each stream varied, but the channels were dominated by cobbles, stones, and boulders. Bedrock was exposed in all of the streams to varying degrees. The amount of Large Woody Debris (LWD) in the tributaries ranged from two to 43 pieces, while the main stem of RTB had 212 pieces.

Forest dominated the land cover throughout the watershed with tree strata covering over 90 percent, and shrub strata covering over 50 percent. There were greater than five native tree species noted in each stream evaluated within the RTB watershed. Detritus covered more than 75 percent of the watershed.

The headwaters of RTB exhibited diverse benthic macroinvertebrate communities. HBI scores ranged between 2.4 to 3.5 over both sampling seasons, which indicated the stream was not affected by organic pollution. The WVSCI scores ranged from 78 to 91 in the spring and 71 to 87 in the fall, indicating overall "good" to "very good" water quality.

4.3.6.2 Conley Branch

Conley Branch is a tributary of Pigeon Creek and has a drainage area of 933 ac. The Conley Branch watershed exhibits a fan shape, consisting of two main forks and their unnamed tributaries. The RFCB has seven unnamed tributaries and the LFCB has one UT. The main

stem and its tributaries are confined by steep valley walls (slopes ranging from 60 to 90%) with narrow valley floors.

HAV scores in the RFCB and its tributaries ranged from 66 to 118. Generally, these scores reflected moderate to poor in-stream habitat, substrate embeddedness, and bank stability. HAV scores from the LFCB ranged from 47 to 105 because of generally poor in-stream habitat, increased sedimentation, and poor bank stability.

The proposed mine project boundary in the Conley Branch watershed included both the RFCB and LFCB and nine of their respective tributaries. CONSOL's assessments indicated that the streams in this watershed were unaltered except for approximately two percent of UT 1 of RFCB, which has been straightened as part of the construction of an access road. The watershed's slope is not altered, except for a few areas where access roads reduced the slope to less than five percent. Stream channels had a slope of greater than four percent.

The channel substrate of each stream was composed of relatively equal amounts of gravel, bedrock, boulders, and cobbles. Sand and silt are notable substrate components within the stream. The number of LWD evaluated in the tributaries ranged from one piece to 89 pieces. The RFCB had 114 pieces, and the LFCB had 159 pieces of LWD.

Land cover within the watershed was forested, and the access roads along the valley walls were covered by trees. Most of the watershed was covered by trees (at least 90%) and shrubs (at least 50%). The exception was the main stem of the LFCB, which had roughly the same coverage, but two percent of the watershed had been altered by construction of an access road. More than five native species of trees were counted throughout the watershed, and detritus comprised more than 75 percent ground cover.

Conley Branch exhibited diverse benthic macroinvertebrate communities. HBI scores ranged between 1.8 and 5.0 in the spring and between 2.9 and 6.0 in the fall, indicating that the level of organic pollution was minimal and was dependent on the station's location within the watershed. Stations in the headwater portion of the watershed exhibited low HBI scores, while stations lower in the watershed near residences had higher HBI score indicating possible organic pollution.

For example, the fall samples from the two stations (CB-1 and CB-2) located in the lower portion of the watershed near residences had only one taxon or no benthic macroinvertebrates in the samples (CB-1 and CB-2, respectively). An HBI score was calculated for CB-1 (6.0), but the WVSCI was not calculated for this station because the sample consisted of a single taxon. Despite relatively good water chemistry results, no benthic macroinvertebrates were collected in the fall from CB-2; therefore, no calculations were reported for this station. The lack of benthic macroinvertebrates at this station may be attributed to poor habitat since this station had the lowest HAV of all stations within the watershed (Baker 2007b).

WVSCI scores of the stations located in the lower portion of the watershed were between 52 and 72 in the spring, indicating “fair” to “good” conditions, and were not calculated in the fall (as explained above). In the upper portion of the Conley Branch watershed, WVSCI scores ranged from 80 to 91 in the spring and from 73 to 98 in the fall, indicating “good” to “very good” water quality.

4.3.6.3 Hell Creek/Left Fork of Hell Creek

The LFHC is a tributary of Pigeon Creek within the study area with a drainage area of 1,268 ac. The watershed exhibits a zigzag pattern, and it is characterized by steep to very steep (slopes ranging from 60 to 80%) valley walls with a narrow valley floor.

HAV scores in the LFHC and its tributaries ranged from 52 to 132. Generally, scores reflected marginal to poor in-stream habitat, substrate embeddedness, and bank stability. Conversely, HAV scores for UT1 of LFHC ranged from 71 to 139. The main stem had marginal in-stream habitat, moderate substrate embeddedness, and moderate bank stability. The tributaries of UT1 of LFHC scored lower with poor in-stream habitat and moderate to poor bank stability.

The main stem of the LFHC was evaluated in four reaches. Reaches 1 and 2 both had less than a four percent channel slope and Reaches 3 and 4 were greater than four percent. Seventeen LFHC tributaries were located within the proposed mine project boundary, and were also included in the assessment. The LFHC and many of its tributaries showed signs of incision and channelization. The majority of the watershed’s slope had not been altered, except in the areas where an access road had been constructed across the stream, lowering the watershed slope to less than five percent.

The substrate varied from stream to stream, with gravel, bedrock, and cobbles comprising the dominant size classes. Bedrock was also exposed in localized areas of streams throughout the watershed. The number of LWD evaluated in the tributaries ranged from one to 254 pieces, and the main stem had 114 pieces.

Dominant land cover was forest; however, there were a few areas where construction of access roads had removed narrow and linear areas of forest cover. Most of the watershed (greater than 90%) was covered by trees with the exception of UT4 of LFHC where 40 percent of the watershed had less than ten percent tree cover. Shrub cover varied throughout the watershed. There were more than five native species of trees counted in this watershed. Detritus was dense throughout the watershed with more than 75 percent coverage.

Hell Creek/LFHC supports a diverse benthic macroinvertebrate community. HBI scores were between 3.0 and 4.7 over both sampling seasons, indicating minimal organic pollution was present within the watershed. WVSCI scores ranged from 78 to 89 at all but two (out of eight) stations in the spring (scores at the other two stations were 58 and 63) and from 69 to 90 in the fall (all eight stations), indicating “good” to “very good” water quality. In the spring, the Hell Creek and most downstream station of LFHC had WVSCI scores of 58 and 63, respectively, indicating “fair” water quality.

4.3.6.4 Right Fork of Hell Creek

The RFHC has a 957-ac drainage area. The watershed is characterized by steep to very steep (slopes ranging from 60 to 80%) valley walls with a narrow valley floor.

HAV scores in the RFHC and its tributaries ranged from 51 to 126. Generally, these scores reflected moderate to poor in-stream habitat, substrate embeddedness, and bank stability. UT1 of RFHC and its tributaries had HAV scores from 43 to 118 with poor in-stream habitat and excessive sedimentation.

An assessment by CONSOL was conducted on a portion of the RFHC and 24 of its tributaries located within the proposed mine project boundary. The results indicated that greater than 80 percent of the watershed was unaltered. In the downstream portion of the RFHC, there were some areas of channel incision that were associated with channel straightening from the

installation of new gas well pads and access roads. The majority of the watershed's slope had not been altered, except in areas where access roads had been installed which lowered the percent slope to less than five percent. The stream channels had a slope of greater than four percent.

The average sediment size in the streams varied; however, cobbles were the dominant sediment size in most streams. Gravels and bedrock were present in all streams in low to moderate amounts, but were the dominant sediment sizes in three tributaries: UT1 of RFHC, UT3 of RFHC and UT2 of UT4 RFHC. The number of LWD evaluated in these streams varied from zero to 156 pieces in the tributaries, while the main stem had 185 pieces of LWD.

Land cover within the watershed was predominately forest with less forested cover in the vicinity of the gas wells and access roads. For example, the average percent cover of trees was between 70 and 90 percent for most of the watershed, but dropped to less than ten percent forest cover in the vicinity of the gas wells and access roads. The areas of greater tree density also had between 20 and 50 percent shrub cover. There were more than five native species of tress counted in this watershed. Detritus was dense with more than 75 percent coverage.

The RFHC supports a diverse benthic macroinvertebrate community. HBI scores ranged between 2.6 and 3.9 over both sampling seasons, which indicated the stream has been minimally affected by organic pollution. The WVSCI scores ranged from 76 to 91 in the spring and 67 to 85 in the fall, indicating overall "good" to "very good" water quality.

4.3.6.5 UT of Pigeon Creek

The watershed of the Unnamed Tributary of Pigeon Creek (UTPC) within the Buffalo Mountain Surface Mine study area has a drainage area of approximately 218 ac. The watershed is small and linear, characterized by steep valley walls (slopes ranging from 60 to 80%) and a narrow valley floor.

HAV scores in the UTPC and its tributaries ranged from 65 to 117. Generally, scores reflected poor in-stream habitat, increased substrate embeddedness, and moderate bank stability.

Three UTPC tributaries were located within the proposed mine project boundary, and were included in the assessment. The majority of the streams within the watershed were unaltered. Approximately 15 percent of the main stem was incised, and sections of the tributaries had been straightened because of construction of access roads. The watershed slope had been unaltered, as only small percentages of the watershed area (2 to 5%) were less than five percent slope because of the access roads. The stream channels had a slope of greater than four percent.

The average sediment size in the watershed was dominated by cobbles and boulders. The main stem of UTPC and UT 7 of UTPC had high amounts of exposed bedrock, 40 and 35 percent, respectively. The number of LWD evaluated in the tributaries of the UTPC ranged from four to 21 pieces, and the main stem had 91 pieces.

Land cover within the watershed was forest. The tributaries had over 90 percent tree cover, while 90 percent of the main stem had over 90 percent tree cover. The remaining ten percent of the main stem was 50 to 69 percent covered by trees. The watershed had over 50 percent shrub cover. There were more than five native species in each part of the watershed. Detritus covered over 75 percent of the ground throughout the watershed.

The UT of Pigeon Creek exhibited diverse benthic macroinvertebrate communities. HBI scores ranged from 2.3 to 3.6 over both sampling seasons, indicating no apparent organic pollution was present. WVSCI scores were 73 and 93 in the spring, indicating “good” to “very good” water quality, and were 86 and 82 in the fall, indicating “very good” water quality.

4.3.6.6 Pigeonroost Creek

Pigeonroost Creek, a tributary of Pigeon Creek, has a drainage area of 805 ac. Similar to Conley Branch, the watershed exhibits a fan shape consisting of Pigeonroost Creek and seven tributaries. The watershed is characterized by steep to very steep (slopes ranging from 60 to 80 percent) valley walls with a narrow floor.

HAV scores in Pigeonroost Creek and its tributaries ranged from 87 to 142. Overall, Pigeonroost Creek, UT1 of Pigeonroost Creek, and UT5 of Pigeonroost Creek had the highest scores, and exhibited optimal in-stream habitat.

The proposed mine project boundary includes the main stem of Pigeonroost Creek, six of its unnamed tributaries, and the Left Fork of Pigeonroost Creek (LFPRC). The majority of the streams within the Pigeonroost Creek watershed were unaltered, except for two tributaries, UT2 to Pigeonroost Creek and UT6 to Pigeonroost Creek, which had been altered by the construction of access roads. Pigeonroost Creek's watershed slope was unaltered except for narrow and linear areas throughout the watershed where access roads lowered the percent slope to less than five percent. The stream channels had a slope of greater than four percent.

Sediment size varied greatly throughout the watershed, as four of the tributaries were comprised mostly of boulders and cobbles, and UT4 of Pigeonroost Creek and Pigeonroost Creek were dominated by exposed bedrock. The remaining stream channels had a heterogeneous mixture of each substrate size class. The number of LWD evaluated in the tributaries ranged from one to 144 pieces, and the main stem had 204 pieces.

Land cover was forest throughout the watershed with a few areas having low percentages of urban/road or only covered by shrubs. Overall, the watershed had over 90 percent tree cover, and over 50 percent shrub cover. Similarly, the LFPRC had 70 to 90 percent tree cover and 10 to 50 percent shrub cover. There were more than five native species of trees counted in this watershed. Detritus covered over 75 percent of the watershed, and the LFPRC had detritus coverage between 50 and 75 percent.

4.3.6.7 UT of Stonecoal Branch of Pigeon Creek

The Unnamed Tributary of Stonecoal Branch (UTSCB) drains an approximately 315-ac watershed. General topography within the watershed ranges from steep to very steep (slopes ranging from 60 to 90%) with the exception of the flatter valley floor near the lower portion of the watershed.

HAV scores in the UTSCB ranged from 76 to 126. Generally, these scores reflected optimal to moderate in-stream habitat and moderate to poor bank stability.

The proposed mine project boundary encompassed 110 ft of UTSCB, which is the reach that was assessed. The majority of UTSCB was unaltered and approximately ten percent was

incised. The watershed slope was unaltered. The stream channel has a slope of greater than four percent.

Stream channel substrate was dominated (60%) by boulders and cobbles. Five LWD pieces were present in the reach.

Land cover within the watershed was forest (70%), and 30 percent was shrubs. Tree coverage ranged from 90 to 50 percent. Eighty-five percent of the shrub cover was within the ten to 19 percent range. Detritus covered 50 to 75 percent of the watershed.

Pigeonroost Creek exhibited a high diversity of benthic macroinvertebrate communities. One spring sample had 25 taxa, including 15 EPT taxa. HBI scores ranged from 3.0 to 3.6 over both sampling seasons, indicating the stream has not been affected by organic pollution. WVSCI scores ranged from 95 to 100 in the spring, indicating “very good” water quality, and from 72 to 92 in the fall, indicating “good” to “very good” water quality.

4.3.6.8 Miller Creek

Miller Creek (MC) is a direct tributary of the Tug Fork River. It has a drainage area of 6,028 ac. The headwaters of the Miller Creek watershed are located within the Buffalo Mountain Surface Mine permit area, and the portion of the watershed within this permit area is characterized by steep valley walls (slopes ranging from 60 to 80%) with narrow valley floors.

HAV scores in MC tributaries ranged from 76 to 131. Three tributaries (UT1 of MC, UT2 of MC, and UT3 of MC) had the highest HAV scores, but exhibited moderate to poor in-stream habitat, but optimal bank stability and riparian vegetation. UT4 of MC had the lowest scores with poor in-stream habitat due to excess sedimentation and channelization in the lower portion of the stream.

Two MC tributaries were located within the proposed mine project boundary, UT4 of MC and UT5 of MC. Each stream was channelized because of an access road traversing the headwater portion of each watershed; however, the stream channels scored in the unaltered range (95 and 97%). Despite the road traversing the watershed, the overall watershed slope for each stream scored in the unaltered range. Both stream channels had a slope greater than four percent.

The average sediment size in the tributaries was comprised of approximately 45 percent boulders and cobbles. The number of LWD evaluated varied greatly between the two streams because the length of stream potentially impacted by the proposed mine project boundary was longer for UT5 of MC than for UT4 of MC. UT5 of MC had 74 pieces of LWD, while UT4 of MC had six pieces.

Land cover was forested in both tributaries with a small percentage (4 to 5%) classified as urban roads because of access roads. Tree cover was greater than 90 percent, and shrub cover was more than 50 percent. More than five native species of trees were counted in the watershed. Detritus coverage over 75 percent was present within the watershed.

The benthic macroinvertebrate community within MC was fairly diverse. HBI scores ranged from 2.5 to 3.1 in the spring and from 2.8 to 4.1 in the fall, indicating no apparent organic pollution was present. WVSCI scores ranged from 83 to 91 in the spring, indicating “very good” water quality, and ranged from 67 to 84 in the fall, indicating a wide range of “fair” to “very good” water quality.

Fisheries resources were sampled at MC-5, the most downstream station on MC. A total of 236 fish were captured, representing three species. Blacknose dace (*R. atratulus*) was the most abundant species comprising 80 percent of the sample, and was a common inhabitant of headwater stream reaches. Standing crop estimate was 3.61 kilograms per ac.

4.3.6.9 Baseline Surface Water Quality

To provide a baseline history for the study area, Compliance Monitoring Laboratories, Inc. of Chapmanville, West Virginia, collected a minimum of six samples for 27 baseline points for surface water quality. For most samples, collection dates were between the fall of 2005 and the fall of 2006; additional samples were collected between the summer of 2006 and the fall of 2007. Methods and parameters were selected and followed in accordance with those recommended in the *Interim Chemical/Biological Monitoring Protocol for Coal Mining Permit Applications* (Hoffman 2000).

Baseline data from the benthic macroinvertebrate reports are summarized in Tables 4-17 and 4-18 for the 2006 spring and autumn seasons, respectively.

Table 4-17
Summary of Water Quality Sampling in the Mine Project Area Spring 2006

Stream	Sampling Location	WVSCI[1]	Water Temperature	Dissolved Oxygen	Specific Conductance[2]	HAV[3]
Pigeon Creek	PC-1	23	8.48c	8.25 mg/L	19	110
	PC-3	32	7.82c	9.52 mg/L	11.6	117
	PC-4	29	8.40c	8.94 mg/L	19.3	125
	PC-5	21	16.18c	9.71 mg/L	49.5	107
	PC-6	41	16.08c	9.88 mg/L	51.3	124
	PC-7	23	15.55c	10.14 mg/L	51.6	116
	PC-8	17	15.76c	9.45 mg/L	59.6	103
	PC-9	25	15.01c	9.39 mg/L	59.5	102
	PC-10	30	9.15c	6.12 mg/L	19.5	109
Ruth Trace Branch	RTB1	91	8.44c	10.1 mg/L	4.1	118
	RTB-2	87	8.51c	10.36 mg/L	4.1	146
Conley Branch	CB-1	52	5.17c	11.68 mg/L	3.5	75
	CB-2	72	5.02c	9.62 mg/L	3.0	91
	CB-3	91	7.32c	10.12 mg/L	4.5	103
	CB-4	90	7.85c	10.11 mg/L	4.5	101
	CB-5	80	7.52c	12.79 mg/L	4.5	89
	CB-6	81	7.45c	12.59 mg/L	4.2	99
	LFCB-1	81	5.47c	10.84 mg/L	3.1	113
	LBCB-2	78	5.86c	11.04 mg/L	2.8	100
Right Fork of Hell Creek	RFHC-1	85	7.69c	11.32 mg/L	4.9	87
	RFHC-2	76	5.57c	13.11 mg/L	11.5	70
	RFHC-3	90	3.65c	14.45 mg/L	14.4	103
	RFHC-4	93	3.63c	13.83 mg/L	16.5	110
	RFHC-5	90	3.43c	14.33 mg/L	4.4	93
	RFHC-6	91	3.70c	9.36 mg/L	3.5	91
	RFHC-7	87	4.32c	11.34 mg/L	2.4	103
Hell Creek/ Left Fork of Hell Creek	HC-1	58	7.50c	10.80 mg/L	4.1	94
	LFHC-1	63	7.45c	11.15 mg/L	3.4	98
	LFHC-2	78	9.14c	11.04 mg/L	2.5	105
	LFHC-3	89	7.35c	11.39 mg/L	2.5	117
	LFHC-4	88	9.54c	10.65 mg/L	2.7	131
	LFHC-5	88	9.73c	10.50 mg/L	3.0	100
	LFHC-6	87	8.94c	10.40 mg/L	2.6	92
	LFHC-7	87	9.38c	10.92 mg/L	4.1	139
UT of Pigeon Creek	UTPC-1	73	8.78c	10.18 mg/L	2.9	114
	UTPC-2	93	10.94c	9.91 mg/L	2.3	107
Pigeonroost Creek	PRC-1	100	6.86c	10.41 mg/L	4.4	152
	PRC-2	95	7.71c	10.23 mg/L	4.2	134
Miller Creek	MC-1	87	11.32c	9.28 mg/L	5.8	152
	MC-2	83	12.07c	9.43 mg/L	6.6	111
	MC-3	86	11.15c	9.26 mg/L	43.0	141
	MC-4	81	11.97c	9.63 mg/L	4.5	132
	MC-5	91	11.79c	10.66 mg/L	8.6	159

Table 4-17 (continued)
Summary of Water Quality Sampling in the Mine Project Area Spring 2006

Stream	Sampling Location	WVSCI[1]	Water Temperature	Dissolved Oxygen	Specific Conductance[2]	HAV[3]
Buffalo Creek	BC-1	64	12.86c	10.72 mg/L	21.6	121

Source: Corps 2007
[1] West Virginia Stream Condition Index
[2] Microsiemens per centimeter
[3] Habitat Assessment Value

Table 4-18
Summary of Water Quality Sampling in the Mine Project Area Autumn 2006

Stream	Sampling Location	WVSCI[1]	Water Temperature	Dissolved Oxygen	Specific Conductance[2]	HAV[3]
Pigeon Creek	PC-1	61	3.96c	14.51 mg/L	83.3	86
	PC-3	39	4.01c	14.73 mg/L	85.3	86
	PC-4	46	3.79c	14.83 mg/L	85.7	86
	PC-5	31	4.35c	15.15 mg/L	89.6	92
	PC-6	32	3.59c	14.38 mg/L	90.3	85
	PC-7	25	3.34c	14.08 mg/L	90.5	86
	PC-8	30	3.14c	13.09 mg/L	97.6	82
	PC-9	14	3.14c	13.51 mg/L	101.9	89
	PC-10	43	4.00c	14.73 mg/L	82.9	87
Ruth Trace Branch	RTB1	87	4.00c	13.04 mg/L	4.2	127
	RTB-2	71	4.55c	11.69 mg/L	4.2	121
Conley Branch	CB-1	N/A	3.67c	12.70 mg/L	8.0	82
	CB-2	N/A	4.22c	12.29 mg/L	6.3	69
	CB-3	73	3.40c	13.25 mg/L	4.7	105
	CB-4	82	3.98c	12.59 mg/L	4.7	115
	CB-5	98	3.51c	12.49 mg/L	4.9	101
	CB-6	76	3.50c	12.82 mg/L	4.7	122
	LFCB-1	75	3.13c	13.30 mg/L	5.7	105
	LBCB-2	96	3.97c	12.61 mg/L	5.7	121
Right Fork of Hell Creek	RFHC-1	67	2.89c	14.15 mg/L	9.7	94
	RFHC-2	83	3.27c	12.79 mg/L	14.8	90
	RFHC-3	69	4.19c	12.40 mg/L	17.9	116
	RFHC-4	84	4.07c	13.10 mg/L	20.2	128
	RFHC-5	79	3.49c	12.30 mg/L	4.8	96
	RFHC-6	79	3.65c	13.05 mg/L	5.2	135
	RFHC-7	85	4.01c	13.84 mg/L	4.6	138

Table 4-18 (continued)
Summary of Water Quality Sampling in the Mine Project Area Autumn 2006

Stream	Sampling Location	WVSCI[1]	Water Temperature	Dissolved Oxygen	Specific Conductance[2]	HAV[3]
Hell Creek/ Left Fork of Hell Creek	HC-1	69	3.88c	12.62 mg/L	9.1	98
	LFHC-1	71	3.78c	12.57 mg/L	7.4	96
	LFHC-2	90	1.86c	13.04 mg/L	6.8	141
	LFHC-3	71	2.28c	13.18 mg/L	5.1	137
	LFHC-4	76	2.11c	7.58 mg/L	4.8	114
	LFHC-5	88	2.10c	7.78 mg/L	5.0	94
	LFHC-6	69	3.07c	9.92 mg/L	4.8	101
	LFHC-7	86	3.13c	12.46 mg/L	12.0	135
UT of Pigeon Creek	UTPC-1	86	4.64c	12.26 mg/L	7.5	125
	UTPC-2	82	6.05c	12.10 mg/L	5.6	126
Pigeonroost Creek	PRC-1	92	3.23c	12.73 mg/L	4.9	133
	PRC-2	72	3.89c	12.97 mg/L	4.7	115
Miller Creek	MC-1	77	4.25c	12.21 mg/L	17.8	111
	MC-2	78	3.14c	13.37 mg/L	18.0	108
	MC-3	67	2.83c	12.71 mg/L	6.5	94
	MC-4	77	3.06c	12.26 mg/L	6.5	86
	MC-5	84	0.48c	14.22 mg/L	13.9	116
Buffalo Creek	BC-1	54	4.31c	13.80 mg/L	33.2	94

Source: Corps 2007
[1] West Virginia Stream Condition Index
[2] Microsiemens per centimeter
[3] Habitat Assessment Value

In comparing the metrics provided in Tables 4-17 and 4-18, the following definitions are helpful. The West Virginia Stream Condition Index (WVSCI) consists of six benthic community metrics combined into a single multimetric index. Dissolved oxygen analysis measures the amount of gaseous oxygen (O_2) dissolved in a solution. Oxygen gets into water by diffusion from the surrounding air, by aeration, and as a waste product of photosynthesis. Specific conductance is a measure of how well water can conduct an electrical current. Conductivity increases with increasing amounts and mobility of ions. These ions, which come from the breakdown of compounds, conduct electricity because they are negatively or positively charged when dissolved in water. Specific conductance is an indirect measure of the presence of dissolved solids such as chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium, and iron, and can be used as an indicator of water pollution. The HAVs allow a comparison of physical stream parameters as they relate to habitat conditions for aquatic organisms. As indicated above, HAVs originate from the USEPA's RBP for streams. The RBP requires evaluation of a

total of ten parameters, including embeddedness, sediment deposition, bank stability, and vegetative protection (amount of stream bank covered by vegetation), among others.

4.3.6.10 High Quality Aquatic Resources

Through agency coordination, WVDNR concluded that there are no known sensitive habitats in proximity to the proposed mine project. However, by letter to CONSOL during the SCMRA permit review, the agency identified Pigeon Creek as a high quality stream within two miles of the Buffalo Mountain Surface Mine project area. Pigeon Creek was identified based on the agency's 2001 *West Virginia High Quality Streams* list. That publication also identifies the Tug Fork River, which is further downstream of the mine project area, as a high quality. Both of these waterways also have Total Maximum Daily Loads (TMDLs) established for certain pollutants. Additionally, the Tug Fork River is on the state 303(d) List for fecal coliform and biological impairment; the fecal coliform impairment extends from the mouth to river mile 35.7 and the biological impairment reaches from river mile 51.6 to the headwaters (WVDEP, 2009b).

None of the streams within or downstream of the Buffalo Mountain Surface Mine project area are *Outstanding National Resource Waters*. The mine project area streams are not stocked with trout and are not known to contain native trout (WVDNR 2008). The mine project area would not be within a wilderness area or a state or federal park or forest. No mine project area streams are listed on the Wild and Scenic Rivers list or list of rivers under study for designation to the National Wild and Scenic Rivers System (NPS 2003 and 2008).

At a minimum, all waters of the State are designated for the Propagation and Maintenance of Fish and Other Aquatic Life (Category B) and for Water Contact Recreation (Category C) consistent with CWA goals (CSR §47-2-6.1). Miller Creek, a receiving stream immediately to the west of the mine project area, meets the criteria for these uses, is not currently listed as an impaired stream, and does not have established TMDLs. Because of these conditions, MC is presumed to be a High Quality Water, according to the legislative definition listed above.

4.3.6.11 CWA Section 303(d), Degraded or Impaired Waters

The proposed surface mine construction would meet the conditions of the applicable Tug Fork River and Pigeon Creek TMDLs for aluminum, iron, manganese, and pH. TMDL conditions are

currently established in USEPA's *Metals and pH TMDLs for the Tug Fork River Watershed, West Virginia* (USEPA 2002). A TMDL is designed to restore and maintain a waterbody's designated uses. The TMDL conditions would be met either by accepting water quality-based limits that meet in-stream standards at the point of discharge (outlet of BMP) or by achieving discharge quality that is better than the wasteload allocation prescribed by the TMDL for a reclaimed and released NPDES permit(s). The conditions would be established through appropriate NPDES permit limits. These alternatives follow the stipulations outlined in the Tug Fork River watershed TMDL for future growth (USEPA 2002).

Current research on the water quality below mountaintop/valley fills indicates that these water quality criteria would be unlikely to be exceeded as a result of the Buffalo Mountain Surface Mine discharges. Pond *et al.* (2008) and Bryant and Childers (2002) did not find a correlation between dissolved aluminum and locations below valley fills. Bryant and Childers cited older studies that found a correlation with iron levels, but Pond *et al.* found no correlation between iron levels and locations below valley fills. In addition, Pond *et al.* (2008) did not find a correlation between the presence of valley fills and temperature or sedimentation levels, factors that can influence the concentration of metals in the waters below the fills. It is anticipated, however, that effluent from the mine project area would affect a temporary spike in manganese levels. Bryant and Childers found a correlation between mountaintop mining/valley fill projects and manganese levels. However, the mine project would be held to the conditions mandated by the NPDES permit for manganese.

As indicated in the TMDL for the Tug Fork watershed (USEPA 2002), metals TMDLs (iron, aluminum, and manganese) are used as a surrogate for a separate pH TMDL calculation. Based on the conclusions above, it would be anticipated that there may be a temporary spike in pH levels associated with manganese released from the mining operations; however, persistent low pH levels would not be anticipated. Through compliance with the NPDES for the metals concentrations, conditions for pH would be met as well.

In addition to having impairment based on the criteria listed above, the Tug Fork River is currently listed on the West Virginia 303(d) List for exceeding the fecal coliform and CNA Biological criteria (WVDEP 2006 and 2008a). The source of this pollution is listed as "Unknown." TMDLs for these impairments to the Tug Fork River are not anticipated until 2021 for fecal coliform and 2016 for CNA Biological.

Recent studies within the Pigeon Creek watershed also indicate problems with fecal coliform (CONSOL 2012).

4.3.6.12 Potential Impacts

Buffalo Mountain Surface Mine

Table 4-19 presents the general size information of each proposed valley fill and associated pond. The proposed drainage and sediment control structures (ponds) would be required to provide storm storage and sediment control for the surface operations. Because of the narrow valley floors, these structures could not be located outside stream channels. Some of the valley fills would use two ponds to provide adequate sediment control and compliance with NPDES limits prior to release downstream.

Drainage from the toe of the valley fills would be routed to the ponds and discharged through the constructed outlets (spillways) prior to entering stream segments below the valley fills. Any effects would be temporary, as the ponds would be removed during reclamation when adequate vegetation has been established and reclaimed in accordance with the mining and reclamation plan. The valley fills would drain directly to the stream segments below. As the valley fills would have rock underdrains, their drainage would generally create a more consistent perennial flow pattern downstream.

Table 4-19
Summary of Valley Fills and Associated Structures for Mine Project Area

Valley Fill No.	Total Volume of Fill (Cubic Yds)	In-Stream Volume of Fill (Cubic Yds)	Drainage Area at Fill Toe (Ac)	Surface Size of Pond (Ac)	Drainage Area at Pond Toe (Ac)
1	30,964,783	563.0	217.2	1.16	329.9
3	4,393,795	88.5	50.4	0.34	89.6
4	5,893,795	310.8	60.6	0.66[a]	70.6[a]
5	15,144,567	343.2	111.3	0.57	151.6
6	8,969,577	219.0	97.4	0.81[b]	126.8[b]
7	6,330,897	119.4	102.6	0.87[c]	358.7[c]
8	14,267,281	427.2	167.9	0.73[d]	221.9[d]
9	8,210,069	640.7	120.4	0.91[e]	146.7[e]
10A	6,959,176	374.1	153.6	1.19[f]	326.3[f]
10B	10,578,402	625.6	125.3		

Table 4-19 (continued)
Summary of Valley Fills and Associated Structures for Mine Project Area

Valley Fill No.	Total Volume of Fill (Cubic Yds)	In-Stream Volume of Fill (Cubic Yds)	Drainage Area at Fill Toe (Ac)	Surface Size of Pond (Ac)	Drainage Area at Pond Toe (Ac)
11	25,826,387	440.2	190.5	1.02[g]	240.4[g]
12	4,525,631	158.3	75.7	0.63	102.4

[a]Combined acreage of Pond Nos. 4A and 4B. [b]Combined acreage of Pond Nos. 6A and 6B.
[c]Combined acreage of Pond Nos. 7A and 7B. [d]Combined acreage of Pond Nos. 8A and 8B. [e]Combined acreage of Pond Nos. 9A and 9B.
[f]Combined acreage of Pond Nos. 10A and 10B, which would both be downstream of Valley Fill Nos. 10A and 10B.
[g]Combined acreage of Pond Nos. 11A and 11B.

Valley Fill No. 1

Valley Fill No. 1 would be located in RTB. The valley fill and its associated mine-through areas, pond, and IUAR stream crossing would impact 2,789 lf (0.38 ac) of perennial stream, 3,770 lf (0.36 ac) of intermittent stream, and 2,433 lf (0.17 ac) of ephemeral stream. Of this impact, 7,928 lf (0.75 ac) would be permanently filled and 1,064 lf (0.16 ac) would be temporarily filled. The permanent impacts include 90 lf (less than 0.01 ac) that would be mined through. The temporary impacts include 855 lf (0.13 ac) due to the construction of Pond No. 1. The temporary impacts would also include the crossing of UT 3 of RTB by IUAR No. 1. This IUAR would impact 65 lf (less than 0.01 ac) of intermittent stream.

The valley fill would contain approximately 30.965 million cubic yards of material, of which approximately 563 cubic yards would be discharged within the Corps' regulatory jurisdiction. Construction of the pond embankment would result in the temporary discharge of approximately 38.76 cubic yards of fill material within the Corps' regulatory jurisdiction. Pond No. 1 would encompass 1.16 surface ac, including both embankment and pool. The total drainage area at the toe of Pond No. 1 would be 329.9 ac. At the toe of Valley Fill No. 1, it would be 217.2 ac.

Valley Fill No. 3

Valley Fill No. 3 would be located in the UT 1 of the RFCB. The valley fill and its associated pond and IUAR stream crossing would impact 670 lf (0.10 ac) of perennial stream, 802 lf (0.09 ac) of intermittent stream, and 173 lf (0.01 ac) of ephemeral stream. Of this impact, 1,195 lf (0.14 ac) would be permanently filled, and 450 lf (0.05 ac) would be temporarily filled. The permanent impacts do not include any mine-through impacts. The temporary impacts include 395 lf (0.04 ac) due to the construction of Pond No. 3. The temporary impacts also include the

crossing of an UT to the UT 1 of the RFCB by IUAR No. 3. This IUAR would impact 55 lf (less than 0.01 ac) of intermittent stream.

The valley fill would contain approximately 4.394 million cubic yards of fill material, of which approximately 89 cubic yards would be discharged within the Corps' regulatory jurisdiction. Construction of the pond embankment would result in the temporary discharge of approximately 11.77 cubic yards of fill material in-stream. Pond No. 3 would encompass 0.34 surface ac, including both embankment and pool. The total drainage area at the toe of Pond No. 3 would be 89.6 ac, and at the toe of Valley Fill No. 3 would be 50.4 ac.

Valley Fill No. 4

Valley Fill No. 4 would be located in the UT 5 of Miller Creek. The valley fill and its associated mine-through areas and two ponds would impact 1,562 lf (0.26 ac) of perennial stream, 960 lf (0.08 ac) of intermittent stream, and 60 lf (less than 0.01 ac) of ephemeral stream. Of this impact, 2,087 lf (0.26 ac) would be permanently filled, and 495 lf (0.08 ac) would be temporarily filled. The permanent impacts include 132 lf (0.01 ac) that would be mine-through. The temporary impacts include 180 lf (0.03 ac) due to the construction of Pond No. 4A and 315 lf (0.05 ac) due to the construction of Pond No. 4B.

The valley fill would contain approximately 5.894 million cubic yards of material, of which approximately 311 cubic yards would be discharged within the Corps' regulatory jurisdiction. Construction of the pond embankments would result in the temporary discharge of approximately 12.35 and 16.17 cubic yards of fill material within the Corps' regulatory jurisdiction for Pond No. 4A and Pond No. 4B, respectively. Pond Nos. 4A and 4B would encompass 0.66 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 4B, which would be downstream of Pond No. 4A, would be 70.6 ac, and at the toe of Valley Fill No. 4 would be 60.6 ac.

Valley Fill No. 5

Valley Fill No. 5 would be located in the UT 1 of RFHC. The valley fill and its associated pond would impact 2,015 lf (0.15 ac) of perennial stream, 865 lf (0.08 ac) of intermittent stream, and 895 lf (0.05 ac) of ephemeral stream. Of this impact, 3,240 lf (0.23 ac) would be permanently

filled, and 535 lf (0.04 ac) would be temporarily filled. The permanent discharges of fill material would not include any mine-through impacts. The temporary impacts would all be due to the construction of Pond No. 5.

The valley fill would contain approximately 15.145 million cubic yards of material, of which approximately 343 cubic yards would be discharged into waters of the U.S. Construction of the pond embankment would result in the temporary discharge of approximately 11.45 cubic yards of fill material into waters of the U.S. Pond No. 5 would encompass 0.57 surface ac, including both embankment and pool. The total drainage area at the toe of Pond No. 5 would be 151.6 ac, and at the toe of Valley Fill No. 5 would be 111.3 ac.

Valley Fill No. 6

Valley Fill No. 6 would be located in the LFCB. The valley fill and its associated pond would not impact any perennial stream, and would impact 2,347 lf (0.26 ac) of intermittent stream and 390 lf (0.03 ac) of ephemeral stream. Of this impact, 2,152 lf (0.21 ac) would be permanently filled, and 585 lf (0.07 ac) would be temporarily filled. The permanent impacts do not include any mine-through impacts. The temporary impacts include 431 lf (0.06 ac) due to the construction of Pond No. 6A and 154 lf (0.01 ac) due to the construction of Pond No. 6B.

The valley fill would contain approximately 8.970 million cubic yards of material, of which approximately 219 cubic yards would be discharged into waters of the U.S. Construction of the pond embankments would result in the temporary discharge of approximately 12.98 and 5.67 cubic yards of fill material into waters of the U.S. for Pond No. 6A and Pond No. 6B, respectively. Pond Nos. 6A and 6B would encompass 0.81 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 6B, which would be downstream of Pond No. 6A, would be 126.8 ac, and at the toe of Valley Fill No. 6 would be 97.4 ac.

Valley Fill No. 7

Valley Fill No. 7 would be located in the UT 4 of the RFHC. The valley fill and its associated pond would impact 695 lf (0.11 ac) of perennial stream, 2,020 lf (0.27 ac) of intermittent stream, and 30 lf (less than 0.01 ac) of ephemeral stream. Of this impact, 1,505 lf (0.20 ac) would be

permanently filled, and 1,240 lf (0.19 ac) would be temporarily filled. The temporary impacts include 455 lf (0.07 ac) due to the construction of Pond No. 7A and 695 lf (0.11 ac) due to the construction of Pond No. 7B.

The valley fill would contain approximately 6.331 million cubic yards of material, of which approximately 119 cubic yards would be discharged into waters of the U.S. Construction of the pond embankments would result in the temporary discharge of approximately 12.01 and 7.32 cubic yards of fill material into waters of the U.S. for Pond No. 7A and Pond No. 7B, respectively. Pond Nos. 7A and 7B would encompass 0.87 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 7B, which would be downstream of Pond No. 7A, would be 358.7 ac, and at the toe of Valley Fill No. 7 would be 102.6 ac.

Valley Fill No. 8

Valley Fill No. 8 would be located in the RFHC. The valley fill and its associated ponds and IUAR stream crossings would impact 2,200 lf (0.34 ac) of perennial stream, 1,580 lf (0.18 ac) of intermittent stream, and 1,460 lf (0.14 ac) of ephemeral stream. Of this impact, 4,440 lf (0.54 ac) would be permanently filled, and 800 lf (0.12 ac) would be temporarily filled. The permanent impacts include 40 lf (less than 0.01 ac) that would be mined through. The temporary impacts include 280 lf (0.04 ac) due to the construction of Pond No. 8A and 480 lf (0.08 ac) due to the construction of Pond No. 8B. The temporary impacts also include the crossings of unnamed tributaries to the RFHC by IUAR No. 8. This IUAR would impact 40 lf (less than 0.01 ac) of intermittent stream.

The valley fill would contain approximately 14.267 million cubic yards of material, of which approximately 427 cubic yards would be discharged into waters of the U.S. Construction of the pond embankments would result in the temporary discharge of approximately 10.87 and 5.97 cubic yards of fill material into waters of the U.S. for Pond No. 8A and Pond No. 8B, respectively. Pond Nos. 8A and 8B would encompass 0.73 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 8B, which would be downstream of Pond No. 8A, would be 221.9 ac, and at the toe of Valley Fill No. 8 would be 167.9 ac.

Valley Fill No. 9

Valley Fill No. 9 would be located in the UT 1 of LFHC. The valley fill and its associated ponds would impact 2,170 lf (0.45 ac) of perennial stream, 1,560 lf (0.24 ac) of intermittent stream, and 370 lf (0.03 ac) of ephemeral stream. Of this impact, 3,315 lf (0.54 ac) would be permanently filled, and 785 lf (0.19 ac) would be temporarily filled. The permanent impacts include 500 lf (0.05 ac) that would be mined through. The temporary impacts include 385 lf (0.09 ac) due to the construction of Pond No. 9A and 400 lf (0.10 ac) due to the construction of Pond No. 9B.

The valley fill would contain approximately 8.210 million cubic yards of material, of which approximately 641 cubic yards would be discharged into waters of the U.S. Construction of the pond embankments would result in the temporary discharge of approximately 15.70 and 36.10 cubic yards of fill material into waters of the U.S. for Pond No. 9A and Pond No. 9B, respectively. Pond Nos. 9A and 9B would encompass 0.91 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 9B, which would be downstream of Pond No. 9A, would be 146.7 ac, and at the toe of Valley Fill No. 9 would be 120.4 ac.

Valley Fill Nos. 10A AND 10B

Valley Fill No. 10A would be located in the LFHC, and Valley Fill No. 10B would be located in UT 10 of the LFHC. Drainage control of both valley fills would be provided by Pond Nos. 10A and 10B. Both valley fills and their associated ponds and single IUAR stream crossing would impact 3,950 lf (0.74 ac) of perennial stream, 4,419 lf (0.58 ac) of intermittent stream, and 529 lf (0.04 ac) of ephemeral stream. Of this impact, 7,473 lf (1.06 ac) would be permanently filled, and 1,425 lf (0.29 ac) would be temporarily filled. The permanent impacts include 295 lf (0.02 ac) that would be mined through. The temporary impacts include 770 lf (0.15 ac) due to the construction of Pond No. 10A and 600 lf (0.14 ac) due to the construction of Pond No. 10B. The temporary impacts also include the crossing of the UT 8 of the LFHC by IUAR No. 10. This IUAR would impact 55 lf (less than 0.01 ac) of intermittent stream.

Valley Fill No. 10A would contain approximately 6.959 million cubic yards of material, of which approximately 374 cubic yards would be discharged into waters of the U.S. Valley Fill No. 10B would contain approximately 10.578 million cubic yards of material, of which approximately 626

cubic yards would be discharged into waters of the U.S. Construction of the pond embankments would result in the temporary discharge of approximately 14.66 and 29.06 cubic yards of fill material into waters of the U.S. for Pond No. 10A and Pond No. 10B, respectively. Pond Nos. 10A and 10B would encompass 1.19 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 10B, which would be downstream of Pond No. 10A, would be 326.3 ac. The total drainage area at the toe of Valley Fill No. 10A would be 153.6 ac, and at the toe of Valley Fill No. 10B would be 125.3 ac.

Valley Fill No. 11

Valley Fill No. 11 would be located in Pigeonroost Creek. The valley fill and its associated mine-through areas, pond and IUAR stream crossings would impact 1,448 lf (0.35 ac) of perennial stream, 3,961 lf (0.52 ac) of intermittent stream, and 300 lf (0.02 ac) of ephemeral stream. Of this impact, 4,520 lf (0.71 ac) would be permanently filled, and 1,189 lf (0.26 ac) would be temporarily filled. The permanent impacts include 140 lf (0.01 ac) that would be mined-through. The temporary impacts include 347 lf (0.10 ac) due to the construction of Pond No. 11A and 528 lf (0.11 ac) due to the construction of Pond No. 11B. The temporary impacts also include the crossings of the UT 2 of Pigeonroost Creek, UT 3 of Pigeonroost Creek and the UT 1 of the UT 1 of Pigeonroost Creek by IUAR No. 11. This IUAR would impact 314 lf (0.04 ac) of perennial, intermittent, and ephemeral stream.

The valley fill would contain approximately 25.826 million cubic yards of material, of which approximately 440 cubic yards would be discharged into waters of the U.S. Construction of the pond embankments would result in the temporary discharge of approximately 19.00 and 21.72 cubic yards of fill material into waters of the U.S. for Pond No. 11A and Pond No. 11B, respectively. Pond Nos. 11A and 11B would encompass 1.02 surface ac, including both embankments and pools. The total drainage area at the toe of Pond No. 11B, which would be downstream of Pond No. 11A, would be 240.4 ac, and at the toe of Valley Fill No. 11 would be 190.5 ac.

Valley Fill No. 12

Valley Fill No. 12 would be located in the UT of Pigeon Creek. The valley fill and its associated pond and IUAR stream crossings would impact no perennial stream, 1,490 lf (0.16 ac) of

intermittent stream, and 487 lf (0.03 ac) of ephemeral stream. Of this impact, 1,330 lf (0.13 ac) would be permanently filled, and 647 lf (0.06 ac) would be temporarily filled. The permanent impacts do not include any mine-through impacts. The temporary impacts include 552 lf (0.05 ac) due to the construction of Pond No. 12. The temporary impacts also include the crossings of the UT 6 of the UT of Pigeon Creek by IUAR No. 12. This IUAR would impact 95 lf (less than 0.01 ac) of intermittent and ephemeral stream.

The valley fill would contain approximately 4.526 million cubic yards of material, of which approximately 158 cubic yards would be discharged into waters of the U.S. Construction of the pond embankment would result in the temporary discharge of approximately 12.69 cubic yards of fill material in-stream. Pond No. 12 would encompass 0.63 surface ac, including both embankment and pool. The total drainage area at the toe of Pond No. 12 would be 102.4 ac, and at the toe of the Valley Fill No. 12 would be 75.7 ac.

Mine-Through Areas

Mine-through areas not associated with the proposed valley fills would impact 100 lf (less than 0.01 ac) of intermittent stream within an UT of Stonecoal Branch of Pigeon Creek. Approximately 4.94 cubic yards of fill material would be discharged in-stream. The drainage area above the most downstream permanent impact would be 6.45 ac.

King Coal Highway

The No-Build Alternative would impact 32,217 lf of streams. The Delbarton to Belo Project would impact 47,385 lf of streams (39,285 lf within the proposed Buffalo Mountain Surface Mine and 8,100 lf of stream impacts within the highway's northern and southern termini areas). An additional 9,215 lf of temporary impacts would occur with the Delbarton to Belo Project.

Table 4-20 summarizes stream impacts for both alternatives. Considerable additional information, including calculations of impacts by watershed, is found in the CONSOL's EID and June 2010 CMP. The locations of study area streams are shown on Figure 4-10.

Table 4-20
Comparison of Stream Impacts

Location	Permanent			Temporary		
	Perennial & Intermittent (lf)	Ephemeral (lf)	Total (lf)	Perennial & Intermittent (lf)	Ephemeral (lf)	Total (lf)
No-Build Alternative						
Entire Length	**32,217 lf**	**0**	**32,217 lf**	Not determined during EIS process		
Delbarton to Belo Project						
Mine Permit Area	32,253	7,032	39,285	9,120	95	9,215
Highway Termini Areas	7,025	1,075	8,100	0	0	0
Total	**39,278**	**8,107**	**47,385**	**9,120**	**95**	**9,215**

4.3.6.13 Avoidance, Minimization, and Mitigation

Valley Fill Design

If a proposed project area is defined as a steep slope area (having an average slope exceeding 20 degrees), excavated material must be returned to the mined area and placed within designated excess spoil storage areas in a manner that is consistent with the requirements of the WVDEP Final AOC Guidance Document, dated February 19, 2004, developed in accordance with the Bragg vs. Robertson Consent Decree, approved by the U.S. District Court on December 31, 1998. This guidance details an extensive yet reproducible method for determining valley fill locations such that fill sizes are optimized to reduce stream impacts. The proposed mine project area is a steep slope area, and therefore, the WVDEP Final AOC Guidance Document was employed in valley fill design.

The Final AOC Guidance Document is an extensive document detailing proper procedure for overburden optimization. The primary objectives and requirements of the procedure are to:

1) Determine mining method to be utilized by the proposed operation.

2) Determine if the overall slope of the proposed project area is greater than 20 degrees and would be required to follow the AOC guidance document method. All steep slope operations are required to follow the AOC process outlined in the AOC guidance document.

3) Develop a volumetric model that:

a) Determines the maximum volume of overburden that can be returned to the mineral removal area based upon the stability requirements, drainage control requirements, sediment control requirements, access/maintenance requirements, and maximum backfill requirements.

b) Determines the additional backfill volume required to be placed in the mineral removal area based upon raising the excess overburden disposal fills to the target fill elevation above the primary mountaintop seam and moving the toe of the backstack horizontally to a point vertically above the lowest seam mined within the fill that is not considered an isolated seam. The volume within the excess overburden disposal fill that is inside this vertical projection is considered the excess spoil disposal volume. Thus, it results in a reduction of the volume of excess overburden to be placed in the fills.

c) The process then evaluates each of the potential fill sites that can be used adjacent to the project's mineral removal area to achieve the most efficient placement of excess overburden. Each fill is evaluated to determine its excess overburden capacity per specified length.

d) Allocate or assign the total volume of excess overburden to the fills in descending order based on each fill's relative efficiency. Relative efficiency is determined by cubic yards of material storage per foot. The result is the optimum placement of excess overburden in terms of cubic yards per ac of waters of the U.S.

e) Develop the final regrade configuration and excess overburden storage areas for the Mine Plan such that the final configuration does not exceed the optimized valley fill toe locations, meets the backfill requirements, and meets the SMCRA and PMLU requirements.

Candidate drainage areas were evaluated based on proximity to the targeted reserves, slope sufficiency and stability, property constraints, proximity to the proposed King Coal Highway Corridor, line of sight from the public, and the potential for maximization of the fill volume per foot of fill length. The evaluation included a slope stability analysis predicated on CSR §38-2-14.14.e.2, which states that fill material must be sufficiently compacted or otherwise mechanically stabilized so as to insure stability with a static safety factor of 1.5. The placement of the proposed valley fills in the uppermost reaches of the watersheds helps to reduce the disruption of periodic water inundation patterns by reducing the amount of drainage area displaced by their construction.

Selected valleys were then carried forward in the AOC process. Design of the Buffalo Mountain Surface Mine valley fills adhered to the requirements of the AOC+ Determination Process, as consistent with the WVDEP Final AOC Guidance Document, developed in accordance with the

U.S. District Court Bragg vs. Robertson Consent Decree. The optimized toe locations were determined using the ESDA Bank Method, as specified in the WVDEP Final AOC Guidance Document. The amount of overburden prescribed by the model for return to the mineral removal area would be returned instead to both the mineral removal area and the tops of the fills. The "Target Fill Elevations" would be exceeded to accommodate the additional material and to maintain the PMLU grading configuration. The approved PMLU plan would offer a higher and better use of the land and would reduce cumulative environmental impacts, including those to waters of the U.S. Despite the elevated fills, the toes of the fills remained where prescribed by the AOC+ model, thus avoiding increased stream impacts.

There are two methods for construction of valley fills: end-dumping and bottom-up. Generally, valley fills are more cost effective when constructed through end-dumping and not through a bottom-up procedure. With end-dumping, excess overburden is not brought to the bottom of the fill, and therefore, the end-dumping procedure requires fewer trucks and less time and fuel for hauling.

Bottom-up construction allows for greater control of the fill material as well as simultaneous reclamation (i.e., revegetation of the valley fill face), and therefore less potential for sedimentation impacts to the stream below the fill. Because of the reduced risk of landslide, the valley fills constructed through a bottom-up method do not require the additional construction of permanent erosion protection zones, and therefore have fewer permanent stream impacts. In the beginning of 2008, CONSOL preliminarily designed the valley fills to include eight fills constructed by the bottom-up method and five constructed by the end-dumping method. After coordination with agencies upon pre-inspection of the mine permit area in March 2008, CONSOL adjusted an additional valley fill (Valley Fill No. 1 in RTB) to use bottom-up instead of end-dumping construction. Removal of the Valley Fill No. 1 EPZ resulted in a reduction of approximately 400 lf of permanent stream impact.

After additional coordination with WVDEP in September 2009, the remaining valley fills initially designed for end-dumping construction, then numbering four, were switched to a bottom-up construction design (Valley Fill Nos. 6, 7, 11, and 12) by CONSOL. The removal of the four associated EPZs had the direct result of reducing permanent impacts by 1,463 lf (0.214 ac), including 325 lf of perennial stream. However, additional pond length was also added at this time at the request of the WVDEP, and thus the proposed temporary impacts were increased,

as detailed in the following section. All twelve valley fills in the proposed Buffalo Mountain Surface Mine would be constructed with the bottom-up method.

NPDES Outlets

After initial design and continuing coordination with WVDEP in September of 2009, 62 additional NPDES outlets were added to the proposed mine project. Additional outlets were added to keep surface waters in the same hydrologic watershed, rather than having water travel and discharge into an adjacent watershed. The additional outlets would also reduce the average discharge volumes, thus further limiting the chance of blow-outs from high discharges out of single outlets.

Pond Design

Drainage and sediment control structures (ponds) are required to provide storm storage and sediment control for the surface operations. To avoid stream impacts, locating the ponds outside stream channels was considered but found not to be practicable because of the narrow valley floors. There are no available areas for construction of the ponds that do not require in-stream discharges of fill material.

Measures were taken during the design of the ponds to minimize stream impacts to the maximum extent practicable. First, the ponds were located as near as practicable to the valley fills. Second, in order to provide full-factor control required for the proposed disturbance, pond pool areas were designed with an extended depth to reduce the extension of the impact farther downstream.

An additional measure was adding retention time for waters below several valley fills. During preliminary design, CONSOL determined that several valley fills required two ponds because of the narrow valleys below them; however, for other valleys, only one pond was determined necessary. In September 2009, in coordination with WVDEP, CONSOL added pond length below each of the valley fills for which EPZs were removed (see previous section). For Valley Fill Nos. 6, 7, and 11, this included adding a second pond, and for Valley Fill No. 12, because of topographical constraints, this included simply extending the existing pond downstream. The

resulting 996 lf (0.136 ac) of additional pond length would increase the retention time and cleaning of the surface waters prior to their release downstream.

Specifically for Valley Fill Nos. 7 and 11, the addition of ponds also required CONSOL to reconfigure the IUARs, which added 319 lf (0.044 ac) of temporary stream impact to the proposed mine project. Total increase in temporary impacts from the changes to the pond configuration after September 2009 equals 1,315 lf (0.180 ac). However, permanent impacts were reduced during this same period of the mining alternatives analysis by 1,463 lf (0.214 ac).

Toxic Materials Handling Plan

The acid/base accounting data collected for the proposed surface mining project provides a means of measuring the potential adverse impacts of specific strata. This analysis identifies isolated strata that have a net deficiency, as well as the strata with an excess neutralization potential, measured in tons CaCO3 per thousand tons of material. CONSOL conducted analysis to determine the selenium concentrations within the coal and overburden in the proposed mine project area.

The acid/base accounting identified an overburden stratum that would be potentially acidic and/or toxic. The strata with the potential for generating acid drainage would be some of the actual coal seams to be removed by the proposed operation and thin bands of shale and mudstone immediately adjacent to the coal seams to be removed. The only material located in the mine area that has a pH less than four would be a shale stratum located below the Middle Kittanning coal seam. Materials identified as having selenium levels in excess of one mg/kg included: the mudstone above and the mudstone and shale below the Middle Kittanning, the sandstone and shale below and the roof material of the Five Block, the sandstone above and the shale below the Stockton, the mudstone and shale above the Coalburg Rider Lower Split, the mudstone and shale above and the mudstone below the Coalburg, and the shale and mudstone below the Buffalo.

Potentially acidic/toxic strata would be handled in such a way that it can be blended with non-acidic strata to neutralize the acidic material within the backstack areas only and would not be transported to and/or disposed of in waters of the U.S. Materials not suitable for blending, such

as pit cleanings, partings, and strata with selenium levels in excess of one mg/kg would be segregated during the mining process and isolated/encapsulated within the backstack areas.

Potentially acid/toxic material not suitable for blending and not containing levels of selenium in excess of one mg/kg would be placed on a pad at least four feet from the nearest highwall. This pad would be composed of non-toxic, non-acidic, durable material at least ten feet in thickness placed on the basal seam pit floor. The potentially acid-toxic materials would then be covered with at least four feet of non-toxic, alkaline material that would be suitably compacted to reduce its permeability. Such isolation zones would be covered with at least ten feet of ordinary backfill material and revegetated in accordance with the planting plan.

Selenium bearing strata (> 1.0 mg/kg) would be segregated during mining and would be placed within encapsulation cells. In the encapsulation cells, the material would be placed on a free draining pad of at least ten feet of coarse non-toxic material and the selenium-laden material would be covered with at least ten feet of the most impervious material available at the surface mine site. Encapsulation cells would be located as needed within the backstack.

It would be anticipated that with the use of the materials handling plan, the subsequent overburden, to be generated as a part of this mine project, would not pose any environmental hazard. Material to be isolated or encapsulated would be buried as quickly as practicable to reduce exposure to weathering elements. The blending of alkaline materials would mitigate acidic/toxic materials discharge. Exposure, aeration, and weathering times would be minimized by contemporaneous reclamation practices to further reduce the potential for adverse environmental impact.

Sediment Control

Prior to any surface mining activities in a component drainage area controlled by a sediment control structure, that specific structure would be constructed and certified. CONSOL designed the sediment control structures for the Buffalo Mountain Surface Mine to reduce sediment discharges into waters of the U.S. downstream. Runoff from the mining area would be routed through erosion control channels, leading into a pond providing sediment control for overburden backfill and valley fill areas. All sediment control structures, including temporary sediment control, have been designed to store 0.125 ac-feet of sediment for each ac of disturbed area.

Sediment ditches have outlets designed to convey a 25-year, 24-hour storm event discharge. Sediment ditches have been designed with sufficient capacity to control drainage for the regraded watersheds. Flumes would be provided, as necessary, to convey upland flow over the regrade areas.

There are 18 proposed ponds located at and below the toes of the 12 valley fills. Four of the ponds (Pond Nos. 6a, 6b, 7a, and 12) would be located solely within intermittent reaches of stream. The remaining 14 ponds would be located within perennial or perennial and intermittent reaches. These structures could not be located outside stream channel because of the narrow valley floors. The ponds would provide sediment control for the entire valley fill areas below the primary mining seam and/or the regrade drainage area (whichever would be greatest).

To provide further control of sediment during valley fill construction, the excess overburden would be placed from the bottom-up as opposed to being end-dumped from the mine-through area. Bottom-up construction allows better control of the material during placement as well as simultaneous reclamation of the fill face.

Drainage and sediment control ponds would be cleaned when sediment reaches 60 percent of the design capacity. Material removed from the in-stream drainage control pond would be placed in the designated pond cleanings sediment storage area. All of the ponds would be removed upon approval of vegetative release for the mine permit area or as approved by the WVDEP.

Gravity Discharge/Outcrop Seepage

Augering and highwall mining would only be proposed to occur in the down-dip and on-strike directions; therefore, little potential for gravity discharge exists. The quality of any discharges would be expected to be within the effluent limits, while the quantity of discharges from any hole would be low because of the limited hole depths.

Seepage from augering and highwall mining would be low because of the limited depth of penetration in all of the seams; the maximum expected penetration for any of the auger and highwall mining areas would be 1,000 feet. In addition, the minimum outcrop barrier width for the proposed mining would be 150 feet along the outcrop. The maximum water head which

would be expected to develop would be approximately 25 feet based on the maximum mining height of approximately 5 feet and the 1,000-foot maximum potential mining depth. The maximum potential seepage per foot of outcrop barrier for the proposed operation (worst-case) would be 30.3 gallons per day.

The auger and/or highwall miner holes would be sealed with overburden during the normal backfilling operations. The openings would be sealed by pushing the most impermeable backfill material available into the openings in order to totally close the hole.

CWA Section 402, NPDES

In accordance with 2010 WVDEP guidance entitled "Permitting Guidance for Surface Coal Mining Operations to Protect West Virginia's Narrative Water Quality Standards" (WVDEP, 2010), CONSOL has prepared an Aquatic Ecosystem Protection Plan (AEPP) to describe control measures to minimize adverse impacts to aquatic ecosystems. The complete AEPP is part of the NPDES permit application. Each of the following measures is part of the AEPP:

- Upland portions of the watersheds were selected for the mine project location, which allows for greater minimization of stream impacts. There are no perennial streams proposed within the mine-through area.
- Only down-dip or on-strike mining is proposed.
- Planning for PMLU was coordinated with the planning for another reasonably foreseeable construction project in the Miller Creek watershed, the King Coal Highway, thus reducing cumulative impacts.
- Fill sizes were optimized to reduce stream impacts. Despite the elevated fills required by the PMLU grading configuration, the toes of the fills remained where prescribed by the AOC+ model, thus avoiding increased stream impacts.
- Valley fills were designed without EPZs, thus reducing permanent stream impacts.
- 62 additional NPDES outlets were added after initial design to keep surface waters in the same hydrologic watershed and reduce discharge volumes from individual outlets.
- Ponds were designed to be as near as practicable to the valley fills and with deep pools to minimize stream length impacts.
- Greater retention time was allowed through the addition of three sediment control structures (ponds) and lengthening of one pond. Although this measure added

stream impact, the impact would be temporary because ponds would be removed during reclamation.

Operational measures within the AEPP include the following:

- Fill material would be 80 percent durable rock, which does not slake when exposed to water.
- Fills would be constructed using a bottom-up method, thus reducing potential for sedimentation and eliminating the need for the additional permanent stream impact associated with EPZs.
- Reclamation would be an ongoing process to reduce total disturbed acreages at any given time, thus reducing exposure, aeration, and weathering times of exposed overburden.
- Operations include a special handling plan for potentially acidic/toxic strata so that remaining overburden to be placed in the fills poses limited environmental hazard.
- A 25-foot riparian buffer would be maintained in perpetuity on both sides of each established and restored stream in the mine project and associated proposed mitigation areas.

CONSOL would monitor biological conditions, conduct WET testing and conduct other chemical monitoring to help guide future decisions and refinements to the protection plan. Biological Assessment Station (BAS) locations were selected "at the first appropriate riffle/run habitat downstream of each new outlet in a perennial stream segment" and were "located such that future impacts to the stream are attributable solely to the [SMCRA] permitted activity" (WVDEP 2010). As of spring 2011, CONSOL has used 12 BASs in the monitoring plan. Additional stations were also selected "on a site-specific basis" to serve as points of comparison to isolate effects of the proposed surface mine from stressors unrelated to the mine project as well as "at points useful in determining the entire aquatic ecosystem's health" (WVDEP 2010).

Baseline data was collected from all sites in the spring of 2011, and would take place annually at the same location, or at other locations as determined necessary in coordination with the WVDEP. Future narrative water quality and WET testing results would be reported to the WVDEP annually for both narrative water quality and WET testing. Differences between the baseline and updated results for the monitoring locations would be discussed. In addition to numerical testing results, reports would include discussion of potential new stressors to the aquatic ecosystems.

Compensatory Mitigation and Stream Restoration Plan

On June 9, 2008, the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule ("Final Rule") became effective (USEPA/Corps 2008). As codified in 33 CFR 332.1 through 332.8 and 40 CFR 230.91 through 230.98, the Final Rule established revised requirements for mitigation to better ensure the offset of unavoidable adverse impacts associated with the Corps' permitted actions. To achieve the offset of unavoidable adverse impacts associated with the proposed discharges of fill material, "the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratio must be used" (33 CFR 332.3(f)(1)). As detailed below, the Buffalo Mountain Surface Mine Compensatory Mitigation and Stream Restoration Plan ("Mitigation Plan") uses assessment metrics to calculate debits and credits as well as a linear foot compensation ratio to ensure offset of impacts. The Mitigation Plan would also employ additional assessment of functions to attempt to demonstrate offset.

Offset of impacts can be achieved using mitigation banks, in-lieu fee programs, or permittee-responsible mitigation under the Final Rule. For the Buffalo Mountain Surface Mine, CONSOL considered each of these mitigation methods. The proposed impacts would not be in the service area of an approved mitigation bank; therefore, CONSOL is not pursuing the mitigation bank option.

Payment of fees to WVDEP is recognized as an approved in-lieu fee mitigation program (Corps/WVDEP 2006). The in-lieu fee agreement between the Corps and the WVDEP (2006) states that after (Section 404) permittees demonstrate project impacts cannot be avoided, further minimized, or mitigated on-site, permittees may achieve mitigation by paying into the in-lieu fee program. However, as summarized in the following sections, CONSOL has demonstrated that mitigation on-site, in combination with off-site mitigation, would be able to offset impacts. Moreover, the proposed on- and off-site mitigation can be conducted using a watershed approach as defined in 33 CFR 332.3(c)(1). Therefore, the in-lieu fee program would not be utilized for this mine project.

CONSOL has chosen the permittee-responsible mitigation option using the watershed-based approach as their most practicable means of providing compensatory mitigation. CONSOL has strategically selected mitigation sites within the impacted watersheds. However, the Corps retains the final decision in determining whether the chosen mitigation satisfies the requirements contained in the Final Rule.

Goals and Objectives

The goal of the Mitigation Plan is to achieve a no-net-loss of stream length, function, and structure, while also providing water quality improvements within the same watersheds in which impacts are proposed to occur (Miller Creek and Pigeon Creek). This goal would be met through the following objectives:

- Meeting guidelines provided in the 2008 Wetlands Mitigation "Final Rule" (USEPA/Corps 2008);
- Replacing each linear foot of impact with at least one linear foot of mitigation;
- Restoring geomorphically stable conditions in the temporarily impacted streams, such that the correct stream type would be in the appropriate valley type;
- Establishing headwater drainage ways by designing streams on-site to transport the bankfull flow and create appropriate bedforms, while also providing habitat and riparian corridors;
- Creating hydrologic connectivity by establishing stream channel from on-site establishment streams to existing jurisdictional waters of the U.S. off-site, while preserving an existing and mature riparian zone;
- Restoring, enhancing, and preserving waters of the U.S. throughout the mine project area watersheds, while also improving water quality in the Hell Creek sub-watershed of Pigeon Creek, which involves installation of a sewer line and pump station to provide sewage treatment and reduce fecal pollution thereby treating approximately 1.3 million gallons of wastewater a year[1] in Hell Creek; and
- Providing potential for future water quality improvements in the Pigeon Creek watershed by installing a system for future hookups to potentially treat 5.8 million additional gallons of wastewater per year in Pigeon Creek.

After submittal of the Mitigation Plan to the Corps in June 2010, CONSOL produced and submitted to the Corps an Addendum to the plan, to present findings from implementation of a

new debit-credit accounting protocol in the state, the West Virginia Stream and Wetland Valuation Metric (WV SWVM) (WVIRT 2010).

West Virginia Stream and Wetland Valuation Metric

In February 2010, the Corps issued a Public Notice for the SWVM. The SWVM was developed by West Virginia's Interagency Review Team (WVIRT), consisting of representatives of the Corps, Huntington and Pittsburgh Districts, USEPA, USFWS, NRCS, WVDEP, and WVDNR. The SWVM is to be used for calculating functional credits and debits in compensatory mitigation plans for losses of aquatic resources (WVIRT 2010). Debits are proposed losses of functions of waters of the U.S. Streams and wetlands have functions such as providing habitat for aquatic insects. Debits can also be complete losses of waters of the U.S., such as when a project would propose to completely fill in a wetland. Credits are proposed increases in functions of waters of the U.S. or can be the creation or re-creation of waters of the U.S. that do not exist. For example, credits can be generated from planting trees along stream banks to increase shading over the stream, which would provide the colder temperatures some aquatic insects and/or fish need to survive.

On February 1st, 2011 the Corps issued a Public Notice for the SWVM version 2.0 along with the implementation of the Hydrogeomorphic (HGM) Approach. The HGM Approach uses measured, physical variables (e.g., the mean diameter of trees within 25 feet of either bank of a stream or the size of sediments in a stream) to determine how close an aquatic resource is functioning at the highest possible level. The variables are combined mathematically into one or more equations to score the aquatic resource on a scale from 0.0 (no aquatic function) to 1.0 (the highest possible functional level for that aquatic resource).

As detailed in the Addendum to the Mitigation Plan, data from representative sites were used to calculate an SWVM unit for each of the individual impact streams and mitigation streams. Also factored into the SWVM calculations are predictions for on- and off-site establishment reaches. Total SWVM debits and credits were determined for each subwatershed in the mine project area (Table 4-21). Overall, there were a total of 71,280 SWVM debits throughout the mine project area and a total of 52,423 SWVM credits, resulting in a total deficit of 18,857 SWVM units. This deficit represents approximately twenty-six percent of the total debits and would be compensated through water quality improvements in the Hell Creek sub-watershed. Therefore,

the findings of the SWVM study supported the Mitigation Plan conclusion that the proposed mitigation would offset the structural and functional losses of waters of the U.S.

Table 4-21
SWVM Summary

Summary of SWVM	Debit	Credit
Ruth Trace Branch	11,622	1,074
Conley Branch	10,608	1,984
Right Fork of Hell Creek	18,173	2,460
Left Fork of Hell Creek	16,899	1,815
Pigeonroost Creek	7,772	1,252
UT of Pigeon Creek	2,876	713
UT of Stonecoal Branch	126	0
UT 4 of Miller Creek	174	0
UT 5 of Miller Creek	3,030	436
On- & Off-Site Establishment Mitigation	0	42,535
Off-Site Restoration, Enhancement and Preservation Mitigation	0	154
TOTAL	**71,280**	**52,423**
Deficit	**-18,857 (26%)**	

Additional Functional Measurements

The Mitigation Plan includes additional quantitative and qualitative functional assessments. The Mitigation Plan identifies and summarizes five of the main functions of streams and provides a summary of methodologies for assessment of those functions, which include: Hydrologic, Hydraulic, Geomorphic, Biotic, and Water Quality. Each of the five functions were assessed at both the impact and mitigation areas for the proposed mine project.

The Mitigation Plan proposes no net loss of linear footage and acreage of streams, and proposes excess linear footage (i.e., more lf of stream mitigation as compared to proposed stream impacts) to compensate for temporal losses. Table 4-22 provides an inventory of lf and ac.

Table 4-22
Buffalo Mountain Surface Mine Linear Feet Inventory

Proposed Impacts	Lf	Ac
Permanent Impacts	39,285	4.429
Temporary Impacts	9,215	1.519
Debit Sub-Total	48,500	5.948
Temporal Impacts[1]	14,550	--
TOTAL DEBIT	63,050	5.948
No Net Loss Mitigation		
On-Site Establishment	29,079	3.826
Off-Site Establishment	16,345	1.973
On-Site Restoration	9,215	1.519
Credit Sub-Total	55,639	7.456
Proposed Mitigation	**Lf**	**Ac**
Supplemental and Temporal Mitigation		
Off-Site Enhancement	4,098	1.308
Off-Site Restoration[2]	4,944	2.122
Off-Site Preservation	5,281	1.141
Water Quality Improvement[3]	--	--
Credit Sub-Total	14,323	4.570
TOTAL CREDIT	**69,962**	**12.026**
EXCESS CREDIT (Total Credit minus Total Debit)	**6,912**	**6.078**

[1] An additional 30% of the total impact length would be compensated for temporal losses during the operation. A total of 10% for every 5 years would be provided for a total of a 15-year active mine life.
[2] Water Quality Improvement segment.
[3] No length shown; replaced at a 1:1 temporary impact replacement ratio.

Implementation

On-site restoration areas would be restored after Phase II bond release, restoring streams to ensure they would be of the appropriate stream type for the valley type using Rosgen (2006) natural stream design methodology. The primary objectives of restoring the streams' dimension, pattern, and profile to physical conditions are to: 1) transport the adequate size and amount of sediment; 2) increase bedform diversity; 3) create stable bed forms; 4) increase and improve aquatic habitat; 5) provide floodplain benefits; and 6) provide hydrologic connectivity to jurisdictional waters of the U.S.

For stream establishment, proposed locations were identified by first defining selection criteria for an increased likelihood of success. By constructing establishment streams the objectives are to: 1) have stable dimension, pattern, and profile with access to a floodprone area; 2) hydrologically connect to jurisdictional streams of the U.S.; 3) provide structure and function to offset loss of these parameters; and 4) result in a "no net loss" of stream length.

On-site locations had to meet the following criteria: 1) located on the down-dip side to increase likelihood of intermittent flow; 2) would not require connectivity to jurisdictional waters by means of a groin ditch; 3) has sufficient floodplain availability to meet design criteria parameters such as entrenchment ratios and width/depth ratios to increase channel stability; and 4) conservation easements or deed restrictions could be obtained to protect the site and its riparian buffers in perpetuity. Once locations on-site were narrowed by the selection criteria, reference streams were evaluated to define their existing function and to use for design. These data, along with additional regional curve data developed from sites in similar physiographic regions were used for the natural stream channel design.

Off-site establishment streams were selected based on the following selection criteria: 1) located in a natural valley setting; 2) had access in one or more locations to install grade control structures to reduce incision and sediment deposition downstream; 3) would hydrologically connect to jurisdictional waters of the U.S.; and 4) conservation easements or deed restrictions could be obtained to protect the site and its riparian buffers in perpetuity.

A combination of off-site restoration and enhancement would take place in the Hell Creek watershed. A combination of grade control structures and aquatic habitat improvements would be installed throughout the reaches, while also improving upon adjacent riparian zones. The objectives of the restoration and enhancement areas are to: 1) reduce sediment load through stabilized stream banks and improved riparian areas; 2) improve aquatic habitat through added substrate, in-stream cover, and woody debris; 3) increase the extent of natural areas between the county road and stream; 4) improve water quality by reducing fecal coliform levels throughout Hell Creek; and 5) improve aesthetics.

A total of 5,281 lf of streams would be preserved with their respective riparian zones. Throughout the entire mitigation plan, an approximate total of 117 ac of riparian buffer would be protected in perpetuity. During the construction of riparian zones, only native riparian and streamside vegetation would be established. Areas of invasive and introduced vegetation, such as autumn olive (*Elaeagnus umbellata*) and multiflora rose (*Rosa multiflora*), would be managed so as not to threaten the newly-established native plants.

Mitigation would be implemented in different phases throughout the mining operation. Preservation of streams in the Hell Creek watershed would begin immediately by filing the

necessary deed restriction documents with the county. The off-site establishment mitigation would be expected to be implemented simultaneously with the mining operational phases such that the NPDES outlets would be discharging into mitigation areas. In order to avoid impacts to the proposed mitigation areas from discharges from NPDES outlets, CONSOL would install grade control structures in the off-site establishment streams where NPDES outlets would be actively discharging water from the mine site. This process would occur as the mine progresses over the life of the mine (approximately 15 years). Also, within one year of impacts to jurisdictional waters of the U.S., the off-site mitigation plan would be initiated in the Hell Creek watershed. On-site mitigation, however, would not occur until after Phase II bond release. Because some mitigation would not be occurring for approximately 15 years, CONSOL proposes to provide an additional 10,356 lf of mitigation off-site to offset the temporal loss.

An as-built survey report documenting the mitigation efforts would be developed within 60 days of the completion of planting on the mitigation sites. The report would include all information required by the Corps, Regulatory Guidance Letter dated August 3, 2006 (Corps, 2006), including elevations, photographs, monitoring stations, sampling plot locations, a description of initial species composition by community type, and a summary of the biotic monitoring results.

Water Quality Improvement

The Mitigation Plan includes proposed improvements to sewage treatment in the Pigeon Creek watershed. This water quality component of the Mitigation Plan is consistent with the overall objective of the CWA to restore and maintain the chemical, physical and biological integrity of the nation's waters.

CONSOL consulted with wastewater engineers and water treatment experts to consider various treatment options (e.g., wetland clusters, traditional methods) for the Hell Creek watershed. Because the mouth of Hell Creek is only three miles from the Delbarton Sewage Treatment Plant, CONSOL determined that it would be feasible and cost-effective to construct a sewer line, pump station and three-mile force main to the wastewater treatment plant.

The Town of Delbarton owns and operates the Delbarton Sewage Treatment Plant. The plant provides secondary treatment of wastewater, which removes the majority (80-95%) of the biochemical oxygen demand and suspended solids. The capacity of the Delbarton Wastewater

Treatment Facility is 250,000 gallons per day (gal/day). It currently serves approximately 400 customers and schools, all from the south of the facility. According to preliminary engineering reports, the calculated dry weather flow from the existing customers should be approximately 95,000 gal/day. However, deterioration in the 37-year old system leads to infiltration into the receiving pipes, and therefore more demand (i.e., higher volume of liquid) is placed on the treatment plant than would be necessary if upgrades to the system were in place.

The Town of Delbarton has applied for and received $9.5 million from a combination of federal and state sources, including the Appalachian Regional Commission, USEPA's State Tribal Assistant Grants program, the West Virginia Small Cities Block Grant program, and the WVDEP. The improvements planned in association with the grant awards include installing more than six miles of sewer pipe, 187 manholes, and 17 grinder pumping stations. Upgrades would improve overall efficiency of the town's water treatment processes. The planned projects also include adding sanitary sewer services to 76 new customers. The upgrades would also expand the system to be able to connect to the planned Mingo County Airport and more residents in the future. All of these planned improvements focus on services to the south and west of the treatment plant.

A goal of the Mitigation Plan is to provide sewer services to customers to the north of the facility. Implementation of the Mitigation Plan would provide a gravity flow sewer to 27 homes in Hell Creek which will connect to a pump station near WV 65 to be pumped in a 1-1/2 inch force main approximately 2.5 miles to the treatment facility. Treatment of sewage by an already established governmental authority could be more cost effective than individual private facilities. A publically-operated treatment facility would also be professionally managed and likely to be more efficient at treating water quality. It would add fewer maintenance, monitoring and ownership issues, than other alternative methods.

As part of the Mitigation Plan, CONSOL would place a 4-inch force main in the same trench with the 1-1/2 inch line. The 4 inch force main would have sufficient capacity to allow other homes/businesses between Hell Creek and Delbarton to connect at some time in the future. Specifically, a 4 inch force main capacity would allow approximately 228 new households to be connected. These additional inputs north of the facility (from the 27 Hell Creek homes and potential 228 additional Pigeon Creek watershed customers) total approximately 70,000 gal/day. Adding this input to the 95,000 gal/day from current customers, these additional customers

would increase the total demand for water treatment services, predicted to be approximately 165,000 gal/day. This demand accounts for approximately 66 percent of the plant's capacity to treat 250,000 gal/day. Therefore the treatment plant has sufficient capacity for the immediate and future potential customers identified in the Mitigation Plan.

Future tie-ins can include new development planned as part of the proposed PMLU. As part of the MOU for the Joint Development Initiative, Cotiga is bound to provide MCRA a utility corridor to access/serve the landowner's development within the mine permit area. Because no such development by Cotiga can occur for over 15 years, while the mine would be active, no definitive plan can be developed at this time. However, Cotiga and the Town of Delbarton, in coordination with MCRA, are in the process of developing a resolution that would, in part, assure that the Town of Delbarton wastewater treatment facility would accept wastewater from Cotiga's PMLU development.

Performance Standards and Monitoring

The Mitigation Plan would comply with 33 CFR § 332.5 regarding ecological performance standards and 33 CFR § 332.6 regarding monitoring. Whereas the regulations require at least five years of monitoring, post-mitigation monitoring for the Buffalo Mountain Surface Mine would be conducted for a minimum of ten years following the completion of construction on the mitigation sites to verify mitigation project success. Also, "the district engineer may conduct site inspections on a regular basis (e.g., annually) during the monitoring period to evaluate mitigation site performance," (33 CFR § 332.6(a)(2)) and further, "the district engineer may extend the original monitoring period upon a determination that performance standards have not been met or the compensatory mitigation project is not on track to meet them. The district engineer may also revise monitoring requirements when remediation and/or adaptive management is required" (33 CFR § 332.6(b)).

The monitoring program would be undertaken for a minimum of ten years, or until the final success criteria would be achieved. Annual monitoring reports would be prepared and would include:

- A detailed narrative summarizing the condition of the mitigation site and all regular maintenance activities;

- As-built topographic maps showing location of monitoring stations, vegetation sampling plots, permanent photo points, and location of transects;
- Photographs showing views of the mitigation site taken from fixed-point stations;
- Hydrologic information;
- Vegetative data'
- Identification of any invasion by undesirable plant species, including quantification of the extent of invasion of undesirable plants by either stem counts, percent cover, or area, whichever would be appropriate;
- Biotic data;
- A description of any damage done by animals or vandalism;
- Wildlife observations; and,
- Reference hydrology and stream data.

Monitoring and success would be measured on each mitigation reach that involves stream restoration, establishment, or re-establishment work. All mitigation monitoring and success would be dependent upon water quality parameters' remaining within recommended ranges for freshwater organisms. If monitoring investigations reveal that proposed mitigation measures have failed or are failing, appropriate actions would be undertaken to repair or replace those failures.

Adaptive and Long-Term Management

In the event that successful mitigation of jurisdictional waters cannot be achieved, CONSOL proposes the following contingencies: re-design of the mitigation, submittal of in-lieu fees, mitigation banking, and preservation. Additionally, with the application of adaptive management, the Mitigation Plan is intended to remain viable and vital to any future planning efforts throughout the watershed. If new information indicates an alternative strategy would be effective, the plan provides the flexibility and latitude to pursue it, with the approval of the regulatory agencies.

During the implementation of mitigation at each site, specific adaptive management measures are developed to implement during and after construction of the mitigation sites. For example, as-built surveys and certification along with maintenance records of the mitigation streams

would serve as a baseline to compare with structural monitoring and aid in adaptive construction practices. Monitoring data would validate if adaptive management efforts need to be implemented based on effective monitoring strategies incorporated during the construction phases of the mitigation. The watersheds would also be continually monitored and evaluated for any disturbances or impacts that would potentially affect the mitigation sites.

CONSOL continues to negotiate proposed deed restrictive easements with the current landowners of the Mitigation Plan project areas; however, the easement areas would include the streams and their associated riparian buffers. The on-site establishment areas are proposed to have 25-foot riparian buffer on both sides of the stream. The off-site establishment areas, on-site restoration areas, off-site enhancement areas, and off-site preservation areas would have a 50-foot riparian buffer on each side of the stream; the off-site restoration and water quality improvement reaches would have a 10-foot sewer line easement, which would include associated riparian zones on each side of the sewer line. Based on CONSOL's intended language in the real estate instruments, the streams and their riparian buffers would be protected in perpetuity amounting to approximately 117 ac of riparian preservation.

King Coal Highway

In order to avoid and/or minimize potential impacts to water quality/streams outside the mine permit area, the following BMPs would be considered and undertaken for the termini areas by the WVDOH, where appropriate, during final highway design and construction under either alternative:

- Reduce the amount of aquatic habitat (and riparian vegetation) that would be disturbed by minimizing the linear distance of stream being impacted.
- Design and construct culvert structures that promote the re-establishment of benthic habitat within the culvert.
- Design and implement an approved Erosion and Sedimentation Control Plan to prevent sediment deposition to aquatic habitats.
- Promptly revegetate all disturbed areas to prevent accelerated erosion.
- Construct all cofferdams, causeways, and temporary crossings with large, clean, rock fill material and filter fabric on the downstream side to trap sediments.
- Minimize the need for in-stream work by heavy equipment.

- Develop highway project sequencing to facilitate in-stream work during periods of seasonal low flow.
- Designate any equipment fueling and service areas away from aquatic habitats to minimize the potential for accidental spillage of petrochemicals.
- Designate and construct all stormwater management facilities to prevent or minimize runoff resulting in erosion and sedimentation.
- Minimize the amount of vegetative clearing and impervious surface within the right-of-way to reduce volume and thermal increases.
- Consider the use of vegetated stormwater management basins and wide, flat drainage ditches to reduce sediment and toxicant loading in highway runoff.
- Minimize the diversion of surface water flow within the cleared portion of the right-of-way to reduce thermal increase.
- Coordinate stream mitigation activities with the natural resource agencies.

Mitigation would be the joint responsibility of the FHWA, the WVDOH, CONSOL and Cotiga. When mitigation responsibilities are consistent with a highway project and the rough-grade road bed is accepted, WVDOH could share in certain pre-acceptance mitigation costs. Coordination between the WVDOH and post-mine users would also occur so that improvements from the mitigation plan and current highway construction practices would be sustainable. The WVDOH would prepare a post-construction plan to monitor compliance with mitigation commitments. If necessary, contracts to assure specific commitments will be developed by WVDOH and entered into with CONSOL, Cotiga, the MCRA, and any other private company or local entity responsible for carrying out mitigation commitments.

4.3.7 Water Supply and Conservation

No groundwater users were identified within the mineral extraction area. While some perched aquifers are known to be present within the mining area, such as the underground mine works in the Coalburg coal seam, others may be present within the sandstone strata. The Coalburg deep mines works underlying the head of the Right Fork of Hell Creek act as perched aquifers discharging water through two punchouts into two of its UTs. There are no known users of these perched aquifer systems.

The only known uses of surface water or groundwater within one-half mile of the Buffalo Mountain Surface Mine SMCRA permit boundary are for domestic purposes by local residents and businesses. There are 177 occupied dwellings that use the groundwater for domestic purposes (163 wells) located within one-half mile of the mine project area. Of these users, there are nine within 1,000 feet of the mine project area. These groundwater users appear to be obtaining water from sources located in the alluvial aquifers or valley floor fracture systems, according to information provided by CONSOL. These alluvial aquifers receive recharge from the underlying bedrock aquifers through the valley floor fracture system, as well as from infiltration of surface water. The bedrock aquifers are recharged via the interconnected valley wall fracture flow system, which intercepts infiltration and perched aquifers underlying the ridges and directs flow to the valley floors. These aquifers are stratigraphically located well below the proposed mineral removal areas, which would be located along the ridge tops. As such, the proposed mining activity would not be anticipated to affect the groundwater sources being used within 0.5 mile of the SMCRA permit boundary.

Based upon the greater hydraulic conductivity of backfill and valley fill material after mining, as compared to that of the intact strata, it would be expected that recharge to aquifers may be enhanced. Also, the removal and backfilling of the overburden may create locally perched water tables along the floor of the lowest seam in each mining area. Perched aquifers are present within the Coalburg deep mine works underlying the mine project area, but as previously noted, they not currently being used and would primarily remain intact upon completion of mining. Results of the SWROA indicated that the peak discharges for both the "during mining" and "post-mining" conditions would be lower than or equal to that of the "pre-mining" conditions for the proposed mine project during a 25-year/24-hour storm event.

Based on results from studies conducted on variables that could affect surface and groundwater resources, it would not be anticipated that the proposed mine project would impact the quality or quantity of water to public users or to wildlife outside of the proposed mine project boundary. The WVDEP's CHIA indicated that "by following the [SMCRA] permit conditions…there should be no material damage caused by the mining of this permit" (WVDEP 2011). Further, WVDEP has prepared a buffer zone analysis for the Buffalo Mountain Surface Mine and concluded that no adverse impacts to the quality or quantity of the flows of the receiving streams below the proposed fills would be anticipated (WVDEP, 2009a).

4.3.7.1 Groundwater and Private Wells

Past natural resource extraction activity, particularly underground coal mining, has left voids in the mountains that serve as underground reservoirs. The groundwater that collects in these voids spills out into the streams via abandoned mine portals, shafts and vents, as well as fissures in the rock strata created from underground blasting activities. Numerous active gas wells are also located throughout the area. The extraction of natural gas reserves also creates voids within the rock strata that may collect groundwater and can alter or contribute to the overall drainage within each watershed. Consequently, groundwater quality is variable throughout the area. Other factors influencing quality include the amount of groundwater available, the chemistry of the rock stratum through which it flows, and the potential for pollutants to enter the system. Although Mingo County has made great strides in providing public water service to its residents, a considerable number of rural residents still utilize individual wells, springs, and cisterns as their water source.

CONSOL assessed groundwater resources through the use of existing data they gathered from the Mingo County PSDA, the MCRA, and mine project area mapping. Groundwater is being taken for human use from alluvial aquifers and valley floor fracture systems. The alluvial aquifers receive recharge from underlying bedrock aquifers and infiltration of surface water. The bedrock aquifers are recharged through the valley wall fracture flow system. Based on the environmental studies conducted in support of the Buffalo Mountain Surface Mine SMA, there would be 163 groundwater wells within 0.5 mile of the mine project area (CONSOL 2012). The WVDEP reviewed this information and determined that neither of the alternatives would cause any impacts to groundwater resources. The aquifers are at sufficient depth to be protected from any proposed construction activities.

4.3.7.2 Protection of the Hydrologic Balance

The proposed mine project has been designed to minimize disturbance to the hydrologic balance within the SMCRA-permitted and adjacent areas and to prevent material damage outside of the proposed mining permit area. No groundwater users were identified within the mineral extraction area. Some perched aquifers are known to be present within the mining area, such as the underground mine works in the Coalburg coal seam, and others may be present within the sandstone strata. The Coalburg deep mines works underlying the head of

the RFHC act as perched aquifers discharging water through two punchouts into two of its UTs. There are no known users of these perched aquifer systems.

As noted earlier, there would be 163 domestic purpose wells within one-half mile of the mine project area. Of these, nine would be located within 1,000 feet of the mine project area. It would not be expected that the proposed mineral extraction would have an effect on these groundwater users based on the surface elevation of the wells and the proposed mining being located along the ridge tops well above the aquifer system.

4.3.8 Wild and Scenic Rivers

No study area stream is listed on the *Wild and Scenic Rivers* list or list of rivers under study for designation to the National Wild and Scenic Rivers System (NPS 2003 and 2008).

4.3.9 Shore Erosion and Accretion

This issue is not applicable to either of the proposed alternatives.

4.4. Physical Environment

4.4.1 Geology and Soils

4.4.1.1 Geology

The bedrock consists of the area consists of sandstone, siltstone, shale, and coal. Because of the low sulfur content, local coal is considered especially attractive to industry. Mingo County ranks fifth in coal production within West Virginia, producing over 12 million tons of coal annually (WVGES 2012).

The Kanawha formation covers approximately 92 percent of Mingo County. It exhibits red and gray shale, siltstone, sandstone, limestone, and coals. This formation includes the Stockton (Mercer), Coalburg, Winifrede, Chilton, Williamson, Cedar Grove, Alma, Peerless, Campbell Creek, Powellton, Eagle, Gilbert, and Douglas coals. The Allegheny formation covers approximately seven percent of the county. It exhibits sandstone, siltstone, shale, limestone,

and coal. This formation includes the Freeport, Kittanning. and Clarion coals. The remaining parts of the county are covered by the Conemaugh Group and the New River formation. These formations include the Elk Lick, Bakerstown, Iaeger, Sewell, Welch, Raleigh, Beckley, Fire Creek, Pocahontas Nos. 8 and 9, and Mahoning coals (USGS 2012).

4.4.1.2 Soils

Most of the soils in Mingo County formed from the weathering of bedrock of the Kanawha formation. In some places, the Guyandotte and Tug Fork Rivers have eroded the soil, exposing the New River formation. In other places, especially on the area's many ridges, weathering has exposed the Allegheny and Conemaugh formations (USDA 2008).

Fiveblock soils formed in material disturbed during surface mining. Soils along the Guyandotte River, Tug Fork, Pigeon Creek, and other smaller streams formed in Quaternary alluvium of recent deposition (USDA 2008).

The Matewan-Highsplint-Guyandotte association is the dominant soil unit within the area. It is composed of Matewan soils (35%), Highsplint soils (30%), and Guyandotte soils (20%). Each of these soil types is characterized by stony, well-drained soils that are typically found on steep mountain slopes. Collectively, Udorthents are commonly found within the developed areas of the Pigeon Creek, Buffalo Creek, Hell Creek, Pigeonroost Creek, and Stonecoal Branch floodplains.

Other soil units occurring within the valley floors of the watersheds include Craigsville very gravelly sandy loam and Highsplint channery loam. Craigsville very gravelly sandy loam soils occur in the floodplains of the lower portion of the watershed, while Highsplint channery loam soils occur within the valley floors of the headwater portions of the watersheds. The Craigsville soil unit is derived from course sediments, and is well-drained. The Highsplint channery loam soil unit is derived from sandstone, siltstone, and shale sedimentary rock colluvium (USDA 2008).

4.4.2 Potentially Contaminated Sites

4.4.2.1 Existing Conditions

Numerous sites with recognized adverse environmental conditions are located throughout the landscape. Types of potentially contaminated sites include operating and abandoned gasoline stations, industrial facilities, utilities, landfills, rail yards, timbering operations, coal mines, and coal processing plants.

4.4.2.2 Potential Impacts

A preliminary assessment of potentially hazardous wastes sites was completed in the study area in November 2010 by Skelly and Loy, Inc. personnel trained in conducting hazardous waste studies. USEPA and WVDEP databases were reviewed and a windshield reconnaissance of the study area was conducted.

The purpose of the field reconnaissance was to identify potentially contaminated sites with recognized environmental conditions (REC) and assess the possibility of future project involvement with potentially contaminated sites. Potentially contaminated locations were mapped and input into a project database. The database included assignment of a site identification number, corridor within which it was located, name, photograph(s), and list of environmental concerns.

Some sites with REC may exist on private property that was inaccessible during the reconnaissance. Sites with REC were identified and categorized into one of the three following levels of concern:

- Level 1 REC – These sites are classified as low risk. These sites include, but are not limited to, automotive and truck repair facilities, small quantity *Resource Conservation and Recovery Act* (RCRA) generator facilities, facilities with aboveground storage tanks (ASTs) containing less than 10,000 gallons of product with no visible signs of contamination, electric power substations, and automobile sales and service facilities.
- Level 2 REC – These sites are classified as moderate risk and have potential to become high risk based on more detailed examination. These sites include, but are not limited to, facilities with ASTs containing greater than 10,000 gallons of product

or ASTs with visible contamination, gasoline fueling facilities, potential former gasoline fueling facilities, metal fabrication facilities, facilities with underground storage tanks (USTs), facilities with junk automotive and truck parts storage, and storage trailers with unknown contents.

- Level 3 REC – These sites are classified as high risk, with the likelihood of soil and/or groundwater contamination. These sites include, but are not limited to, bulk petroleum storage facilities, properties with groundwater monitoring wells, properties with visible soil staining, industrial properties, surface mining facilities, landfills, and salvage yards.

Four sites are located within the study area. All would be located within the northern termini of either alternative. They are described in Table 4-23 and shown in Figure 4-11.

Table 4-23
Potential Hazardous Wastes Sites in the Study Vicinity

Site	REC Level	Description
HZ-1	2	*Concrete Batch Plant* (WV 65 north of WV 65/US 119 intersection). Three very large ASTs are part of this concrete plant. One tank could have been for emulsion oil (roadway tar). Historical aerial photographs indicate that several structures existed on the property. Fifteen gallons of multiguard and 5 gallons of coolant were located on the property at the time of site reconnaissance. The material was contained in 5-gallon buckets with the lids attached.
HZ-2	3	*Norfolk Southern Railroad* (along WV 65 and US 119 near project northern terminus). General environmental concerns associated with railroads are chemical treatments used on wooden railroad ties and the potential for transportation and spills of environmentally sensitive materials.
HZ-3	1	*Private Residence* (adjacent to US 119 near WV 65/US 119 intersection). An estimated 500-gallon AST is located at this residential site. The tank appeared to be in good condition with no visible staining on it or the ground surface below.
HZ-4	1	*Private Residence* (*Ruth Trace Road).* An estimated 1,000-gallon AST is located at this residential site. The tank appeared to be in good condition with no visible staining on it or the ground surface below.

The No-Build Alternative would impact three of the sites, HZ-2, HZ-3, and HZ-4. The Delbarton to Belo Project would not impact any of the potentially contaminated sites.

4.4.2.3 Avoidance, Minimization, and Mitigation

Either of the proposed alternatives would include development of a waste management plan, if necessary, to address potential contamination at identified waste sites. Additional analysis and physical testing of sites would need to be conducted, however, during final design. Detailed testing, excavation, and disposal plans would be developed for sites that are identified as being impacted by construction of the rough-grade road bed or subsequent highway construction.

4.4.3 Utilities

4.4.3.1 Existing Conditions

Utility lines cross the study area in the vicinity of US 119 and US 52. Utilities found in the study area include electric, water, communications, and natural gas lines. Additionally, the Mingo County PSD maintains a water storage tower along US 52, east of Delbarton.

4.4.3.2 Potential Impacts

Both of the alternatives would displace the water storage tower as well as have temporary negative impacts to utility service lines. The Delbarton to Belo Project, however, would allow for the creation of a utility corridor within the construction alignment. This utility corridor would provide infrastructure for future underground and surface transmission lines, bringing all utilities to the proposed growth areas in the county. By extending public water lines and wastewater services, the utility corridor would support economic development in the region and improve public health. By extending communications lines, it would increase the quality of life for area residents.

4.4.3.3 Avoidance, Minimization, and Mitigation

The Mingo County PSD water tower would be displaced by either alternative. As a result, a replacement would be necessary. The WVDOH would work with the PSD to find a new location for the water tower. If the rough-grade road bed is completed and accepted as proposed, WVDOH would assume the cost of constructing a new tower.

Coordination with the utility operators would also be required throughout final design and construction of the King Coal Highway under either alternative. Coordination meetings would be held to discuss the need for additional right-of-way, expansion, or relocation easements, and impacts to schedules, construction requirements, and any other special issues. Utility relocations would be coordinated by the parties in accordance with applicable federal and state provisions and any applicable permit requirements.

4.4.4 Air Quality

4.4.4.1 Existing Conditions

Air quality refers to ambient or outdoor air that is safe to breathe by all members of the general population, including young children, elderly citizens, and other "at risk" individuals such as asthmatics. Specific standards are used to assess the levels at which air quality is measured and health protected. National Ambient Air Quality Standards (NAAQS) have been established by the USEPA for the following categories of air pollutants: carbon monoxide (CO), lead, nitrogen dioxide (NO_2), particulate matter (smaller than PM-10 micrometers and PM-2.5 micrometers in diameter), ozone (O_3), and sulfur dioxide.

Air quality is monitored primarily by the states, but with substantial assistance from larger monitoring networks supported by USEPA and others. Areas failing to meet one or more of the NAAQS are identified as being in non-attainment. Non-attainment areas may be individual communities or multi-county regions, depending on the type and extent of the pollution problem. Transportation air quality evaluation requirements, as stipulated in the NEPA of 1969 and the federal Clean Air Act (CAA), involve micro-scale computer modeling on the project level to determine localized air quality impacts related to the NAAQS, as well as regional modeling to determine conformity. Regional emissions for these alternatives were analyzed by the WVDEP through an evaluation of their State Implementation Plan (SIP). Mingo County is in an air quality attainment area.

4.4.4.2 Potential Impacts

Transportation air quality evaluation requirements, as stipulated in the *NEPA of 1969* and the federal CAA, involve micro-scale computer modeling on the project level to determine localized air quality impacts related to the NAAQS, as well as regional modeling to determine conformity. Regional emissions for these alternatives were analyzed by the WVDEP through an evaluation of their SIP. Mingo County is in an air quality attainment area and no further regional analysis is necessary.

The final rule for $PM_{2.5}$ and PM_{10} by the USEPA, effective April 5, 2006 (as amended at 71 73 FR 4441, Jan. 24, 2008) and published in 40 CFR Part 93, defines $PM_{2.5}$ and PM_{10} as particles

with an aerodynamic diameter less than or equal to a nominal 2.5 and 10 micrometers, respectively. The USEPA specifies in Sec. 93.123(b)(1) that projects of air quality concern are:

- New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
- Projects affecting intersections that are at level of service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Both US 119 and US 52 are currently operating at LOS C or better. The King Coal Highway Delbarton to Belo Project, when accepted and the highway constructed, would be expected to maintain the same level of service with either of the alternatives. Although traffic is projected to increase over the next 20 years, the percentage of diesel vehicles using the highway network would not be expected to change appreciably. In addition, no new or expanded bus and rail terminals and transfer points would be associated with either of these alternatives. Based on the consistent level of diesel traffic and levels of service, both of these alternatives would be presumed to meet CAA and 40 CFR 93.116 requirements without any explicit hot-spot analysis. Direct impacts from the proposed Buffalo Mountain Surface Mine to air quality would primarily be in the form of dust from the mine project since blasting is a major component of the mining procedures. Trucks transporting overburden and coal would also release emissions. With approximately 20 occupied structures within 1,000 feet of the proposed mine project area the Buffalo Mountain Surface Mine would not be located in a densely inhabited area.

This project has been determined to generate minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special Mobile Source Air Toxics (MSAT) concerns. As such, this project, when accepted and the highway constructed, will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an

increase in MSAT impacts of the project from that of the no-build alternative. Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 100 percent. This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

4.4.4.3 Temporary Construction Impacts

During construction, both of these alternatives would have an increase in emissions by heavy construction equipment and an increase in dust. Dust and exhaust particulate emissions from heavy equipment operations would temporarily degrade air quality in the immediate construction zone. Impacts from dust would be localized within the immediate area of construction.

4.4.4.4 Avoidance, Minimization, and Mitigation

Proper measures to limit fugitive dust would be implemented as listed below:

- Air emissions associated with mining operations (such as blasting, earth and rock removal, transport-related dust) are considered “fugitive emissions” under the CAA. Surface mining does not meet the criteria for major source air quality permits (*Title V of the Clean Air Act*), because mining does not qualify as a permanent/stationary source that emits at least 250 tons/year of a regulated pollutant. Emissions are controlled by the implementation of BMPs.
- Watering of access and haulage roads during dry, windy periods.
- Frequent maintenance of roads in order to remove coal, rock, soil, and other dust forming materials.
- Frequent grading and compaction to stabilize road surfaces.
- Minimizing the area of disturbed land through contemporaneous reclamation.
- Prompt revegetation of reclaimed land.
- Increasing suppression activities of fugitive dust during periods of air stagnation.

In response to public concern regarding blasting during mountaintop mining activities, the state of West Virginia created the Office of Explosives and Blasting (OEB) in 1999. OEB is responsible for determining the coal industry's compliance with West Virginia's blasting laws and regulations. It also oversees the pre-blast survey process, directs the certified-blaster program, certifies the competency of both pre-blast surveyors and surface mine blasters and handles claims by residents whose property is damaged by flyrock, air blasts, or vibrations from blasting. The blasting design for the proposed operation is based on the existing regulations, which provide controls for preventing damage to structures and wells.

A letter of notification would be sent to all owners and/or residents, and a pre-blast survey, if requested, would be conducted in accordance with the provisions of Chapter 22, Article 3, Section 13a of the Code of West Virginia. In order to blast within 500 feet of an underground mine, or within 1,000 feet of a protected structure, a certified blaster would prepare a blast design and submit it to the OEB for approval at least 15 days prior to blasting. The design would include the following:

- Maximum allowable airblast and ground vibration limits;
- Methods to control flyrock;
- Monitoring plan identifying equipment and procedures;
- Sample blasting log; and,
- Description of blasting procedures and safety precautions.

The blasting operations at the proposed mine would follow the final blasting plan as required by WVDEP Permit S-5018-07. Flyrock would be controlled by using proper stemming and delay patterns.

4.4.5 Noise

4.4.5.1 Existing Conditions

Specific noise receptors within the area include picnic areas, recreation areas, residences, and churches. Individual receptors in the immediate construction area under either alternative would be identified as the project proceeds. Sources of future noise would result from mining activities, highway construction, future traffic, and future land use.

4.4.5.2 Potential Impacts

Noise sensitive receptors in the area would be located at the two project termini under either alternative. Detailed noise assessments were conducted for the No-Build Alternative during preparation of the King Coal Highway 2000 FEIS as well as during the Corridor G alignment studies (US 119), WV 65/US 119 intersection improvements, and upgrades of WV 65 from US 119 north to Parsley Bottom. The predicted future design year noise levels with the proposed project alignments under either alternative in place were compared to the existing year noise levels and evaluated to determine if there were traffic noise impacts.

The FHWA noise abatement criteria activity (NAC) Category B was used as the criterion for sensitive receptors. Representative receptors within Category B found in the study area were limited to residences only. There are no schools, churches, or parks in the area that would be potentially impacted by noise. The only existing recreational resource in the area is the Hatfield-McCoy Trail, an ATV facility.

According to the FHWA guidance, a project is defined as having a traffic noise impact if either of the following conditions occurs:

- Predicted noise levels approach or exceed the FHWA NAC. Approach levels are considered to be 1 dB(A) less than the noise abatement criteria. The 1 dB(A) level was interpreted from the FHWA directive of December 1993 in an effort to standardize the approach criteria. For Category B receptors, the FHWA has established the absolute NAC at 67 dB(A), and the approach level has been set at 66 dB(A).

- A substantial increase in predicted noise levels over the existing noise levels occurs even though the NAC has not been reached. In West Virginia, the WVDOH has defined the substantial increase to be 16 dB(A) or greater over the existing level.

During those previous studies, future noise levels did not exceed the FHWA criteria. Conditions in the area have not changed appreciably and it would be expected that a similar conclusion would be reached with both of the alternatives. If noise impacts from a new highway occur, they would happen at the termini where the potential to encounter noise receptors exists. Additional noise analysis, if necessary, will be performed once alignment and tie-down locations are established. This will be performed as part of the likely future NEPA re-evaluation described in Section 1.5.3 of this document.

4.4.5.3 Temporary Construction Impacts

Construction activities may result in temporary and localized increases in noise levels during construction under either alternative. Construction of the highway under either alternative would require the use of stationary material-handling and earth-moving equipment, and the noise from operation of earth-moving equipment would temporarily increase localized noise levels.

The noise generated by the proposed mining operations would be typical of most construction and mining operations. Loading and handling, and other mining processes, can generate noise levels up to 95 decibels on the A-weighted scale (dBA) at 25 feet, although typical average noise levels generated by the proposed mine project would be substantially lower. Safety backup alarms on haul truck and other major equipment may generate 100 dBA at 25 feet.

Noise is attenuated by distance, atmospheric conditions, and topography. Sound wave divergence typically results in a six dBA decrease for every doubling of distance from a noise source. This assumption is conservative since it does not account for noise attenuating factors such as topography, wind, temperature gradients, atmospheric pressure, and other atmospheric and site-specific factors. The topography in the study area would provide substantial noise attenuation in the vicinity of local communities. However, higher-level noise values would be expected during the instant when blasting occurs.

Transient noise receptors, such as dispersed recreational uses in the area around the study area, would be exposed to audible noises generated by mine operation activities. Both alternatives would result in unavoidable temporary increases in ambient noise levels within a 5-mile radius of the footprints associated with either alternative. Noise levels would diminish with distance from construction and mining noise sources, and ambient noise would decrease with time as the pit walls, heap, and waste rock stockpiles provide increasing topographic attenuation of sound levels from noise sources within the construction and mining area.

A pre-blast warning signal would precede blasting operations during construction activities under either alternative. The pre-blast audible warning consists of three short air horn blasts of five seconds duration with five seconds between each blast. The “all clear” signal consists of one long air horn blast of 20 seconds duration.

4.4.5.4 Avoidance, Minimization, and Mitigation

When the predicted highway design year sound levels approach or exceed the NAC, noise abatement considerations are warranted for the identified impacted areas. The goal of a noise barrier is to eliminate impacts or to substantially reduce noise levels at affected receptors. Mitigation consideration of noise barriers consists of two components: feasibility and reasonableness.

Feasibility deals primarily with engineering and acoustical considerations. Engineering considerations include restrictions to vehicular or pedestrian traffic (including driveways), safety concerns (such as sight distances or recovery zones), barrier constructability and maintainability, impacts to utilities and drainage, and overall adverse social, economic, and environmental effects. Acoustical considerations include a minimum insertion loss (IL) of 5 dB(A) for the majority of noise receptors behind the barrier with a 7 dB(A) reduction at least at one location.

Reasonable determinations are based on noise abatement benefits, desires of the affected community, comparison of existing to future noise levels, development trends and land use controls, and mitigation cost per impacted and/or benefited receptor. The cost per benefited receptor should not exceed the state limit of $15,000 per benefited land use to be considered reasonable. A receptor is considered eligible to be included in the reasonable cost analysis for the proposed mitigation if it receives a minimum IL of 5 dB(A).

Trees provide a visual shield and some psychological benefit, but are not nearly as effective at reducing noise levels as a solid barrier. A 200-foot width of dense vegetation can reduce noise by 10 decibels, which cuts traffic noise in half. However, it is often impractical to plant enough vegetation along a road to achieve such a reduction.

Airblasts during mine construction would not exceed the maximum limits, listed in Table 4-24, at the location of any dwelling, public building, school, church, or community or institutional building outside the mine permit area.

Table 4-24
Maximum Community Decibel Limits

Lower Frequency Limit of Measure	Maximum Level (decibels)
0.1 Hz or lower - flat response (only when approved by Director)	134 peak
2 Hz or lower - flat response	133 peak
6 Hz or lower - flat response	129 peak
C-weighted - slow response (only when approved by Director)	105 peak

4.4.6 Energy and Mineral Needs

Several factors contribute to the demand for energy sources such as coal, oil, and natural gas. The demand for these fuels is inextricably linked and contingent on variables such as availability, demand for electricity, environmental regulation, and weather. The demand for electricity, in particular, has an effect on the demand for coal. An increasing demand for electricity and shifts in electricity producing resources indicate that the supply of coal must be increased to meet projected demands. As recently as August, 2012, however, coal was responsible for about 39 percent of electricity output in the United States. Worldwide, about 40 percent of current electricity needs are met through coal production (USEIA 2012). .

4.4.6.1 Long-Term Energy Needs

Increases in coal use for electricity generation at existing plants and new coal-fired plants could lead to modest annual production increases until 2030 (DOE EIA, 2009a). In 2007, coal's contribution to U.S. electricity generation was 49 percent. Coal-fired power plants would remain a dominant source of electricity generation through 2030, with its predicted 2030 contribution as a renewable energy source in the *American Recovery and Reinvestment Act of 2009*. Total coal use in the United States was 22.5 quadrillion Btu in 2006 and is expected to increase to 26.6 quadrillion Btu in 2030 (DOE EIA, 2009b, p.49). The consumption of natural gas by electric power generators has been increasing since 2009 and as recently as August, 2012, coal was responsible for about 39 percent of the country's electricity output (USEIA 2012).

4.4.6.2 Short-Term Energy Needs

Oil and natural gas prices influence coal demands. Higher oil and natural gas prices generally result in an increased demand for less expensive, coal-generated electricity. The AEO Short-

Term Energy Outlook (STEO) predicts a 3.8 percent increase in coal consumption for electricity for 2013 as projected coal prices fall and natural gas prices increase (DOE EIA, 2012). The STEO also predicts worldwide demand for coal will lead to an increase in U.S. coal exports.

4.4.6.3 West Virginia

Coal generates 97.8 percent of electricity in West Virginia, twice as high as the national average (ACCCE 2009; DOE EIA 2008a). West Virginia has the 3rd lowest retail electricity price in the nation (ACCCE, 2009). The relatively low retail electricity price can be attributed to the proximity of coal sources to the utilities. Because the coal is relatively inexpensive to transport, the utilities pay less and pass the savings on to consumers. At West Virginia's current reported rate of consumption, 39.15 million tons per year (DOE EIA, 2008b), the coal reserves identified for recovery by this mine project (16.874 million tons) represent over 43 percent of a year's supply for the state of West Virginia.

4.4.6.4 Transportation

Highway design and traffic conditions are directly associated with vehicular energy efficiency and initiatives for vehicle efficiency improvement due to the increasing cost of crude oil. Features that affect vehicular energy efficiency include profile, alignment, pavement surface, roadway width, traffic density, access points, at-grade intersections, and length. There would be a short-term increase in energy expenditure to construct a rough-grade road bed and a completed highway. However, the development of a new roadway would decrease energy expenditure because the roadway would relieve existing traffic congestion and reduce travel delays.

4.4.7 Safety

4.4.7.1 Buffalo Mountain Surface Mine

WVDEP Permit No. S-5018-07 includes a variety of provisions and regulations to assure public safety. All applicable requirements have been identified, evaluated, and discussed in the Surface Mine Permit. These issues include, but are not limited to the following:

- Evaluation of Existing Underground Mining;
- Static Safety Factors (Valley Fill and Backfill Design);
- Valley Fill Inspections and Certifications;
- Blasting Controls;
- Surface Water Runoff Analysis (SWROA); and,
- Transportation.

Evaluation of Existing Underground Mining

An evaluation of the existing underground mines has been conducted in accordance with CSR §38-2-3.6.h.3 and CSR §38-2-3.23.a.8. As part of the evaluation process, all of the existing underground works and openings have been located and identified. Prior to mining and blasting within 500 feet of the works, the SMCRA permittee must get approval from MSHA as per §38-2-14.13.

Portions of the proposed operation would be within 500 feet of one active and six abandoned underground mines within the Coalburg seam, six abandoned underground mines in the Buffalo seam, and three abandoned underground mines in the Winifrede seam. The active mine that would be located within 500 feet of the proposed mine permit area is the Bronzite Mine, WVDEP Permit No. U-5038-86.

The active underground mine in the Coalburg seam would be located within approximately 100 feet of the proposed operation along the northwestern border along the north side of Ruth Trace Branch. Along the north side of Valley Fill No. 1, there would be a Coalburg contour cut proposed within 100 feet of the Bronzite Mine. The DMM-67 and Operator's Approval, included in Attachment N-3B, Section N of WVDEP Permit No. S-5018-07, outlines the mining/blasting operations and procedures that would be coordinated between the SMCRA permittee and the contractor operating the underground mine. Both of these operations are permitted under SMCRA for CONSOL. All proposed blasting that would occur within 500 feet of the Bronzite Mine would occur later in the proposed surface mine life when the Bronzite Mine will have been mined out and would likely have been totally abandoned and reclaimed.

The six completely abandoned underground mines in the Coalburg seam fall within and/or adjacent to the southern portions of the mine permit area. These workings lie within and

immediately adjacent to the mining areas associated with the Coalburg seam and beneath areas to be mined to the Five Block seam. Portions of the old works would be mined through in the areas adjacent to Valley Fills No. 8, 9, 10A, and 10B as a result of the mining in the Coalburg seam. The six completely abandoned underground mines in the Buffalo seam also fall within and/or adjacent to the southern portions of the mine permit area. These old workings are not proposed to be mined through by the Buffalo Mountain Surface Mine and fall primarily under the areas to be mined only to the Five Block. The three completely abandoned underground mines in the Winifrede seam fall within and/or adjacent to the southern portions of the mine permit area. These workings lie within and immediately adjacent to the mining areas associated with the Winifrede seam and beneath areas to be mined to the Five Block seam. Portions of the old works would be mined through within the confines of Valley Fills No. 8 and 9. It would not be expected that surface mine related blasting would have a substantial impact on the abandoned mine. Any surface cracks would be identified during development of the areas for excavation and remedied during the development of drill benches by dozer operation. In the areas of the mine through, the openings would be backfilled and blocked as quickly as practicable.

Static Safety Factors (Valley Fill and Backfill Design)

The proposed valley fills have been designed in accordance with CSR §38-2-14.14.g.6 as is required under West Virginia SMCRA-implementing regulations. Those regulations state that, “the foundation of the fill and the fill shall be designed to assure a long-term static safety factor of 1.5 or greater, and meet an earthquake safety factor of 1.1.” The valley fills to be located within the mine project area exceed the minimum static and seismic safety factors for valley fill construction.

Backfill areas are designed in accordance with CSR §38-2-14.8.a.4. Those regulations state that, “the material used to backfill and eliminate the highwall shall be sufficiently compacted or otherwise mechanically stabilized so as to insure stability of the backfill with a static safety factor of 1.3.”

Valley Fill Inspections and Certifications

The proposed valley fills would be inspected and certified in accordance with CSR §38-2-14.14.b and "Excess Spoil and Valley Fill Certification Requirements" policy dated May 12, 2004. During construction, the fills would be inspected quarterly for stability by a registered professional engineer experienced in the construction of earth and durable rock fills, or other qualified professional specialist under the direct supervision of such professional engineer. The inspections would be done in accordance with the following schedule:

- Regularly, but not less than quarterly, during construction;
- During critical construction periods. Such periods defined as: foundation preparation, including the removal of all organic material; placement of underdrains; installation of surface drainage systems; and final regraded revegetation; and
- Upon completion of construction.

A qualified registered professional engineer experienced in the design of earth and/or durable rock fill embankments would promptly, within no more than two weeks following the completion of the inspections, provide a certified report that the facility has been constructed and maintained as designed and in accordance with the approved plan. The report would include color photographs and will note any instances of apparent instability, structural weakness, and other hazards.

Blasting Controls

In response to public concern regarding blasting during mountaintop mining activities, the state of West Virginia created the OEB in 1999. OEB is responsible for determining the coal industry's compliance with West Virginia's blasting laws and regulations. It also oversees the pre-blast survey process, directs the certified blaster program, certifies the competency of both pre-blast surveyors and surface mine blasters and handles claims by residents whose property is damaged by flyrock, air blasts, or vibrations from blasting. The blasting design for the proposed operation is based on the existing regulations, which provide controls for preventing damage to structures and wells.

A letter of notification would be sent to all owners and/or residents, and a pre-blast survey, if requested, would be conducted in accordance with the provisions of Chapter 22, Article 3, Section 13a of the Code of West Virginia. Details on notification procedures are provided in Section T of WVDEP Permit No. S-5018-07. In order to blast within 500 feet of an underground mine, or within 1,000 feet of a protected structure, a certified blaster would prepare a blast design and submit it to the OEB for approval at least 15 days prior to blasting. The design would include the following:

- Maximum allowable airblast and ground vibration limits;
- Methods to control flyrock;
- Monitoring plan identifying equipment and procedures;
- Sample blasting log; and,
- Description of blasting procedures and safety precautions.

The blasting operations at the proposed mine would follow the final blasting plan as required by WVDEP Permit S-5018-07. Public access to the area prior to blasting would be controlled by blocking all entrances to the blasting area. At least 10 days, but not more than 30 days, before beginning a blasting program, CONSOL would publish a blasting schedule in a newspaper of general circulation in the locality of the proposed blasting site. Copies of the schedule would be distributed by mail to local governments, public utilities, and to each residence within one-half mile of the mine permit area and within seven-tenths mile of the blasting sites.

There would be no occupied structures within 300 feet of the proposed mine project area. There would be no public buildings, schools, or churches located within 1,000 feet of the mine project area, but there would be approximately 20 occupied structures within this zone. There would be approximately 420 occupied structures within one-half mile of the mine project area. Also, most of downtown Delbarton is approximately one half mile from the southeastern edge of the mine project area. There would be approximately 780 occupied structures located within the seven-tenths mile blasting zone.

SWROA

The results of the SWROA indicated that the peak discharges for both the “during mining” and “post-mining” conditions would be lower than or equal to that of the “pre-mining” conditions for

the proposed mine project during a 25-year/24-hour storm event. In general, the increased infiltration and storage capacities of the backstack areas and the valley fills would allow the alluvial/valley floor aquifer system, which would be the only usable aquifer system in the area, to recharge more effectively and into drier periods of the year. The SWROA has been completed based on the requirements as set forth in CSR §38-2-5.6.

Transportation

US 52 and WV 65 would be used to transport coal from the proposed mine project. There would be 40 to 60 daily outbound truckloads operating over a 24-hour period on these roads. All coal haulage trucks leaving a mine pit would be properly covered to prevent coal spillage and associated coal dust problems related to transportation. No public roads would be closed, relocated, or modified in conjunction with the proposed mining operation.

There are five haulroads proposed to be constructed to provide haulage and access between mineral removal areas. Additionally, two regrade roads would be constructed during reclamation to access regraded areas. Also, IUARs would be used to provide access to the sediment control structures and initial access to some of the areas proposed for development prior to construction of haulroads to these areas.

Upon completion, the roadways would be inspected and certified by a registered professional engineer, or other approved persons. All roads used for transportation of coal or overburden, and which would be constructed outside the SMCRA-permitted coal extraction area, would be certified before they would be used for such transportation. Any road which lies within the coal extraction area and, therefore, would be constructed concurrently with progress of mining activities, would be certified in sections of 1,000 lf or less, as measured from the active pit. The roadways would be inspected on a regular basis to ensure that its ditches, culverts, and associated sediment control structures would be performing properly.

Reasonable means would be employed to control dust from the road surfaces. These means may include, but may not be limited to: water trucks, chemical mixtures, and any other practicable methods that the company may deem necessary.

With the exception of Haulroad Nos. 1, 2, and 3, all of the proposed haulroads and regrade roads would remain in-place after mining has been completed to provide access to the alternative PMLU areas. After completion of all mining and reclamation, all roadways constructed for this mine project would be abandoned in accordance with the rules and regulations. The access roads would be seeded and mulched in accordance with the revegetation plan immediately upon abandonment.

4.4.7.2 King Coal Highway

Construction of either alternative would have temporary impacts to, and long-term benefits on, the study area. Temporary impacts associated with construction would include, but would not be limited to, inconvenient traffic conditions, increased noise and particulate air pollution, erosion, and health and safety-related construction issues. Long-term benefits consist of increased highway safety improvements, construction employment, and opportunities for future economic diversification.

Construction activities under either alternative could result in disruptions to local residents and the traveling public. These disruptions would be temporary, localized, and would be limited to the duration of project construction under either alternative.

Construction activities may also result in temporary and localized increases in noise levels during project construction under either alternative. Highway construction would require the use of stationary material-handling and earth-moving equipment, and the noise from operation of earth-moving equipment would temporarily increase localized noise levels.

During construction, the project under either alternative would have an increase in emissions by heavy construction equipment and an increase in dust. Dust and exhaust particulate emissions from heavy equipment operations would temporarily degrade air quality in the immediate construction zone.

4.4.8 Conservation

Numerous measures to protect the natural, physical, and human environment have been incorporated into the proposed mine operation (WVDEP Permit No. S-5018-07) and are

summarized throughout this document. The intent and application of Public Law 95-87, *The Surface Mining Control and Reclamation Act of 1977* (SMCRA), is to:

- Establish a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations;
- Assure that the rights of surface landowners and other persons with a legal interest in the land or appurtenances thereto are fully protected from such operations;
- Assure that surface mining operations are not conducted where reclamation, as required, is not feasible;
- Assure that surface coal mining operations are so conducted as to protect the environment;
- Assure that adequate procedures are undertaken to reclaim surface areas as contemporaneously as possible with the surface coal mining operations;
- Assure that the coal supply essential to the nation's energy requirements, and to its economic and social well-being, is provided and strike a balance between protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy;
- Assist the States in developing and implementing a program to achieve the purposes of this Act;
- Promote the reclamation of mined areas left without adequate reclamation prior to the enactment of this Act and which continue, in their unreclaimed condition, to substantially degrade the quality of the environment, prevent or damage the beneficial use of land or water resources, or endanger the health or safety of the public;
- Assure that appropriate procedures are provided for the public participation in the development, revision, and enforcement of regulations, standards, reclamation plans, or programs established by the Secretary or any State under this Act;
- Provide a means for development of the data and analyses necessary to establish effective and reasonable regulation of surface mining operations for other minerals;
- Encourage the full utilization of coal resources through the development and application of underground extraction technologies;
- Stimulate, sponsor, provide for and/or supplement present programs for the conduct of research investigations, experiments, and demonstrations, in the exploration, extraction, processing, development, and production of minerals and the training of mineral engineers and scientists in the field of mining, minerals resources, and technology, and the establishment of an appropriate research and training center in various States; and,

- Wherever necessary, exercise the full reach of Federal constitutional powers to insure the protection of the public interest through effective control of surface coal mining operations.

WVDEP Permit No. S-5018-07 fulfills the regulatory requirements under this Act. WVDEP Permit No. S-5018-07 summarizes the technical issues, analyses, and procedures used in developing the Surface Mine Permit Application.

The Mitigation Plan presented with this document for the Buffalo Mountain Surface Mine includes proposed compensation for all structural and functional losses of waters of the U.S. from the proposed operations for the entire mine permit area, including those areas planned for public services such as a portion of the King Coal Highway. The Mitigation Plan provides for a watershed-based approach of on- and off-site mitigation within the Pigeon and Miller Creek watersheds. Impacted structural and functional resources would be offset by applying multiple debit-credit protocols; preserving habitat and riparian corridors; creating hydrologic connectivity; and providing a comprehensive restoration plan for the Hell Creek sub-watershed, including installation of a sewer line and pump station to provide improved sewage treatment and thereby reduce fecal pollution. In addition to compensating for the permanent loss of function and structure at the proposed mine site, a no net loss of stream channel would be achieved by restoring temporarily impacted stream channels on-site, establishing streams on-site, and establishing stream channels immediately off-site.

4.5 Cultural Resources

Mingo County was the site not only of significant coal (and coke, gas, and lumber) production in the early twentieth century, it was also the scene of violent labor conflicts and unrest. The Mine Wars took place in the coalfields of Mingo and surrounding counties from 1912 to 1922. They centered on the efforts of the United Mine Workers of America to unionize miners and the resistance of the coal operators that often manifested in bloody confrontations (Corbin 2010). After the May 1920 Matewan Massacre—a clash between Baldwin-Felts detectives who enforced the coal company policies and striking miners who were supported by local officials—left ten people fatally shot, Mingo County became known nationally as “Bloody Mingo” (Corbin 2010; Savage 2010).

After a surge of coal production in the 1940s to meet the wartime demand, the population of Mingo County peaked in 1950 at 47,409 (Van Meter 2010). Several factors, including the depletion of many of the coal fields and the increased mechanization of the mining industry, caused the population to shrink over the second half of the twentieth century to a total of 26,839 in 2010 (US Census 2010). While mining (predominantly strip mining and mountaintop removal mining), lumbering, and natural gas production continue to be important industries for Mingo County and all of southern West Virginia, the region now includes tourism as one of its economic mainstays. Overall travel and tourism in West Virginia contributed approximately $4.3 billion to the state's economy in 2010 and has grown by 5.6 percent since the year 2000 (West Virginia Division of Tourism 2012). It is part of the thirteen-county National Coal Heritage Area and the home of the Hatfield-McCoy Trail, the Williamson Area Railroad Museum, and the Laurel Lake Wildlife Management Area. The creation of Appalachian Corridor G (US 119) in the 1970s provided greater access to and within the county.

The study area contains potential historic resources associated with residential, commercial, industrial, and agricultural activities. Most of the historic commercial/residential development in the region was situated near transportation corridors or population centers. The types of historic period archaeological resources expected in the study area include artifact scatters; house, church, and other building ruins and features; cemeteries and graves; industrial ruins; and transportation-related ruins related to roads and railroads. Due to the geographic, topographic, and soil constraints in the study area, agriculture has played much less of a role in the historic period land use of the area than in adjoining regions; therefore, the potential for agricultural-related historic period archaeological resources is less than that of industrial- and transportation-related resources. Based on the late settlement of the study area, there is better potential for the identification of historic period archaeological resources related to the later periods of historic land use when transportation-related advancement into the area made industrial ventures such as mining and logging economically lucrative, and population and land use in the study area increased.

There are seven sites in Mingo County listed on the NRHP. They are: the Coal House in Williamson; the Hatfield Cemetery south of Newtown; the Matewan Historic District; the Williamson Historic District; the Mountaineer Hotel; the R.T. Price House; and the Elvin C. Smith House, all in Williamson. There are numerous other sites that have been determined NRHP-eligible, but have not been listed.

4.5.1 Architectural Resources

4.5.1.1 Surveys Conducted for the Buffalo Mountain Surface Mine

Michael Baker Jr., Inc. conducted a survey of architectural resources between 1996 and 1999 and in May 2006 within the Area of Potential Effect (APE) (Baker, 2006). The defined APE was developed through coordination with the SHPO. For the purposes of this evaluation, the APE is defined to include all land areas that could contain historic properties affected by the proposed undertaking. In general, because of the mountainous topography and heavily wooded slopes, sight lines and view sheds are largely limited by these and other natural topographic features.

To determine potential viewshed impacts, a three-dimensional model of the topography was created. In an effort to delineate an APE, a windshield survey of the mine project area was conducted in May 2006. During the survey, all standing structures, modern and those appearing to be 50 years of age or older, were photographed and their locations recorded on mine project mapping. No standing structures were located along the entire western limit of the mine project area. The western limit of the APE, therefore, coincides with that of the mine project area. The southern limit of the mine project area generally follows contour lines along the south slope of Buffalo Mountain, just north of US 52. The northern and eastern limits of the mine project area generally follow the contour lines of the mountains and hillsides southeast of WV 65 from Belo to Delbarton.

4.5.1.2 Surveys Conducted for the King Coal Highway

Historic resources on or eligible for NRHP listing were also identified to comply with federal and state legislation, including Section 106 of the National Historic Preservation Act; the National Environmental Policy Act of 1969; Federal Regulations: Advisory Council on Historic Preservation 36 CFR 800; and Executive Order 11593. The initial studies were updated through additional research, an examination of study area mapping and preliminary reports, a windshield survey conducted in November 2010, and coordination with the SHPO. No sites within the study area are currently listed in the NRHP. Only one historic resource in the study area has been identified as being NRHP eligible, the Norfolk and Western Railroad (currently owned by Norfolk Southern), which is located near US 119; its tracks are spanned by US 119 near Ruth Trace Road (Figure 4-12). The railroad is part of the 18-mile Lenore Branch which

runs from Naugatuck (through the study area) to Scarlet Glen. It was determined eligible for the NRHP on November 29, 1999.

Coordination with the SHPO conducted in 2007 and 2010 indicated that no new resources had been determined eligible since the completion of the King Coal Highway 2000 FEIS. Further investigation of SHPO and the WVDOH records and the 2010 windshield survey confirmed that there were no other potentially historic properties in the study area.

4.5.1.3 Potential Effects

Buffalo Mountain Surface Mine

Because of the mountainous topography and dense tree line, the Buffalo Mountain Surface Mine would have no effect to architectural resources that are eligible for or listed in the NRHP. The SHPO concurred with these findings (WVDCH November 13, 2006).

King Coal Highway

The No-Build Alternative would impact the Norfolk and Western Railroad.

There would be no direct impact to historic resources as a result of the Delbarton to Belo Project. Depending on the location of a final alignment, however, there could be a visual impact to the railway right-of-way.

4.5.2 Archaeological Resources

4.5.2.1 Surveys Conducted for the Buffalo Mountain Surface Mine

Cultural Resource Analysts, Inc. (CRA) conducted a Phase I archeological survey of the proposed mine project area between May 1, 2006 and May 19, 2006 (CRA 2006). The survey consisted of a combination of pedestrian survey and all-terrain vehicle survey supplemented with limited shovel testing on intact portions of ridge top and sideslope benches within the APE, as defined by the limits of the proposed mining operation. The purpose of the field work was to

determine if any architectural and/or archeological resources existed within the APE and whether or not those resources were potentially eligible for listing in the NRHP.

No previously identified sites listed in or eligible for the NRHP would be affected by the proposed mine construction. Two historic sites identified within the mine project area during the survey were considered potentially eligible for the NRHP. Site 46MO114 and Site 46MO117 were considered potentially eligible for inclusion in the NRHP under Criteria D.

CRA conducted Phase II National Register evaluations of Site 46MO114 and Site 46MO117 between November and December of 2006 (CRA 2007). Based on the results of the Phase II archival research, field investigations, and subsequent laboratory analysis, Site 46MO114 was determined not eligible for inclusion in the NRHP. With regard to Site 46MO117, the prehistoric component was determined eligible for inclusion in the NRHP. The SHPO concurred with the recommendations in the Phase II report.

In addition, Semaphore Hill Associates, LLC conducted an evaluation of the eligibility of six cemeteries for the NRHP pursuant to the criteria set forth in 36 CFR 60.4 (a-d), and in accordance with the guidelines established by the National Historic Preservation Act, as amended (36 CFR 800) and with all guidelines set forth in the U.S. Department of the Interior National Park Service Guidelines for Evaluating and Registering Cemeteries and Burial Places (1992) (SHA 2008). There are no cemeteries within the mine's proposed area of disturbance. With regard to cemeteries in the vicinity of the mine permit area, Site 46MO129 (Dempsey Cemetery), Site 46MO130 (Maynard Cemetery), Site 46MO131 (Mullins Cemetery), Site 46MO132 (Evans Cemetery), Site 46MO133 (Martin Cemetery), and Site 46MO134 (Davis Cemetery) are recommended not eligible for the NRHP in relation to Criterion A, Criterion B, and Criterion C. The SHPO concurred with the findings of the report and additionally found the cemeteries not to be eligible for the NRHP in relation to Criterion D. The SHPO stated that no further consultation would be necessary with respect to the cemetery resources.

4.5.2.2 Surveys Conducted for the King Coal Highway

During preparation of the King Coal Highway 2000 FEIS, only one archaeological site (46MO117) in the study area was determined to be eligible for the National Register of Historic Places. A MOA was entered into by CONSOL, the SHPO, and the WVDEP to conduct Phase III

data recovery activities on that site at a future date if the site cannot be avoided during mining activities (WVDCH 2009). A separate PA was entered into by the WVDOH and the SHPO to defer additional archaeology studies until a final highway alignment is developed for the highway project under any alternative alignment (WVDCH 2000).

4.5.2.3 Potential Effects

Buffalo Mountain Surface Mine

Because of other mine project constraints, the Buffalo Mountain Surface Mine would not avoid impacting Site 46MO117. The SHPO and CONSOL agreed the mine project would have an Adverse Effect on this site. The WVDEP, which provided the mine permit application to the WVDCH and SHPO, also consulted the Advisory Council on Historic Preservation (ACHP), and the ACHP declined to participate in a mitigation agreement. In June and July of 2009, the WVDEP, SHPO, and CONSOL signed a MOA to document a plan for mitigation of potential adverse effects to the site through Phase III archeological data recovery investigations of the prehistoric component. The MOA includes a Draft Phase III Archeological Data Recovery Plan for the site. Under the MOA, the data recovery excavations would be completed and would receive SHPO clearance before the site would be disturbed from mining activities.

King Coal Highway

There would be no impacts to archaeological resources from either of the alternatives other than Site 46MO117.

4.6 Section 4(f) Resources

In accordance with Section 4(f) of the *United States Department of Transportation Act of 1966* (49 U.S. Code [U.S.C], Section 303) and the *Federal Aid Highway Act of 1968* (23 U.S.C., Section 138), the Secretary of Transportation may not approve the use of land from any publicly owned park, recreation area, or wildlife and waterfowl refuge, or any historic site unless a determination is made that there is no feasible and prudent alternative to the use of land from the property; and, the action includes all possible planning to minimize harm to the property resulting from such use.

The No-Build Alternative would impact one Section 4(f) resource, the Norfolk and Western Railroad. Although archaeological site 46MO117 is eligible for listing in the NRHP and would be impacted by the No-Build Alternative, it is not considered a Section 4(f) resource because it does not warrant preservation in place (FHWA 2005).

No Section 4(f) resources were identified within the impact area of the Delbarton to Belo Project. At first glance, the Hatfield-McCoy Trail may appear to be a Section 4(f) resource, but it is not publicly owned, and, therefore, a key component of Section 4(f) eligibility is missing.

4.7 Indirect and Cumulative Impacts

Guidelines prepared by the Council on Environmental Quality (CEQ) for carrying out NEPA requirements broadly define indirect impacts as those that are caused by an action and are later in time or further removed in distance, but are still foreseeable (CEQ 1978). Secondary impacts may be associated with development that may result from the construction of a facility, such as a transportation improvement project, but differ from impacts directly associated with the construction and operation of the facility itself. Generally, these impacts are stimulated by an initial action and comprise a wide variety of indirect effects, such as changes in land use, development patterns, economic activity, population density, and related impacts on air, water, and other natural systems, including ecosystems. Indirect impacts may result in increased development pressure on open space, farmlands, and other natural resources.

Cumulative impacts, on the other hand, result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions (CEQ 1997), regardless of what agency, person, or organization undertakes such actions. Cumulative impacts result from past, present, and future actions. When considered in concert with other foreseeable developments and projects, they can result in a combined effect greater than considering separate elements independently.

The Delbarton to Belo Project is considered to be consistent with the *Mingo County Land Use Master Plan* and the *Mingo County Comprehensive Plan Update*. County planners were also heavily involved with the development of the PMLU plan, especially in the identification of land use compartments needed for future residential, commercial, and other utility development.

4.7.1 Indirect and Cumulative Effects Associated with Coal Mining

4.7.1.1 Background

Historically, the mining, preparation, and transportation of coal have been important sources of economic activity throughout much of West Virginia, eastern Kentucky, western Virginia, southeastern Ohio, and southwestern Pennsylvania. While the present-day economies within these regions are somewhat more diverse, coal mining and related activities continue to represent a substantial share of total commercial activity. For example, in West Virginia, coal revenues represent between 12 and 15 percent of the Gross State Product (Hicks and Burton, 2007). Moreover, in many coal producing counties, mining and related activities account for between 25 and 40 percent of all commerce (Burton *et al*. 2000, 2001). Coal and coal-related economic activities also contribute substantial revenues to state and local government operations. Again focusing on West Virginia, 2001 estimates suggest that direct and indirect coal-related tax collections were in excess of $300 million (Burton *et al.* 2000, 2001).

4.7.1.2 Indirect Effects

According to CONSOL (2012), the Buffalo Mountain Surface Mine would produce 1.5 million tons of coal per year at peak operation, which would occur over 9.5 years of the 15-year mine life. The first six months of the operation would consist of mine development, the last 12 months would consist of reclamation, and another four years would consist of non-peak coal extraction operations. An average production value for the full 15-year life was utilized in this analysis; the mine permit would facilitate the average production of 1.12 million tons of coal annually, with a projected value of $43.3 million in average annual revenues (at a mine mouth price of $38.50 per short ton). Additionally, the operation would provide continued full-time-equivalent workforce of 103 direct mining jobs at peak production. When other jobs enabled by this mine project are factored into the equation, e.g., the additional administration needs, the direct jobs would be higher: an annual average of 215 jobs (CONSOL 2012).

In addition to the coal sales and employment, mine project related economic activity would include approximately $77.6 million in capital investment in Mingo County (CONSOL 2012). Based on all these mine project-specific data and 2007 tax information, CONSOL (2012)

estimated totals for tax collections as a result of the Buffalo Mountain Surface Mine would be $51 million in state and local taxes and $37 million in Federal taxes.

4.7.2 Indirect Impacts Associated with Highway Construction

Indirect impacts are those normally associated with development that may result from the construction of a facility, such as a transportation improvement project, but differ from those impacts directly associated with the construction and operation of the facility itself. Indirect impacts are commonly referred to as induced development. Generally, these impacts are stimulated by an initial action and comprise a wide variety of secondary effects, such as changes in land use, development patterns, economic activity, utility service capacity, and population density. Although Indirect impacts may result in increased development pressure on open space and other natural resources, the rural character of the study area limits indirect impacts primarily to areas with some infrastructure in place.

Factors that typically induce indirect development are new access to potential development areas, increased roadway capacity, existing development plans, suitable terrain, and economic incentives. The potential for indirect development to occur in any particular area is determined in great part by individual municipal planning objectives.

Three factors were considered in the identification of potential indirect impacts. First, known development trends and redevelopment efforts in the study area were examined. Second, it was assumed that areas that have been developing or would be subject to redevelopment would be more likely to experience induced effects as a result of the improved access provided by the highway project under either alternative. Third, because of the limited availability of land and public infrastructure in Mingo County, induced development is most likely to occur near the interchanges on new highways rather than somewhere else.

This qualitative assessment included field reviews; interviews with planning and development officials; and a review of other secondary sources. Planning officials were contacted to discuss the highway project and gather information on other projects or trends in the area. Specific questions directed to these individuals during the interviews included the status of comprehensive plans, consistency of the highway project with county plans and programs for economic growth, the extent of public water and sewer systems, proposed development in the

area, and other relevant planning and economic development information. In addition, information was gathered on other major projects in the area.

As determined from existing trends and current plans, commercial or industrial growth is most likely to occur in clusters around future interchanges, and residential growth would be limited to specific areas identified in both the PMLU plan and the County's land use plan. In any event, all development would be constrained by topography and the limits of existing public water and sewer systems. Specifically, less than 2.0 percent of land in Mingo County is considered developable (MCRA 2001).

As a result, elected officials in Mingo County have targeted specific areas for growth and planned infrastructure improvements to coincide with future development opportunities in those areas. This has led to balanced development similar in concept to smart growth and the creation of sustainable communities. The proposed roadway facility would have access controls. Thus, sprawl would be limited and development concentrated in specifically identified growth areas.

Under the No-Build Alternative, growth would be controlled by the County's forthcoming zoning ordinance. But under the Delbarton to Belo Project, growth along the new highway corridor would be controlled by both the PMLU plan and the zoning ordinance. Most of the future growth anticipated by the Delbarton to Belo Project would occur on land disturbed by surface mining and, therefore, falls within an area directly impacted by the mine project.

Of course, future growth would occur outside the mine footprint. Suitable land, the availability of public water, the availability of public sewer service, and suitable transportation are typically used as appropriate development features that can be used to predict growth (Kulkarni 1976). The opportunity for induced development is strongest when all four elements are in place and almost nonexistent when one or more of the four elements are absent. By using the existence of these features as a predictor of growth, a 20-year build-out scenario was developed for each terminus interchange location.

Widespread soil failure is highly probable on slopes over 25 percent (Marsh 1978) and land with this characteristic is unlikely to be developed. It is also assumed if public water service is available (currently or with the assurance from local planners that it would be in the near future)

a build-out in 20 years is likely. Table 4-25 shows the build-out rates for interchange locations associated with either of the alternatives. Although subjective in nature, the build-out rates are an attempt to predict how much of the area around the interchanges would be developed in the next 20 years. A 40 percent build-out rate indicates that 40 percent of the land around the interchange would be developed during that time period. A 60 percent build-out rates indicates that 60 percent of the land would be developed. A 100 percent build-out rate indicates that all of the land would be developed. The interchange locations would be in the approximate same location regardless of which alternative would eventually be advanced to construction.

Table 4-25
Build-out Scenarios for the Representative Interchange Locations

Terminus	Location	Public Water Available	Public Sewer Service Available	Steep Slope Area	Likely Build-Out Rate
Northern	US 119 near WV 65	Yes	No	Yes, but some level land available	60%
Southern	US 52 west of Delbarton	Yes	No	Yes	40%

Following the identification of build-out rates for each interchange location, the extent of possible impacts on resources was calculated. The build-out rates were then applied to each resource to determine the potential for indirect impacts at each location. Though unlikely, build-out rates at 100 percent were also reported. Table 4-26 shows build-out scenarios for the two termini areas.

Table 4-26
Impacts Due to Build-Out Scenarios for Termini Areas

Terminus	Wetlands (ac)	Streams (lf)	Forests (ac)	Flood-plains (#)	Historic Resources (#)	Recreation Areas (feet)	Residences (#)
100 Percent Build-Out							
Northern	0.03	8,400	182	0	1	0	32
Southern	0.09	1,350	24	0	0	2,817	3
Northern: 60 Percent Build-Out / Southern: 40 Percent Build-Out							
Northern	0.02	5,040	109	0	1	0	20
Southern	0.04	540	10	0	0	1,127	2

Both alternatives could induce development and create indirect impacts. Economic pressures on the local community coupled with national trends are also likely to induce some additional development in the region.

The alternatives would also result in induced development, but growth in the corridor would be limited by the finite availability of land and infrastructure. The No-Build Alternative would likely only see growth at the termini, but a key community goal of the Delbarton to Belo Project is to see growth along the new corridor. Consequently, this has led to the development of a PMLU plan coincidental with this alternative consistent with Mingo County's master land use plan and its comprehensive plan. According to the PMLU plan (CONSOL 2010a), approximately 678 ac of land within the corridor would be designated for light industry and commercial uses, approximately 195 ac would be designated for public services, and approximately 106 ac would be designated for residential use.

Although the roadway termini would likely be the first areas where induced development would occur, resources in other areas could also be impacted. As time passes and new travel patterns would be created, development would move further away from the interchange areas. If no land use controls are in place, development could occur further away from the interchanges almost immediately. Still, developmental pressures would be expected to remain lower in non-growth areas. This in turn would be likely to allow population densities and economic activity in rural areas to remain relatively constant with the present. Thus, the likelihood of indirect impacts further away from future interchanges would remain minimal.

The larger area expected to be impacted by either alternative (i.e., Mingo County in its totality) is considered to be one of the most economically depressed areas of West Virginia (Marshall University 2006). Historically, the economy of this area is dominated by extractive natural resource industries, with little diversification. State and local officials have indicated that there is considerable need for economic diversification within the area. New opportunities associated with implementation of the PMLU plan would meet the demand for the diversification of services and development (MCRA 2010) if the Delbarton to Belo Project would be advanced.

Mitigation

Induced development from either alternative can be accommodated in an orderly manner. Overall, secondary development would be an economic benefit to the community and supports the highway construction needs. Avoidance and minimization of the adverse impacts related to induced development would be accomplished through comprehensive planning and implementation of other plans. Although strict land use controls are not currently present in the

area, Mingo County is preparing a limited-type of zoning ordinance that is likely to be in place prior to highway construction. In conjunction with the county comprehensive plan and land use master plan, this ordinance would guide future development. Additional mitigation strategies or future developmental controls could include access management, transfer of development rights, growth management regulations, resource management, resource preservation, conservation easements, and the provision of incentives for infill development in other areas of the county. Infill is the use of land within a built-up area for further construction, especially as part of a community redevelopment program. Discussions with local officials indicated that secondary impacts within the study area would likely be limited to targeted growth areas because that is where land is available and infrastructure would be in place.

4.7.3 Cumulative Effects

Taken individually, the impacts from an action may have little effect on the environment. When viewed as a sequence of events, however, different actions may add up to, or cause, additional effects over time. Thus, the cumulative impact may be of more consequence than isolated, individual impacts.

Past projects since 1970 and planned actions through the year 2030 were reviewed to complete a qualitative assessment of cumulative impacts. The geographic scope of the cumulative impacts assessment was identical to that used in the CHIA. That analysis utilized portions of the Miller Creek, Buffalo Creek, and Pigeon Creek watersheds as the potential area of impact (WVDEP 2010b). Primary data sources included a review of comprehensive plans and related programming documents, interviews with local planners and economic development officials, study area field views, and secondary data sources. As a result, a qualitative analysis rather than a quantitative trends analysis emerged. In addition to the primary data sources identified above, the Corps has developed a Cumulative Effects Analysis (CEA) Tool to assist the agency with the evaluation of cumulative effects as required by CWA Section 404(b)(1) Guidelines [40 CFR 230.11(g)] and NEPA (40 CFR 1508.7).

Cumulative effects can be difficult to understand because they are not clear cut. They can accrue from similar impacts, from multiple actions, or be the product of unrelated impacts from a variety of actions. In addition, some actions may offset the effects of other actions, lessening

the overall impact. Cumulative effects can also arise from actions which may only be connected by their common impacts on similar resources, ecosystems, or human communities.

The analysis of cumulative effects presents many challenges. Proponents of future actions may be reluctant to reveal information for a number of reasons. Plans may be uncertain and project sponsors, both private and public, may not see a benefit in disclosing them. Furthermore, project sponsors may not completely understand the importance of their plans on other projects, or understand the potential impact inherent in those plans on others. Detailed design and operational information is generally not available for proposed projects. At the preliminary stage of project development, locations may not be set. Project size and magnitude may not have been determined. Usage estimates or projections may not be sufficiently rigorous. Many factors also affect the timing, location, and design of future actions. If programming and funding requirements have not been finalized, future actions may be delayed, downsized, or modified significantly over time. If definitions of future actions are too liberal, future impacts may be predicted as being too high. If definitions are too conservative, future impacts may be underestimated.

4.7.3.1 Introduction

Large forested tracts are important habitat for area sensitive species and species requiring large territories. These forested areas contain other microhabitats, such as streams and associated riparian corridors, which are utilized by a wide variety of wildlife species for feeding and/or breeding purposes. Land use/land cover patterns were assessed for the study area at a state and regional level, as well as an 8-digit, 10-digit, 12-digit, and Cumulative Impact Area (CIA) watershed scale. Analyses done at the state/regional level are compared using square miles, while the smaller scale (10-digit), (12-digit), and CIA evaluations use acreage as the basis of comparison.

The land use/land cover analysis was a tiered analysis of the state of West Virginia, the Mountaintop Mining Region of West Virginia, the Tug Fork basin (8-digit) (which, along with the Wolf Creek-Tug Fork watershed, includes a portion of the State of Kentucky), the Pigeon Creek and Wolf Creek-Tug Fork (10-digit) watersheds, the Buffalo-Miller-Pigeon CIA watershed; the Miller Creek-Tug Fork, Outlet of Pigeon Creek, and Headwaters of Pigeon Creek (12-digit) watersheds.

4.7.3.2 Land Use/Land Cover at a Regional/State Scale

Overall, active mining makes up approximately 423.5 square miles in the state of West Virginia, or approximately 1.8 percent of the land use/land cover. Active mining accounts for 220 square miles within the mountaintop mining region, or 11.6 percent of the land use/land cover of this region. Within the Tug Fork basin, active mining accounts for 77.2 square miles of its land use/land cover, or 5.0 percent of the basin (CONSOL 2012).

Land use/land cover was broken down by 12 NLCD categories, in addition to the sub-categories of active mining and post-mining transitional. For the entire state of West Virginia, the dominant land use/land cover is deciduous forest (roughly 18,220.7 square miles or approximately 75.2% of the land use/land cover). Evergreen forest and mixed forest make up an additional 4.3 percent of the land use/land cover. In total, it is estimated that approximately 79.5 percent of West Virginia is of a forested land use/land cover. Approximately 2.2 percent of land use/land cover statewide is active mining and post mining transitional.

The analysis of land use/land cover within the mountaintop mining region displayed similar percentages of forest, but a different trend in mining activity as compared to the state-level analysis. Approximately 75 percent of the 1,901.6 square miles that make up the mountaintop mining region is forested land use/land cover. However, active mining and post mining transitional areas account for approximately 14.3 percent (versus the 2.2% at the state level). This can be in part explained by examining the active mining acreages, which has increased activity in the mountaintop mining region.

4.7.3.3 Watershed Level Land Use/Land Cover

The CHIA were calculated based on the following: 1) the amount of acreage within the Pigeon Creek and Wolf Creek-Tug Fork (10-digit) watersheds; the Headwaters of Pigeon Creek, Outlet of Pigeon Creek, and Miller Creek-Tug Fork (12-digit) watersheds; and the Buffalo-Miller-Pigeon CIA watershed that are covered by SMCRA-permitted mines; and, 2) the length of streams that intersect SMCRA-permitted mines. The procedures and methodology are based on the expert report of Douglas C. Pflugh, as presented in the United States District Court for the Southern District of West Virginia, Huntington Division on May 16, 2006, in Ohio Valley Environmental

Coalition, *et al.* (Plaintiffs) vs. the United States Army Corps of Engineers, *et al.* (Defendants) (No. 3:05-0784).

The Pigeon Creek and Wolf Creek-Tug Fork (10-digit) watersheds have slightly less forested cover (70.8% forested for Pigeon Creek and 65.9% forested for the Wolf Creek-Tug Fork) than the state of West Virginia and the Mountaintop Mining Region. The Outlet of Pigeon Creek, Headwaters of Pigeon Creek, and Miller Creek-Tug Fork, (12-digit) watersheds show less forested cover (72.2% forested, 68.6% forested, and 69.1% forested, respectively) than either the state of West Virginia, or the Mountaintop Mining Region.

4.7.3.4 Watershed Level Stream Length Analysis

Using the National Hydrography Dataset, or NHD, stream length for each scale of analysis was calculated. Within the GIS, stream data were clipped to the watershed boundaries being analyzed. This created separate stream data files for each scale of analysis. Total length was then calculated. The portions of the stream data that fell within the mine permit areas were also calculated, resulting in a measurement of stream length within mine permits for each watershed.

Total stream length is approximately 1,593,634 lf for the Pigeon Creek (10-digit) watershed, approximately 595,335 lf for the Outlet of Pigeon Creek (12-digit) watershed, and approximately 632,458 lf for the Headwaters of Pigeon Creek (12-digit) watershed. Total stream length is approximately 1,934,395 lf for the Wolf Creek-Tug Fork (10-digit) watershed, and approximately 565,660 lf for the Miller Creek-Tug Fork (12-digit) watershed. Total stream length is approximately 424,114 lf for the Buffalo-Miller-Pigeon CIA watershed. Streams located within currently SMCRA-permitted mine and reasonably foreseeable future mines cover approximately 338,909 lf of the total stream length within the Pigeon Creek (10-digit) watershed, representing 20.6 percent of the total stream length within the Pigeon Creek (10-digit) Watershed. Streams located within currently SMCRA-permitted mine and reasonably foreseeable future mines cover approximately 118,908 lf of the total stream length within the Outlet of Pigeon Creek (12-digit) watershed, representing 20.0 percent of the total stream length within the Outlet of Pigeon Creek (12-digit) watershed. Streams located within currently permitted (under SMCRA) mine and reasonably foreseeable future mines cover approximately 106,758 lf of the total stream length within the Headwaters of Pigeon Creek (12-digit) watershed, representing 16.9 percent of the total stream length within the Headwaters of Pigeon Creek (12-digit) watershed. Streams

located within currently permitted (under SMCRA) and reasonably foreseeable future mines cover approximately 64,737 lf of the total stream length within the Wolf Creek-Tug Fork (10-digit) watershed, representing 3.3 percent of the total stream length within the Wolf Creek-Tug Fork (10-digit) Watershed. Streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines cover approximately 63,954 lf of the total stream length within the Miller Creek-Tug Fork (12-digit) watershed, representing 11.3 percent of the total stream length within the Miller Creek-Tug Fork (12-digit) watershed. Streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines cover approximately 88,928 lf of the total stream length within the Buffalo-Miller-Pigeon CIA watershed, representing 21.0 percent of the total stream length within the Buffalo-Miller-Pigeon CIA watershed.

Total first-order stream length is approximately 923,998 lf within the Pigeon Creek (10-digit) watershed, which represents 58.0 percent of the total stream length within the watershed. Total first-order stream length is approximately 346,843 lf within the Outlet of Pigeon Creek (12-digit) watershed, which represents 58.3 percent of the total stream length within the watershed. Total first-order stream length is approximately 388,008 lf within the Headwaters of Pigeon Creek (12-digit) watershed, which represents 61.3 percent of the total stream length within the watershed. Total first-order stream length is approximately 1,058,603 lf within the Wolf Creek-Tug Fork (10-digit) watershed, which represents 54.7 percent of the total stream length within the watershed. Total first-order stream length is approximately 324,793 lf within the Miller Creek-Tug Fork (12-digit) watershed, which represents 57.4 percent of the total stream length within the watershed. Total first-order stream length is approximately 224,698 lf within the Buffalo-Miller-Pigeon CIA watershed, which represents 53.0 percent of the total stream length within the watershed.

First-order streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines include approximately 271,620 lf of the total first-order stream length within the Pigeon Creek (10-digit) watershed, representing 29.4 percent of the total first-order stream length within the watershed. First-order streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines include approximately 101,697 lf of the total first-order stream length within the Outlet of Pigeon Creek (12-digit) watershed, representing 29.3 percent of the total first-order stream length within the watershed. First-order streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines include approximately 96,060 lf of the total first-order stream length within the

Headwaters of Pigeon Creek (12-digit) watershed, representing 24.8 percent of the total first-order stream length within the watershed. First-order streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines include approximately 43,340 lf of the total first-order stream length within the Wolf Creek-Tug Fork (10-digit) watershed, representing 4.1 percent of the total first-order stream length within the watershed. First-order streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines include approximately 42,556 lf of the total first-order stream length within the Miller Creek-Tug Fork (12-digit) watershed, representing 13.1 percent of the total first-order stream length within the watershed. First-order streams located within currently permitted (under SMCRA) and reasonably foreseeable future mines include approximately 70,843 lf of the total first-order stream length within the Buffalo-Miller-Pigeon CIA watershed, representing 31.5 percent of the total first-order stream length within the watershed.

Streams disturbed by pre-law mining and completely released mining activity include approximately 163,316 lf (or 10.2%) of the total stream length within the Pigeon Creek (10-digit) watershed, approximately 56,936 lf (or 9.6%) of the total stream length within the Outlet of Pigeon Creek (12-digit) watershed, and approximately 83,637 lf (or 13.2%) of the total stream length within the Headwaters of Pigeon Creek (12-digit) watershed. Streams disturbed by pre-law mining and completely released mining activity include approximately 560,826 lf (or 29.0%) of the total stream length within the Wolf Creek-Tug Fork (10-digit) watershed, and approximately 78,561 lf (or 13.9%) of the total stream length within the Miller Creek-Tug Fork (12-digit) watershed. Streams disturbed by pre-law mining and completely released mining activity include approximately 35,732 lf (or 8.4%) of the total stream length within the Buffalo-Miller-Pigeon CIA watershed.

First-order streams disturbed by pre-law mining and completely released mining activity include approximately 69,700 lf (or 7.5%) of the total first-order stream length within the Pigeon Creek (10-digit) watershed, approximately 17,740 lf (or 5.1%) of the total first-order stream length within the Outlet of Pigeon Creek (12-digit) watershed, and approximately 47,894 lf (or 12.3%) of the total first-order stream length within the Headwaters of Pigeon Creek (12-digit) watershed. First-order streams disturbed by pre-law mining and completely released mining activity include approximately 286,457 lf (or 27.1%) of the total first-order stream length within the Wolf Creek-Tug Fork (10-digit) watershed, and approximately 39,909 lf (or 12.3%) of the total first-order stream length within the Miller Creek-Tug Fork (12-digit) watershed. First-order streams

disturbed by pre-law mining and completely released mining activity include approximately 11,282 lf (or 5.0%) of the total first-order stream length within the Buffalo-Miller-Pigeon CIA watershed.

Stream disturbance related to the total past, present, and future mining activities includes approximately 492,225 lf (or 30.9%) of the total stream length within the Pigeon Creek (10-digit) watershed, approximately 175,844 lf (or 29.5%) of the total stream length within the Outlet of Pigeon Creek (12-digit) watershed, and approximately 190,395 lf (or 30.1%) of the total stream length within the Headwaters of Pigeon Creek (12-digit) watershed. Stream disturbance related to the total past, present, and future mining activities includes approximately 625,563 lf (or 32.3%) of the total stream length within the Wolf Creek-Tug Fork (10-digit) watershed, and approximately 142,545 lf (or 25.2%) of the total stream length within the Miller Creek-Tug Fork (12-digit) watershed. Stream disturbance related to the total past, present, and future mining activities includes approximately 124,660 lf (or 29.4%) of the total stream length within the Buffalo-Miller-Pigeon CIA watershed.

First-order stream disturbance related to the total past, present, and future mining activities includes approximately 341,320 lf (or 36.9%) of the total first-order stream length within the Pigeon Creek (10-digit) watershed, approximately 119,437 lf (or 34.4%) of the total first-order stream length within the Outlet of Pigeon Creek (12-digit) watershed, and approximately 143,984 lf (or 37.1%) of the total stream length within the Headwaters of Pigeon Creek (12-digit) watershed. First-order stream disturbance related to the total past, present, and future mining activities includes approximately 329,797 lf (or 31.2%) of the total first-order stream length within the Wolf Creek-Tug Fork (10-digit) watershed, and approximately 82,465 lf (or 25.4%) of the total first-order stream length within the Miller Creek-Tug Fork (12-digit) watershed. First-order stream disturbance related to the total past, present, and future mining activities includes approximately 82,125 (or 36.5%) of the total first-order stream length within the Buffalo-Miller-Pigeon CIA watershed.

4.7.3.5 Corps Cumulative Effects (CEA) Analysis

Introduction to the CEA Tool

The Corps Institute for Water Resources (IWR) used a CEA framework to develop a CEA methodology for aquatic resource impacts associated with the Appalachian surface mining region. The methodology included a review of available literature, acquisition of available land use and ecological GIS data, development of logic models to characterize the relationships between land uses and aquatic ecosystem effects, and development of a computer interface ("the CEA tool") with supporting documentation. The Corps based this methodology on the ecological management decision support (EMDS) system, which was originally developed by the U.S. Forest Service to support watershed characterization and decision-making in National Forests. EMDS has been used in over 40 peer-reviewed journal publications and technical conference presentations.

The analytical component of the CEA tool relies on national and state data from various federal and state agencies and identifies the major land use stressors affecting the aquatic ecosystem. The CEA tool is used to inform the agency decision maker about the condition of a geographic area. The Corps evaluates the regulated impact in relationship to the past, present and reasonably foreseeable future actions. The CEA tool helps frame a proposed Section 404 action in the context of other activities in the watershed and is incorporated with other site-specific analyses, including those by the Corps and other agencies. The CEA tool does not prescribe a specific action, but serves as an opportunity to raise questions that should be addressed as part of the project evaluation process. Like all ecological models, the CEA tool does not provide a basis for making specific predictions with a high level of certainty. Rather, it provides a watershed perspective of general trends in degradation. It does not prescribe specific thresholds that would force a certain action.

The CEA tool relies on indirect assessments of water quality. The aquatic condition data are derived from the WVSCI data. The CEA tool indirectly considers water quality through consideration of land uses and their potential impact on stream insects. The CEA tool takes into account a number of other water-quality related data, including the number of NPDES permits per stream mile and the percentage of streams on the 303(d) list (i.e., impaired streams) within the watershed of study. The CEA tool gathers the best available GIS data to provide a

qualitative and quantitative, science-based measure of the severity of stressors within a watershed. It provides information to help the Corps understand the magnitude of the proposed action in relationship to past/on-going activities, understand the important stressors that need to be considered as part of the Section 404 permit application, characterize the effects of possible watershed-based compensatory mitigation actions, and project future conditions with implementation of a proposed project. The CEA tool uses statistical analysis of available data to correlate landscape-scale variables to the aquatic environment. Together, the landscape-scale variables and stream condition information is analyzed to understand the important stressors on the aquatic environment. The results of this analysis serve to inform Section 404 permit decisions and mitigation opportunities. The CEA tool was developed to provide data within each 12-digit HUC within southern West Virginia.

During the development of the CEA tool for southern West Virginia, it was determined that the most discriminating stressors could be grouped into four major areas: developed/residential land uses, mining, in-stream condition, and other upland condition. The research by IWR indicated the WVSCI scores showed measurable response patterns to particular stressors within each group. For developed/residential land uses, these are comprised of percent development in the watershed and rural structures found in the 100 m buffer of USGS blue-line streams (recorded as number per square mile of buffer). For mining, the stressors are: area of watershed comprised of abandoned mine lands, percent surface mining area in the watershed, and the percentage of valley fill area in the watershed. For in-stream condition, the stressors are percent of streams impacted as indicated by listing on the 303(d), number of NPDES permits per stream mile, road crossings per stream mile, percent of streams in impoundments and number of impoundments and dams. Most of the “streams” in this dataset refer to USGS blue-line streams as indicated on the 1:24000 (7.5 minute) topographic quadrangles. However, the number of impoundments and dams is measured on USGS blue-line streams as indicated on the 1:100000 (15 minute) quadrangles.

Other upland condition stressors are further subdivided into two sections: those that occur within the 100 m buffer of USGS blue-line streams (as measures on 7.5’ quadrangles) and those that are within the overall watershed. However, the stressors are the same; they differ only by their location. They include percent land use in agriculture, percent land use associated with logging activities, road density (measured in road miles per square mile land area), number

of oil/gas wells per square mile, and number of other industrial facilities per square mile ("other industrial facilities" as defined by the U.S. EPA).

The CEA tool provides baseline data for each 12-digit HUC watershed, and then based on statistical analysis, provides scores (ranging from -1.0 to 1.0) for each stressor, each grouping and then for the overall watershed. The lower the value of the score, the more that particular stressor is having an adverse effect on water quality as indicated by the WVSCI score. However, it should be noted that the CEA tool does not proscribe a decision-making threshold based on any of the scores. It is a tool to be used by the reviewer, in combination with other information on a particular project, to frame a particular project within the context of cumulative effects. Generally, positive scores indicate lower stress on water quality by a particular stressor, within a particular category, or within the overall watershed. Thus negative scores generally indicate greater stress to water quality in the same manner.

The CEA tool was used to describe potential cumulative effects of both of the alternatives below. As indicated above, the CEA tool is based within study areas comprised of 12-digit HUC watersheds. For the analysis of alternatives to the project described in this SEIS, the CEA tool analysis was conducted on three 12-digit HUC watersheds: Outlet Pigeon Creek, Headwaters Pigeon Creek and Miller Creek-Tug Fork. Further, the CEA tool was not used to distinguish between the time frames of zero to 10 year and 10 to 20 years. For this analysis, available information was used to describe the affected environment approximately 25 years from today. It should be noted other activities under these categories may be proposed and/or occur within this time frame. However, outside of the information available at this time, these activities would be speculative at best and not reasonably foreseeable.

The CEA tool also does not account for potential mitigation to any of the stressors described above. For instance, as surface mines are reclaimed over time, it is reasonable to assume the stresses typically associated with surface mining (loss of forested habitat, increased surface water runoff temperature due to loss of canopy, etc.) would be reduced over time, particularly within the 25-year time frame used for this analysis. Therefore, the analysis using the tool can be described as "worst-case scenario" indicating the effects of potential actions would not be offset by the lessening of other stressors. For instance, although the PMLU for the proposed Buffalo Mountain Surface Mine would include some acreage of forestland, this acreage is not

added back into the percent logging variable (and thereby potentially decreasing the amount of stress) for the analysis.

Generation of Data Used in CEA Tool

The following provides an explanation of data sources and incorporation of these data used in the CEA Tool.

- For Development in the Watershed, CONSOL (2012) provided in their EID acreages for various developments along the King Coal Highway as part of the proposed PMLU for Buffalo Mountain Surface Mine. Although the tool did not split the development area precisely along watershed lines, if the bulk of the development was in one 12-digit HUC, it was assigned to that watershed. The anticipated 800 ac development to be associated with the Air Transportation Park in Mingo County came from information elsewhere in this document. This Park will be located in the Headwaters Pigeon Creek watershed.

- For Total Mining Percentage: CONSOL (2012) provided information on proposed mines based on 12-digit HUCs. Only those mines proposed for surface mining were used in the CEA Tool based upon its model design. The amount of valley fill acreage was subtracted from this total using information below.

- For Valley Fill Percentage: The approximately-measured sizes of the proposed valley fill for Buffalo Mountain Surface Mine was based on the approved SMCRA mining map. Using a measurement tool on USGS National Map, these areas included the valley fill toe upwards to the top of the highest lift, and whatever elevation this occurred, this contour line was followed around the valley to the other side of the highest lift and back down to the toe. So this included area that has the traditional "valley fill" lifts plus the area behind the lifts known as a "backstacking area." Essentially, the lifts function like an earthen dam with all the overburden filling the valley behind it, so that was the area measured. Although some or all of the other reasonably foreseeable surface (and for that matter, even some of the underground) mines may involve valley fills, this information is not readily available.

- NPDES Permits/Stream Mile: In this case, since all mines of whatever type have to have an NPDES permit, using the information on reasonably foreseeable mines provided by CONSOL (2012), the number of NPDES permits corresponds with the number of these reasonably foreseeable mines. Most NPDES permits involve multiple outlets, and since there are valley fills proposed for all 3 HUC-12 watersheds covered by the Buffalo Mountain Surface Mine, its NPDES permit was counted in all three watersheds. Additional NPDES outlets would be located in the Buffalo Creek watershed in association with the Buffalo Mountain Surface Mine; however, these outlets are on-bench ponds with the ultimate discharge points being in either the Miller Creek-Tug Fork or Headwaters Pigeon Creek watershed.

- For Road Crossings/Stream Mile: This represented the total crossings by both proposed haul roads associated with the Buffalo Mountain Surface Mine as well as

anticipated crossings by the King Coal Highway, since the crossing is the stressor for this variable, not necessarily the type of road used to cross the stream. These were crossings that only showed up over USGS 1:24000 (7.5 minute) blue-line streams. Those highway crossings were generated using either the conceptual alignment for the Delbarton to Belo Project, or by reasonable assumptions of anticipated crossings within the No-Build Alternative corridor.

- For Percentage of Stream in Impoundments: These were measured off the approved mining map for the Buffalo Mountain Surface Mine, measured as the end of the proposed impoundment berm upstream to the end of the proposed pond. These were measured only for ponds proposed to occur in USGS 1:24000 (7.5 minute) blue-line streams.

- For Road Density within the 100 m Buffer of Streams: This was only counted for those road crossings associated with the King Coal Highway (because haul roads are almost never shown on the census data as public roads and the original data used for the CEA TOOL model looked at Census data alone). Assumptions included only counting road crossings and the roads being absolutely perpendicular to the flow of the USGS 1:24000 (7.5 minute) blue-line streams. For instance, one road crossing would constitute 200 m of road within the 100 m buffer. The precision was not available to determine whether any other part(s) of the King Coal Highway would occur within the 100 m buffer of any other of these streams (judged off of conceptual alignment of Delbarton to Belo Project or the corridor of the Original King Coal Highway). In other words, portions of highway alignments could occur within the 100 m buffers of streams outside of those assumed for actual road crossings; these areas were not included in the CEA tool.

- For Road Density within the Watershed: Similar to road density within stream buffers, this was only counted for the King Coal Highway. The total mileage for the conceptual alignment for the Delbarton to Belo Project was used covering all three watersheds; however, the division of lengths amongst the watersheds is approximate. Further, the total mileage for the Original King Coal Highway is also approximate without a conceptual alignment (as well as division amongst the watersheds). Without a precise alignment in the No-Build Alternative, road density within the watershed is conservative based on straight-line distances.

- For Logging Activities (watershed condition): Representatives from CONSOL contacted the main timber owners within these watersheds and these companies provided estimates of total logging anticipated within the next 20 years in these watersheds. Given that timbering is not supposed to occur within a certain distance of streams, it was assumed no logging would occur within the 100 m buffer areas of streams.

Cumulative Effects of the No-Build Alternative

This alternative assumes the King Coal Highway would be built within the FEIS corridor. As this alternative would be the outcome should the Corps deny the Section 404 permit for the Buffalo Mountain Surface Mine, for this analysis it is not included as a RFFA. For potential impacts

within the King Coal Highway 2000 corridor, a specific alignment was not designed or proposed. However, given highway design constraints and the overall direction of the corridor, certain impacts were assumed to be reasonably foreseeable (basically stream crossings).

Based on data provided by CONSOL (2012), Outlet Pigeon Creek watershed would experience an additional 299 ac of surface mining. Without access to specific mining plans (outside of the Buffalo Surface Mine), it is unclear whether these additional surface mains would include valley fills. Therefore, the surface mining acreage was assumed to impact the percent total mining stressor alone. In addition to surface mining, as each mining project (whether surface or underground) requires at least one NPDES outlet, it is anticipated a total of six NPDES permits would be added to this watershed (based on the anticipation of six mines in the watershed). Using the 2000 King Coal Highway corridor, this watershed would contain one additional road stream crossing, and increase the road density by 0.12 mi within 100 m stream buffers and 2 mi within the overall watershed. Finally, and based on information provided by the two major landowners in the watershed (Cotiga Land Company and Pocahontas Land Company), a total of 500 ac of existing forestland would be expected to be timbered within the next 25 years within this watershed. As most BMPs require logging/timbering to occur outside of 100 ft on each side of streams, this acreage would be expected to occur mainly outside of the 100 m buffer of streams. The WCI would decrease from 0.20 to 0.14 under this alternative, mainly associated with potential impacts by the additional NPDES permits and mining impacts.

Using the same data sources, Headwaters Pigeon Creek watershed would experience an additional 555 ac surface mining, six additional NPDES permits and 4,900 ac of logging/timbering within the watershed (as indicated above, assumed to be outside of the 100 m stream buffer). This watershed will have 800 ac of increased development due to the Air Transportation Park. This would result in a decrease in WCI from 0.04 to -0.12. The original King Coal Highway corridor (i.e., No-Build Alternative) would not be anticipated to have impacts to the stressors identified in the CEA tool within this watershed.

The Miller Creek-Tug Fork watershed would experience an additional 848 ac surface mining, five additional NPDES permits, and 500 ac of logging/timbering within the watershed. Building the King Coal Highway within the original 2000 corridor would result in an additional three stream road crossings, 0.37 mi of road within the 100 m buffer of streams, and 5.4 mi of road within the overall watershed. The WCI would experience a slight decrease from 0.09 to 0.02.

It should be noted that the activities indicated as potential RFFAs above are generally outside of the regulatory authority of either the FHWA or the Corps. Logging/timbering activities are generally exempt from most Clean Water Act regulations. NPDES permitting is regulated by the WV DEP with USEPA oversight. Surface mining is also regulated by the WV DEP, as the OSM has delegated SMCRA authority to the state in West Virginia. Some surface mines do involve the discharge of fill material into waters of the United States, and therefore, would require authorization under Section 404 of the CWA by the Corps. However, many mine operators also design their activities to avoid impacting waters of the U.S., and therefore, some, if not all, of the increased surface mines reasonably expected to occur in these watersheds may not require authorization from the Corps.

Based on a review of the analysis for this alternative, the majority of cumulative effects associated with this alternative would occur in the Outlet Pigeon Creek watershed.

Cumulative Effects of the Delbarton to Belo Project

This alternative describes the Buffalo Mountain Surface Mine combined with the proposed shift of the King Coal Highway whereby the Highway would be built on top of fills constructed as part of the mining process. The majority of the Highway would occur within the currently approved SMCRA permit boundary for the mine. However, the shift in the highway corridor would also include two connector pieces north and south of the mine, connecting the shifted Highway to US 119 and US 52, respectively. As the PMLU for the Buffalo Mountain Surface Mine would include developable land, the analysis includes this development as a reasonably foreseeable future action. However, the areas of developable land were not precisely divided among the three watersheds included in the analysis. Each mapped area was assigned to the watershed which comprised the majority of the proposed developable land use area.

Based on data provided by CONSOL (2012), Outlet Pigeon Creek watershed would experience an additional 1,865 ac of surface mining and 595 ac of valley fills. The valley fill acreage would be all associated with the Preferred Alternative of the Buffalo Mountain Surface Mine. Using the same caveats as above, no valley fill acreage is attributed to the other reasonably foreseeable surface mines. Therefore the other surface mining acreage was assumed to impact the percent total mining stressor alone. It is anticipated a total of seven NPDES permits would be added to this watershed (based on the anticipation of seven mines in the watershed, including Buffalo

Mountain Surface Mine). Using the shifted King Coal Highway corridor, this watershed would contain 11 additional road stream crossings, and increase the road density by 0.75 mi within 100 m stream buffers and 6.03 mi within the overall watershed. A total of 1.03 additional stream mi would be impounded, associated with the proposed sediment ponds on the Buffalo Mountain Surface Mine. Finally, a total of 500 ac of existing forestland would be expected to be timbered within the next 25 years within this watershed. This acreage would be expected to occur mainly outside of the 100 m buffer of streams. Finally, given the approved PMLU of development (on a portion of the proposed Buffalo Mountain Surface Mine), the watershed would experience an increase in 792 ac of developed land. The WCI would decrease from 0.20 to -0.04 under this alternative, mainly associated with potential impacts by the additional NPDES permits and mining impacts, in addition to impacts associated with the additional development in the watershed.

Using the same data sources, Headwaters Pigeon Creek watershed would experience an additional 910 ac surface mining, 66 ac of valley fills, seven additional NPDES permits, 0.15 miles of stream within impoundments (all associated with the Buffalo Mountain Surface Mine) and 4,900 ac of logging/timbering within the watershed (as indicated above, assumed to be outside of the 100 m stream buffer). Road density would increase in the watershed by 0.6 mi due to proposed southern connector piece of the Highway. This alternative would involve an increase of 188 ac of developed land due to the approved PMLU of the Buffalo Mountain Surface Mine. Finally, as under the other Alternative, there will also be an increase in 800 ac of developed land due to the Air Transportation Park. These cumulative impacts would result in a decrease in WCI from 0.04 to -0.18. The decrease in WCI associated with the Delbarton to Belo Project is slightly greater than that which would be experienced under the No-Build Alternative.

The Miller Creek-Tug Fork watershed would experience an additional 1,200 ac surface mining, 24 ac valley fills, five additional NPDES permits, and 500 ac of logging/timbering within the watershed. The shift in the Highway Corridor would result in an increase in 0.47 mi of road within the overall watershed. The WCI would experience a slight decrease from 0.09 to 0.01, very similar to the No-Build Alternative.

Conclusions on Cumulative Effects Related to Corps CEA Tool

Table 4-27 (below) summarizes the changes in the WCI expected to occur based on the implementation of either the alternatives discussed above.

Table 4-27
Change in Watershed Condition Index Based on Alternatives

Location	Baseline	No-Build Alternative	Delbarton to Belo Project
Outlet Pigeon Creek	0.20	0.14	-0.04
Headwaters Pigeon Creek	0.04	-0.12	-0.18
Miller Creek-Tug Fork	0.09	0.02	0.01

As indicated above in the discussion of use of the CEA tool, the tool does not take into account any mitigation activities that may be associated with either of the Alternatives. Although stresses on water quality would be expected to increase under either of the alternatives, mitigation associated with the Buffalo Mountain Surface Mine would be expected to offset some of these stressors by improving streams within some of these same watersheds. Some of this mitigation includes removal of proposed sediment ponds (currently affecting the percentage of streams in impoundments stressor under the Delbarton to Belo Project) and restoration of stream functions as well as rehabilitation and enhancement of streams in other parts of some of these watersheds. Further, one aspect of the proposed mitigation plan for the Buffalo Mountain Surface Mine would be expanding water treatment services to rural residents within some of these watersheds. In reviewing the associated literature used to develop the CEA tool, most research indicates the lack of modern sewage treatment in rural watersheds, particularly those residences located with the 100 m buffer of streams, most explains the increased amounts of stress to water quality. Therefore, although it would be outside of the scope of the use of the tool, this particular mitigation activity would be expected to further offset the cumulative effects of either of the Alternatives, if not result in an overall improvement to these watersheds.

In addition to the proposed mitigation associated with the Buffalo Mountain Surface Mine, the CEA tool in its current format does not account for improved reclamation activities currently associated with surface mining. As the baseline scores for these watersheds reflect past activities and their impacts on water quality and these impacts occurred over a large number of years, some of which occurred prior to the implementation of SMCRA (for example, abandoned mine lands), it would be anticipated that future mining would not result in the same increases of

stress on water quality as experienced due to previous mining. Another factor to consider outside of the scope of the CEA tool is the typical rotational nature of timbering activities. For example, although some of the reasonably foreseeable future activities in this analysis include future timbering, the tool does not account for the renewable nature of forested lands when managed using approved BMPs. Within the 20 to 25 year time frame used for this analysis, it is reasonable to assume that lands currently being timbered or timbered in the recent past would be expected to recover to pre-timbering levels (although likely not to pre-settlement conditions) thereby offsetting the cumulative impacts associated with timbering.

In conclusion, the main purpose of the CEA tool is to frame a proposed project, or in this case alternatives to a proposed project, within the framework of reasonably foreseeable future projects and within the context of past activities that have resulted in stresses on water quality as demonstrated in WVSCI scores. The tool does not specify, nor would it be appropriate to assign, a threshold WCI or change in WCI beyond which a particular alternative would not be approvable. However, the analysis may be used in concert with the overall review of the potential environmental consequences of alternatives to make a decision on the alternatives.

4.7.3.6 Regional Development

Regardless of which alternative would be chosen, there would be cumulative impacts to the area. Under both alternatives, impacts would occur to large tracts of forested land, primarily through the loss of this land, but also by opening up previously inaccessible land to future development pressures. According to environmental studies associated with the mining permit application, past, present, and future impacts to forested land were deemed comparable to both the State of West Virginia and the Mountaintop Mining Region (CONSOL 2012). Other actions that have contributed to cumulative effects are shown in Table 4-28.

Table 4-28
Past, Present, and Future Major Actions in the Study Area

Activity	Location	Environmental Issues that are Cumulative	Type of Action
Public water service improvements	Kermit, Pigeon Creek area, Matewan	Land use, terrestrial habitat	Residential, commercial, and industrial development
Public sewer service improvements	Williamson, Delbarton, Matewan	Land use, terrestrial habitat	Residential, commercial, and industrial development

Table 4-28 (continued)
Past, Present, and Future Major Actions in the Study Area

Activity	Location	Environmental Issues that are Cumulative	Type of Action
Construction of new housing	Throughout Mingo County	Land use, terrestrial habitat, water quality, wetlands, traffic, air quality	Residential development
Construction of utility corridor	Along King Coal Highway	Land use	Residential, commercial, and industrial development
Completion of King Coal Highway	Along the width of Mingo County	Land use, terrestrial habitat, water quality, wetlands, traffic, noise, air quality, cultural resources	Residential, commercial, and industrial development
Surface mining	Within Miller Creek, Buffalo Creek, and Pigeon Creek watersheds	Terrestrial habitat, water quality, wetlands, noise, air quality, cultural resources	Natural resource development
Timbering operations	Throughout Mingo County	Terrestrial habitat, water quality, wetlands, noise, air quality, cultural resources	Natural resource development
Hatfield-McCoy Trail	Throughout Mingo County	Terrestrial habitat, water quality, wetlands, cultural resources	Recreation development
Industrial parks	US 119 and King Coal Highway corridors	Terrestrial habitat, water quality, wetlands, noise, air quality, traffic, cultural resources	Industrial development
Commercial development	US 119 and King Coal Highway corridors	Terrestrial habitat, water quality, wetlands, noise, air quality, traffic, cultural resources	Commercial development
Construction of new airport	Southeast of Delbarton	Land use, terrestrial habitat, water quality, wetlands, traffic, noise, air quality, cultural resources	Residential, commercial, and industrial development
Construction of a coal to gas liquefaction plant	Gilbert	Land use, terrestrial habitat, traffic, noise, air quality	Natural resource development

Once RFFAs were identified, a matrix of probability and potential impact was developed. The matrix connects RFFAs and their anticipated effects on resources so that judgments can be made on the likelihood they would occur. This method was originally developed by the Corps for projects along the Ohio River, but it can serve as a valid method for analyzing any linear project. The use of matrices is one of the recognized techniques identified by the CEQ for measuring cumulative impacts (CEQ 1997). Matrices provide two-dimensional checklists that quantify interactions between human activities and resources and assess both magnitude and importance.

RFFAs for alternatives to this project were divided into four categories: community development; infrastructure improvements; transportation improvements; and regulatory environment. Resources analyzed included water quality, wetlands, terrestrial habitat, RTE species, air quality, recreation resources, socioeconomics, cultural resources, and increased potential for flooding. Two time periods were used for the analysis, within 10 years and between 10 and 20 years from now. Based on a review of the Mingo County Comprehensive Plan Update and the Mingo County Land Use Master Plan, ranking for both importance and occurrence probability were suggested. Three rankings were used to determine importance: high, medium, and low. Three rankings were used for occurrence probability, including high, medium, and low. Three rankings were used to determine the anticipated effects on the resource, positive (+), negative (-), and mixed effects (+/-). The results of the analysis are shown in Table 4-29.

Table 4-29
Potential Impact of RFFAs on Resources

RFFA	Time Period	Importance	Occurrence Probability	Water Quality	Wetlands	Terrestrial Habitat	RTE Species	Air Quality	Recreation Resources	Socio-economics	Cultural Resources
Community Development											
Surface mining	1,2	M	M	+/-	+/-	-	-	-	+/-	+	-
Timber operations	1,2	M	M	+/-	+/-	-	-	-	+/-	+	-
Construction of new housing	1	H	H	+/-	+/-	-	+/-	+/-	+	+	+/-
Industrial parks	1,2	H	H	+/-	+/-	-	+/-	+/-	+	+	+/-
Commercial development	1,2	M	M	+/-	+/-	-	+/-	+/-	+	+	+/-
Infrastructure Improvements											
Public water service improvements	2	H	H	+	+	+/-	+	+/-	+	+	+/-
Public sewer improvements	2	H	H	+	+	+	+	+/-	+	+	+/-
Construction of utility corridor	2	H	H	+	+	+	+	+	+	+	+
Coal to gas liquefaction plant	1	H	H	+/-	+/-	-	+/-	+/-	+/-	+	+/-
Transportation Improvements											
Completion of King Coal Highway	2	H	M	+/-	+/-	+/-	+/-	+	+	+	+/-
Construction of new airport	1	H	H	+/-	+/-	+/-	+/-	+	+	+	+/-
Hatfield-McCoy Trail	1	M	H	+/-	+/-	+/-	+/-	+	+	+	+/-
Regulatory Environment											
Federal	1	H	H	+	+	+	+	+	+	+	+
State	1	H	H	+	+	+	+	+	+	+	+
Local	1,2	H	H	+	+	+	+	+	+	+	+

Time period: 1 = within 10 years, 2 = between 10 and 20 years from now
Importance/Occurrence probability: H = high, M = medium, L = low.
Anticipated effects: Positive (+), negative (-), mixed or both positive and negative (+/-).

Community development and infrastructure projects would have mixed impacts to most resources. Considerable land in the area could see surface mining. There are 13 reasonably foreseeable future mining SMCRA permits within the Pigeon Creek watershed. The cumulative total of past, present, and future mining activity would encompass approximately 22,787 ac, or 25 percent of the watershed; approximately 36,461 ac of the Wolf Creek-Tug Fork watershed, or 28.7 percent; approximately 8,110 ac of the headwaters of Pigeon Creek, or 27.7 percent; and, approximately 6,828 ac of the Miller Creek-Tug Fork watershed, or 19 percent. The cumulative total of past, present, and future mining within the geographic scope of the cumulative effects analysis is 5,477 ac. This represents 714 ac past, 1,409 ac present, and 3,354 ac future. Mining disturbances at levels less than 25 percent have been linked to degradation of the aquatic ecosystem (Petty 2010).

Properly functioning water and waste water treatment systems, regardless of type, can encourage economic growth. When public water is available and a community has adequate sewer facilities in place, public health improves and the community becomes more attractive as a place to live or work. When such systems are not in place, or are not functioning properly, stream pollution can result. If not replaced or improved, older systems may not be able to accommodate growth and can result in negative impacts to environmental resources.

Development also can affect wetlands, terrestrial habitat, and RTE species by consuming land and infringing on natural ecosystems. Properly designed development can offset negative impacts, however, and assist in preserving valued elements of the landscape. Additionally, besides providing for development opportunities, the PMLU plan (under the Delbarton to Belo Project) is a mixed-use plan that would also include the re-establishment of considerable tracts of forested land.

Additional development could also increase traffic and subsequently add to existing air quality problems or require future transportation improvements. The potential effects could be mitigated by the design of future developments and the regulatory environment. Positive effects to recreation and socioeconomic resources would be expected, primarily through improved facilities or better access.

Because many actions associated with community development are performed by the private sector, the potential for negative effects on cultural resources exists. Most actions likely to

occur, however, would have some public sector involvement and consideration of cultural resources would be an integral part of those projects.

Increased safety, efficiency, and congestion management are the principal justification for surface transportation projects. Short-term local income and revenues would increase as a result of future transportation projects, including bridge renovations, highway rehabilitations and upgrades, and new roadways. Significant changes to population, property values, local taxes, and existing land use patterns could occur, however, if roadway locations would be changed or shifted.

There could be mixed impacts to water quality, wetlands, terrestrial habitat, and RTE species as a result of converting land to highway use. Effects associated with the Alternatives would be mitigated in various ways, including avoidance, minimization, and replacement.

Effects to air quality, recreation resources, and socioeconomics would be expected to be generally positive. Additionally, although the effects of transportation projects on cultural resources are mixed, these projects are tied to federal funding or permitting and, therefore, are subject to Section 106 and Section 4(f) compliance. These regulatory processes ensure that the significance of individual cultural resources is considered during project development.

Long-term positive impacts would be associated with improved environmental conditions guaranteed through the regulatory environment. These regulations are especially important where there are numerous development opportunities and the potential for threats to the natural environment occur. All three levels of government (federal, state, and local) have created laws or programs to address negative effects.

A concerted effort by government and the private sector has also occurred over the past 20 years to bring about economic redevelopment in the area (MCC 2007). Several initiatives have contributed to this effort to revitalize the area, including improvements to the transportation system, extensions of public water and sewer systems, construction of new commercial centers, enhancement of tourist-related and outdoor recreational facilities, and new residential development. In total, these efforts have enhanced the quality of life for the area's citizens and businesses without imposing an inordinate cumulative impact on the natural, cultural, or socioeconomic environment (MCC 2007). While these improvements, when taken as a whole,

have had a cumulative effect on the area in the past and present, with plans in place and the implementation of new development controls, future cumulative effects are expected to benefit the community rather than harm it.

4.8 Summary

This SEIS evaluated a proposed shift of the King Coal Highway corridor between Delbarton and Belo. It also documents the Corps' NEPA analysis for the proposed Buffalo Mountain Surface Mine application for the discharge of fill material into waters of the United States. As an aid in evaluating the effectiveness of the proposed PMLU plan under the full Delbarton to Belo Project, Table 4-30 provides a general summary of the environmental impact of the proposed surface mine only (as currently presented in the SMA).

Table 4-30
General Summary of the Proposed Surface Mine

Feature	Potential Impact
Size of the Permit	2,308 ac
Seams to be Mined	Upper Kittanning, Middle Kittanning, Middle Kittanning Leader, Five Block, Stockton, Coalburg Rider, Coalburg, Buffalo, Lower Buffalo, Winifrede
Recoverable Clean Tons of Coal	16,784,000
Number of Fills	12 (Delbarton to Belo Project)
Drainage and Sediment Control Structures (Ponds)	15 temporary ponds (life of mine plus four years)
Wetlands	Discharge of fill material into 0.2 ac
Streams	Discharges of fill material into: Ruth Trace Branch – 8,992 lf; Right Fork of Conley Branch – 1,645 lf; Left Fork of Conley Branch – 2,737 lf; Right Fork of Hell Creek – 11,760 lf; Left Fork of Hell Creek – 12,998 lf; Pigeonroost Creek – 5,709 lf; UNT of Pigeon Creek – 1,977 lf; UNT of Stonecoal Branch – 100 lf; Miller Creek – 2,582 lf Total – 48,500 lf (39,285 lf permanent, 9,215 lf temporary)

The potential effects of the alternatives are summarized on Table 4-31. In addition to summarizing the impacts of the No-Build Alternative and the Delbarton to Belo Projects, information is also provided on the impact of the separate highway and mining projects.

Table 4-31
Summary of Impacts

Resource/Element	No-Build Alternative	Delbarton to Belo Project	Total Impacts of Separate Projects
Environmental Justice	Displacements to Ruth Trace area; positive economic benefits to Mingo County	Displacements to Ruth Trace area; positive economic benefits to Mingo County	Displacements to Ruth Trace area; positive economic benefits to Mingo County
Tax Base	Negligible	$26.8 million of coal severance tax generated	$26.8 million of coal severance tax generated
Business Displacements	5	2	5
Residential Displacements	40	10	40
Community Facilities and Services	Displaces Mingo County PSD water tower	Displaces Mingo County PSD water tower	Displaces Mingo County PSD water tower
Community Cohesion	Displaces 80% of Ruth Trace area homes	Displaces 20% of Ruth Trace area homes; unlikely to impact overall community cohesion	Displaces 80% of Ruth Trace area homes
Farmlands	0	0	0
Developed Land	56 ac	82 ac	114 ac
Parks and Recreation	Hatfield-McCoy Trail: 4,718 feet & trailhead	Hatfield-McCoy Trail: 6,060 feet & trailhead	Hatfield-McCoy Trail: 8,000 feet & trailhead
Vegetation and Wildlife	805 ac forestland	2,520 ac forestland	3,050 ac forestland
Rare, Threatened, and Endangered Species	0	0	0
Streams/Water Quality	32,217 lf	47,385 lf (permanent, including approximate impacts associated with highway connector pieces); 9,215 lf (temporary, all associated with proposed mine)	81,751 lf
Floodplains	0	0	0
Wetlands	2 (0.9 ac)	6 (0.19 ac, all associated with mine)	5 (0.97 ac)
Groundwater	0	0	0
Air Quality	Consistent with *CAA* standards	Consistent with *CAA* standards	Consistent with *CAA* standards
Noise	Within FHWA NAC	Within FHWA NAC	Within FHWA NAC
Hazardous Wastes Sites	3	0	3
Cultural Resources (NRHP-Listed/Eligible)	Norfolk & Western RR; Archaeological Site 46MO117	0	Norfolk & Western RR; Archaeological Site 46MO117
Utilities	Mingo County PSD water storage tower	Mingo County PSD water storage tower; creates utility corridor	Mingo County PSD water storage tower

Table 4-31 (continued)
Summary of Impacts

Resource/Element	No-Build Alternative	Delbarton to Belo Project	Total Impacts of Separate Projects
Secondary Impacts	Possible, could be negative or positive	Yes, likely to be positive	Possible, could be negative or positive
Cumulative Impacts	Yes, likely to be positive	Yes, likely to be positive	Yes, likely to be positive
Temporary Construction Impacts	Yes	Yes	Yes
Energy	Yes, most likely positive	Yes, most likely positive	Yes, most likely positive
Section 4(f) Resources	Norfolk & Western RR	0	Norfolk & Western RR
Highway Costs	$198.8 million	$89 million	$198.8 million

In terms of the socioeconomic environment, the most critical differences between the No-Build Alternative and the Delbarton to Belo Project are related to residential impacts and future economic development. The No-Build Alternative would take 40 residences from the Ruth Trace neighborhood. The entire neighborhood consists of only 50 homes; displacements of this magnitude would be likely to displace the entire neighborhood. Although the Delbarton to Belo Project would displace 10 residences from the neighborhood, those residences are all located on the southern edge of the community and it would be likely that the neighborhood would continue with the required taking associated with highway development.

In Mingo County where developable land is limited, the PMLU plan under the Delbarton to Belo Project would create flat, developable land tracts located out of the floodplain, as well as provide a 15-foot wide right of way for the installation of utilities, water trunk lines, and wastewater collection lines.

In terms of the natural environment, impacts to streams and forestland would be considerable with either of the alternatives. Over 32,000 lf of streams and 805 ac of forestland would be impacted with the No-Build Alternative. There would be approximately 47,000 lf of permanent stream impacts and 2,520 ac of forest impacts with the Delbarton to Belo Project. Impacts would be even greater if the No-Build Alternative and the Buffalo Mountain Surface Mine were undertaken separately; approximately 82,000 lf of streams and 3,050 ac of forestland would be impacted.

In terms of cultural resources, two NRHP-eligible properties would be impacted with No-Build Alternative. No cultural resources would be impacted by the Delbarton to Belo Project.

As indicated in Chapter 1 of this SEIS, the decision to construct the King Coal Highway was finalized as part of the 2000 FEIS. The purpose of the SEIS was to determine if 1) the Corps could approve the proposed Buffalo Mountain Surface Mine under Section 404 of the CWA, including its dual purpose of extracting coal and constructing a portion of the King Coal Highway, and 2) the FHWA should approve construction of a portion of the King Coal Highway between Delbarton and Belo in an eastward-shifted (as compared to the original) corridor on a rough-grade road bed that is incorporated into the PMLU of the Buffalo Mountain Surface Mine while still meeting the purpose and need of the King Coal Highway 2000 FEIS.

Based on the analysis contained in this SEIS and the following reasons, the FHWA and the Corps are proposing the preferred alternative is the Delbarton to Belo Project:

- the cost savings associated with constructing a portion of the King Coal Highway between Delbarton and Belo on a rough-grade road bed to be constructed as a part of the Buffalo Mountain Surface Mine and subsequently donated to WVDOH;
- the benefits to the WV state economy associated with the generation of coal severance tax by the Buffalo Mountain Surface Mine;
- the benefits to regional energy production associated with extraction of coal at the Buffalo Mountain Surface Mine;
- the reduction in residential displacements associated with the preferred alternative compared to constructing the King Coal Highway between Delbarton and Belo in the original corridor;
- the increase in developable land;
- the reduction in impacts to wetlands;
- the avoidance of impacts to cultural and Section 4(f) resources; and,
- the water quality improvements associated with CONSOL's CMP in the Hell Creek watershed.

5.0 PUBLIC AND AGENCY COORDINATION

The Notice of Intent to prepare a SEIS to evaluate the potential impacts related to the proposed Delbarton to Belo portion of the King Coal Highway 2000 FEIS and the Buffalo Mountain Surface Mine *Clean Water Act* Section 404 permit application was published in the Federal Register on January 25, 2012. In accordance with federal and state regulations, the FHWA, the Corps, and the WVDOH followed the required procedures and initiated a proactive public and agency involvement process for the proposed joint-use project. Public outreach, as well as Federal, state, local and environmental agency involvement throughout the joint-use project review process, has been considerable. To date, the public involvement efforts have included public and agency scoping meetings, public information workshops, news releases, meeting announcements, and agency coordination meetings.

5.1 Scoping

A formal scoping meeting for the original King Coal Highway project was held on September 16, 1993, in Charleston, West Virginia, between federal and state agency representatives. The agencies represented at the meeting included FHWA, USEPA, USFWS, WVDNR, WVDEP, and WVDOH. The agency scoping meeting established a framework for the proposed King Coal Highway project's purpose and need, presented background on the project area, established preliminary study corridors, and addressed initial environmental concerns.

Following the public scoping meeting, several alternative corridors were developed and analyzed. An inventory of social, natural, cultural, and physical resources within the corridors was prepared in support of preliminary engineering design and the detailed environmental studies that supported the selection of a preferred alternative corridor. A DEIS was prepared in late 1999 and presented to the agencies and the public in February and March, 2000. The FEIS was issued in June 2000 and a ROD was subsequently approved.

On February 16, 2012, an agency scoping meeting was held in Charleston, West Virginia, to specifically address the SEIS currently under development for the proposed joint-use project of the King Coal Highway Delbarton to Belo project and the Buffalo Mountain Surface Mine *Clean Water Act* Section 404 permit application. Agencies represented at the scoping meeting included FHWA, the Corps, USEPA, USFWS, WVDNR, WVDEP, WVDCH (the West Virginia

SHPO), West Virginia Office of Coalfield Community Development, WVDOH, and the King Coal Highway Authority. The overall purpose of the SEIS scoping meeting was to clearly define the scope of the project. The following information was presented: reasons for preparing a SEIS; a description of the combined NEPA analysis and the *Clean Water Act* Section 404 permitting process that is being followed; background on the overall proposed King Coal Highway project and the proposed Buffalo Mountain Surface Mine project; background on the joint-use project; the joint-use project's consistency with federal and state regulations, as well as regional and local master plans; the post-mining land use plan; environmental studies conducted to date; preliminary environmental issues; and, the status of all permits and applications related to the proposed King Coal Highway project and the proposed Buffalo Mountain Surface Mine project.

Following the agency scoping meeting, the USEPA submitted written comments to the FHWA, USACE, and WVDOH. In a letter dated March 2012, the USEPA made five principal points: 1.) that as the project progresses, the purpose and need should be clearly explained; 2.) that there are three basic alternatives for the project (a no-build alternative, constructing the proposed roadway within the original King Coal Highway corridor, and a joint development initiative); 3.) that there specific environmental data and information should be presented in the SEIS; 4.) that the cumulative impacts of past, present, and reasonably foreseeable future actions should be addressed in the SEIS; and, 5.) that while the proposed compensatory mitigation plan addresses impacts from the Buffalo Mountain Surface Mine, conceptual mitigation for the proposed highway should also be addressed in the SEIS. A complete copy of the USEPA letter is found in Appendix E.

The WVDCH also submitted written comments following the agency scoping meeting. In a letter dated March 15, 2012, the WVDCH. The WVDCH noted that a programmatic agreement was signed by FHWA, WVDOH, and WVDCH in April 2000. That agreement outlined the steps necessary to complete the Section 106 process. The letter went on to note that a Phase I archaeological study will be necessary, at the appropriate time, for one potentially-impacted site in the area. The WVDCH also noted that the Lenore Branch of the Norfolk & Western Railroad is the only NRHP-eligible historic resource in the project's area of potential effect. A complete copy of the WVDCH letter is also found in Appendix E.

A public scoping meeting announcing the proposed joint-use project and the development of the SEIS was also held in the evening of February 16, 2012, at the Mingo Central High School near

Red Jacket, Mingo County, West Virginia. Approximately 60 people, including FHWA, the Corps, and WVDOH staff, local officials, and members of the public attended the public scoping meeting. Although the public scoping meeting was presented in a workshop format, a formal presentation was made by staff from the WVDOH, the FHWA, and the Corps. The following information was discussed during the formal presentation: reasons for preparing a SEIS; a description of the combined NEPA analysis and *Clean Water Act* permitting process that is being followed; background on the overall King Coal Highway project and the Buffalo Mountain Surface Mining project; background on the joint-use project; the project's consistency with federal and state regulations; a review of related regional and local master plans; the post-mining land use plan; environmental studies conducted to date; preliminary environmental issues; and, the status of all permits and applications related to the proposed King Coal Highway project and the proposed Buffalo Mountain Surface Mine project.

Citizens attending the public scoping meeting had the opportunity to gather information, ask questions of project staff, present opinions and concerns, and submit written comments during the public meeting and/or throughout the public comment period, which ended on March 19, 2012. In addition to the public scoping meeting, information was also distributed to the public through local media outlets and presented on the WVDOH web site. The public also had the option to email comments directly to the WVDOH or submit comments through the WVDOH web site. All of the comments received were sent to the Corps and the FHWA for their review and consideration.

Two comment letters were received following the public scoping meeting. One comment letter was received from a citizen living within the proposed project area. The commenter asked that the cumulative impacts of all surface mining in the area be considered when analyzing potential flooding impacts. The second comment letter consisted of a series of comments and was sent by the Appalachian Mountain Advocates. In summary, the comments suggested that it is the opinion of the Appalachian Mountain Advocates that a thorough study of the proposed Buffalo Mountain Surface Mine will show that the mine will cause "significant environmental degradation" to the Tug Fork watershed and that past mitigation efforts related to mountaintop mining have not been effective. The comment letter also included statements that mountaintop mining has a serious impact on human health and plays a significant role in the health problems of the area's population.

5.2 Past Public and Agency Involvement of the King Coal Highway Project

Public participation during the initial King Coal Highway Project review process was extensive. In total, there were 13 public meetings. The project was introduced to the public through a series of public meetings held in 1992. Another round of public meetings was held in 1998 after six build alternatives were developed with sufficient information and detailed analysis to be considered noteworthy alternatives. During this round of public meetings, local residents were also asked to assist in the selection of a preferred alternative. A final round of public workshops and public meetings was held in 2000 to present the DEIS and solicit comments on it.

All of the public meetings were held at public forum settings located within the proposed project area. A special effort was undertaken through all of these meetings to encourage public participation of all members of the community living within the proposed project area. The majority of comments received during these meetings were positive with the majority of the commenters expressing support for the proposed project.

During the development of the FEIS, formal agency coordination meetings were held on September 16, 1993, May 25, 1995, October 13, 1995, and January 29, 1997. In addition, several informal meetings with between agency representatives were held, as needed, to address specific agency concerns and solicit advice on analytical methodologies, data collection, and interpretation.

As previously stated, the first of these meetings was an agency scoping meeting to introduce the proposed King Coal Highway Project and develop the parameters for its future socioeconomic and environmental studies. The May 25, 1995, meeting was an alternatives development workshop with all of the relevant resource agencies represented. The purpose of the workshop was to review the alternatives that would be analyzed in the DEIS and to address environmental issues. The October 13, 1995, meeting was with the USFWS and WVDNR, specifically to discuss issues related to vegetative cover, wildlife, and habitat. The January 29, 1997 meeting presented the alternatives that were evaluated and that would be included in the DEIS with a detailed analysis of each alternative.

5.3 Buffalo Mountain Surface Mine Project

There has also been significant communication between federal, state and local representatives, as well as an extensive amount of public outreach activities conducted for the proposed Buffalo Mountain Surface Mine Project. Formal agency and public meetings related to the SMCRA and CWA Section 404 permit applications for the proposed surface mine have been held with the Pigeon Creek Watershed Association, officials from the Town of Delbarton, Corps, USEPA, FHWA, and WVDEP. The primary purpose of these meetings was to discuss research objectives, planning methods, and project alternatives, and to address public and agency comments on an ongoing basis.

CONSOL submitted a SMA for the proposed Buffalo Mountain Surface Mine (SMCRA Permit S-5018-07) to the WVDEP in November 2007. Following its initial administrative review of the SMA, the WVDEP advertised SMCRA Permit S-5018-07 for public comment on June 11, 2008. Comments were accepted until August 7, 2008.

On July 25, 2008, the WVDEP provided CONSOL with comments received from the public. Subsequently, CONSOL provided responses to each commenter *via* certified mail. As requested by residents of Pigeonroost Creek, the WVDEP held an informal conference to provide additional information on the SMA on September 9, 2008.

Due to changes to the mine plan, the WVDEP re-advertised SMCRA Permit S-5018-07 for public comment on August 4, 2010. The WVDEP did not receive a request for a second informal conference during the public comment period. After review and evaluation, the WVDEP issued the SMCRA permit on November 22, 2011. An appeal to the permit has been raised, however, and a hearing will be scheduled before the Surface Mine Board. The appellants raised four objections related to runoff, drainage, installation of rain gauges, and installation of flow meters. CONSOL is addressing these concerns and believes that if any modifications to the proposed project are warranted as a result of their re-evaluation of the objections raised, the project modifications would be minor.

The Corps received IP application LRH-2008-491-TUG in late 2008, and as required by the Corps Regulatory Program regulations (33 CFR 320-332), Public Notice 2008-491 was issued

on December 3, 2008. The Corps uses the Public Notice process to inform the public and resource agencies about the project proposed by the IP application and to solicit comments.

The Corps received three comment letters on Public Notice 2008-491-TUG for the proposed Buffalo Mountain Surface Mine Clean Water Act Section 404 IP application. These comment letters were related to the following:

- The WVDOH provided comments in a letter dated December 18, 2008, that the proposed Buffalo Mountain Surface Mine would not impact any of their facilities in the vicinity of the proposed project area.
- Ms. Margaret Janes with the Appalachian Center for the Environment and the Economy provided comments in a letter dated December 16, 2008, requesting that an EIS be prepared to comply with NEPA mandates. The letter also included comments that the project would result in significant impacts that are not being sufficiently mitigated. Additionally, the letter included a comment requesting that the permit be denied.
- In an email message dated December 16, 2008, the USEPA requested an extension to the Public Notice comment period scheduled to end on January 3, 2009. In response to USEPA's request, the Corps extended the comment period to January 17, 2009. In a follow-up letter dated January 20, 2009, the USEPA provided comments to the Corps on the Public Notice, including concerns regarding the cumulative impacts of the project on the watershed, the need for the applicant to investigate additional alternatives, and the necessity for the mitigation plan to demonstrate adequate compensation for unavoidable impacts to waters of the United States.

On February 12, 2009, the Corps forwarded the Public Notice comments to CONSOL for response and rebuttal. CONSOL submitted responses to the Public Notice comments to the Corps shortly thereafter, and the Corps is evaluating these responses as part of its review of the IP application LRH-2008-491-TUG.

By letter dated November 8, 2011, Margaret Janes, on behalf of the Appalachian Center for the Environment and the Economy submitted additional comments to the Corps regarding the proposed Buffalo Mountain Surface Mine *Clean Water Act* Section 404 IP application. The November 8, 2011, letter contained many of the comments previously outlined in the December 18, 2008, Public Notice comment letter submitted by the Appalachian Center for the Environment and the Economy. The Corps identified new or expanded comments, including potential health impacts, public notice procedures, existing cumulative impacts, downstream sediment, impacts to the biodiversity of streams, potential future downstream toxic events, the

length of stream impacts, stream functions, the use of groin drains as a mitigation effort, the use of stream creation as a mitigation effort, the potential for mitigation efforts to cause future environmental harm, and the use of the 2007 Interim Functional Assessment Analysis to measure stream function and structure. These comments were provided to CONSOL for response and rebuttal on November 15, 2011. CONSOL evaluated the additional comments and provided detailed responses to them in March 2012.

In addition to the SMA, CONSOL submitted a NPDES permit application and a *Clean Water Act* Section 401 Water Quality Certification (WQC) application to the WVDEP. The WVDEP advertised their draft 401 WQC for the proposed Buffalo Mountain Surface Mine on October 8, 2011, providing a 30-day public comment period. The comment period closed on November 7, 2011. The WVDEP received no comments on the 401 WQC, and issued the certification on November 23, 2011.

As required under CWA Section 402 (40 CFR 123.44) and the MOA Regarding the Administration and Enforcement of the NPDES in West Virginia 1982, the WVDEP provided a copy of draft NPDES permit WV 1029690 for the proposed Buffalo Mountain Surface Mine to the USEPA on October, 24, 2011. On November 2, 2011, the USEPA notified the WVDEP that due to the size and complexity of the draft NPDES permit WV 1029690, the USEPA would require 90 days to review the draft permit. Furthermore, the USEPA stated they would provide the WVDEP with any additional specific comments or objections, if any, to the issuance of NPDES permit WV 1029690 by January 21, 2012.

The USEPA provided comments to the WVDEP on the NPDES permit on January 20, 2012. USEPA determined that the proposed permit was not as stringent as necessary to protect water quality standards and issued a specific objection. The WVDEP worked with USEPA to resolve specific comments on the permit application. After coordination with USEPA and CONSOL, the WVDEP issued the NPDES permit for the Buffalo Mountain Surface Mine on October 29, 2012.

In addition to USEPA review, the WVDEP advertised the draft NPDES permit WV 1029690 for a 30-day public comment period on December 9, 2011. The comment period closed on January 8, 2012. The WVDEP received no comments from the public during the public comment period.

5.4 King Coal Highway Delbarton to Belo Project

The joint-use project was first introduced to the public on October 23, 2007, when WVDOH, FHWA, CONSOL, Cotiga, and the Mingo County Redevelopment Authority signed a MOU to pursue shifting a portion of the proposed King Coal Highway onto land that would eventually be included in the post-mining land use plan for the proposed Buffalo Mountain Surface Mine project. In addition to the signatories of the document, then Governor Joe Manchin, several elected federal and state legislators, legislative aides, local elected officials, and members of the public witnessed the MOU signing. In total, approximately 100 people were in attendance. Copies of the MOU were distributed to the media and members of the general public. As a result, the outreach effort received considerable press coverage.

In late 2007, the Mingo County Commission voiced support of the joint-use project in a letter to the WVDEP agreeing that the proposed post-mining development would be consistent with the Mingo County Master Land Use Plan. Similarly, the Town of Delbarton passed a resolution in October 2008 in support of the proposed joint-use project and the proposed mining project's mitigation plan. Information on the joint-use project was presented to the community through a public meeting held at Burch High School in Delbarton on December 11, 2008. A formal presentation on the project was made at the public meeting. Additional information was provided through a workshop format. The combined public meeting/workshop provided the public the opportunity to gather detailed information on the project, ask questions, and provide comments to WVDOH staff. The meeting agenda included information on development of the proposed project's purpose and need, an update on the overall King Coal Highway Project, and background on the proposed joint-use project. More than 100 people attended the workshop. Over 800 comments were received during the 45-day comment period. All of the comments expressed support for the proposed joint-use project.

Public involvement opportunities have occurred during the preparation of this SEIS as well, including additional agency coordination, field reviews, and a stakeholder/public meeting held on November 17, 2011. Approximately 120 people attended the public meeting, and 178 comment letters or comment forms were received. All but two of the public comments expressed support for the project. The majority of comments in support of the project were submitted on a form letter.

5.5 Future Activities

Public involvement activities and agency coordination will continue as the proposed project review and coordination efforts progress. Copies of the Draft SEIS are being made available for public review throughout the local community for a 45-day review period.

A public hearing on the Draft SEIS will be scheduled in accordance with federal regulations and state policies. During the public hearing and comment period, oral and written testimonies will be collected on the proposed joint-use project and the Draft SEIS. Following the close of the public comment period, all public and agency comments will be evaluated by the WVDOH, FHWA, and the Corps. All substantive comments and questions will be addressed in the Final SEIS.

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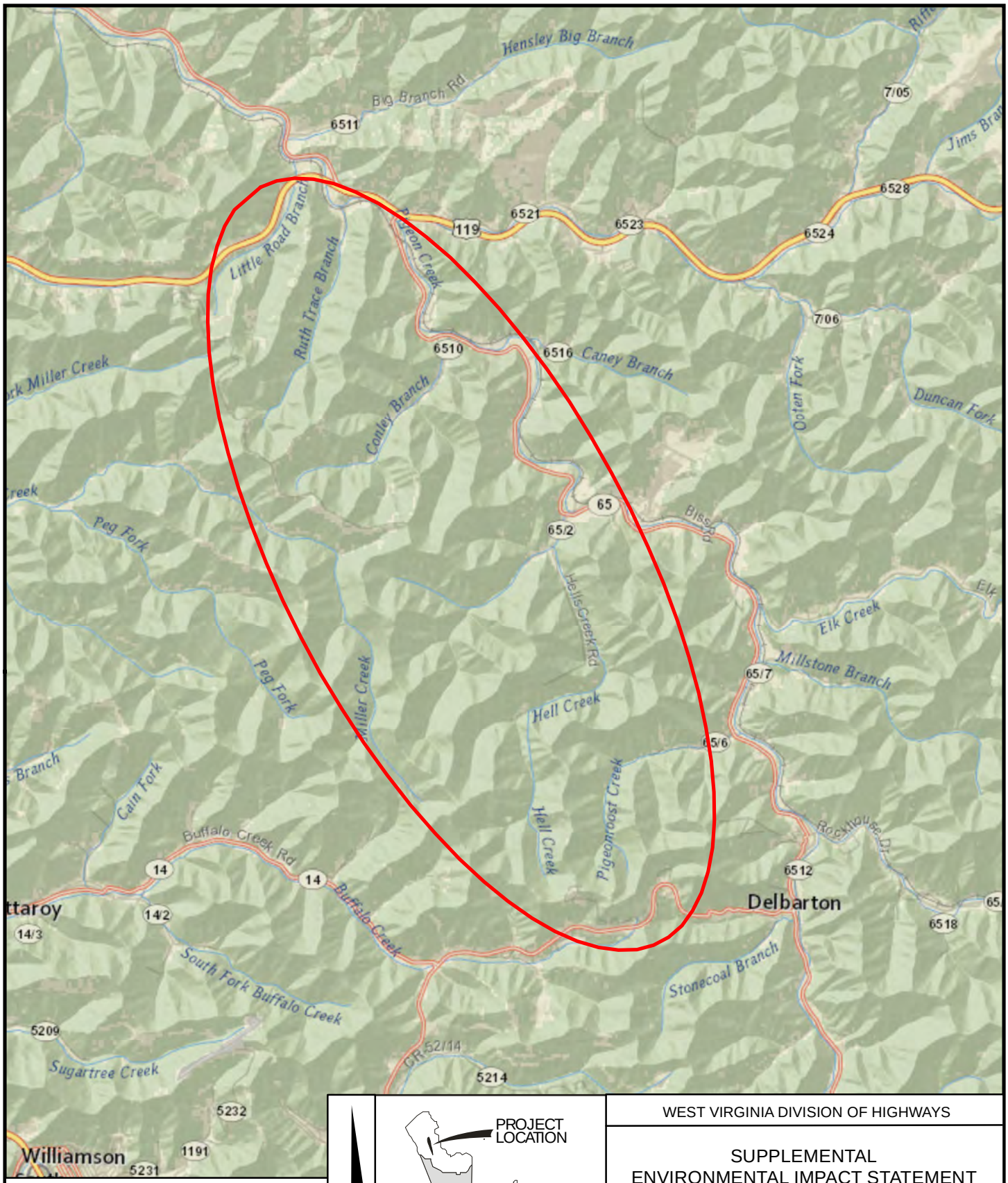
FIGURES



Legend

Study Area

SOURCE: NATIONAL GEOGRAPHIC 2012

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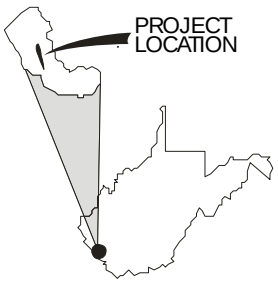
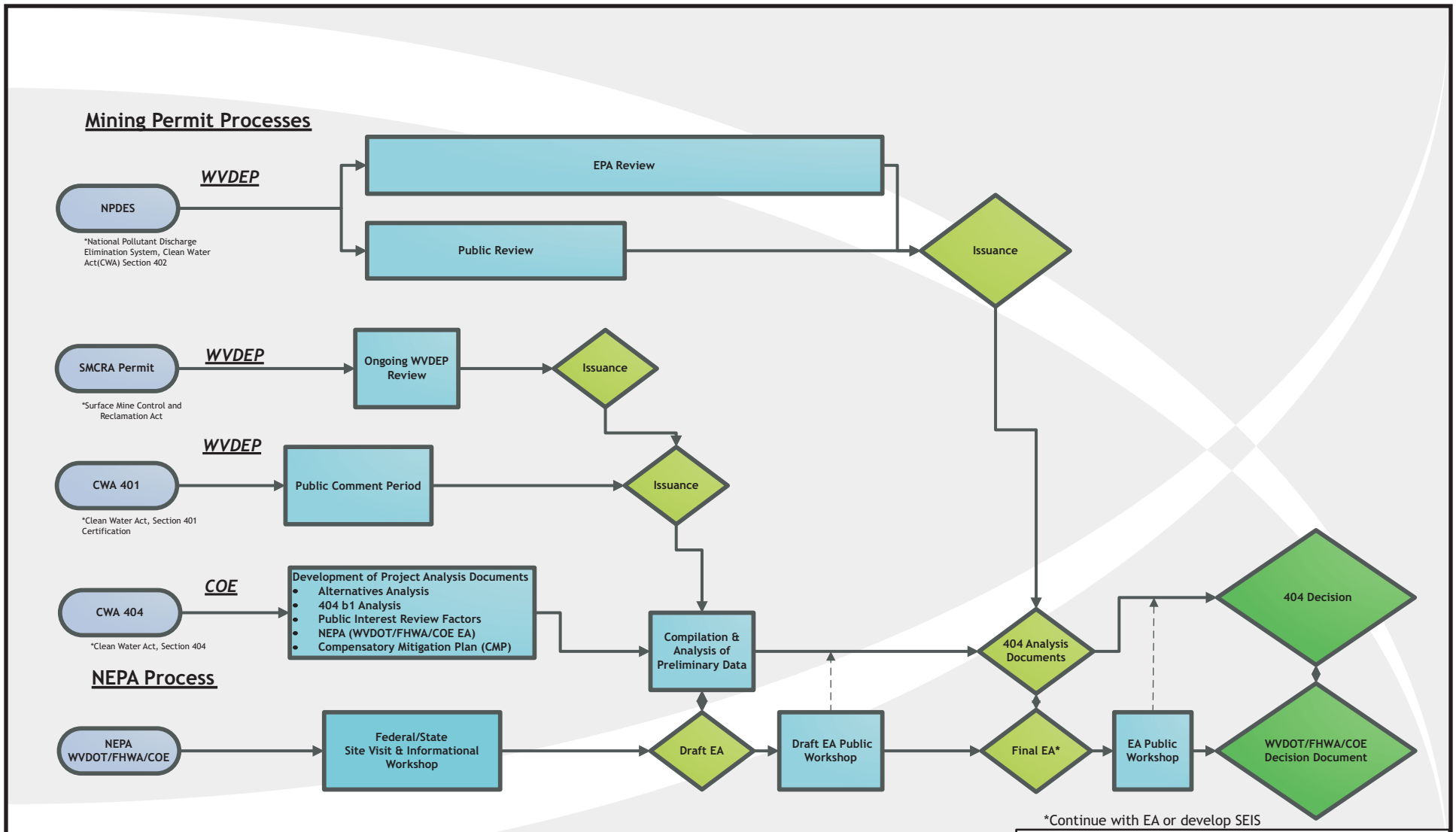


WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

PROJECT AREA

FIGURE - 1-1



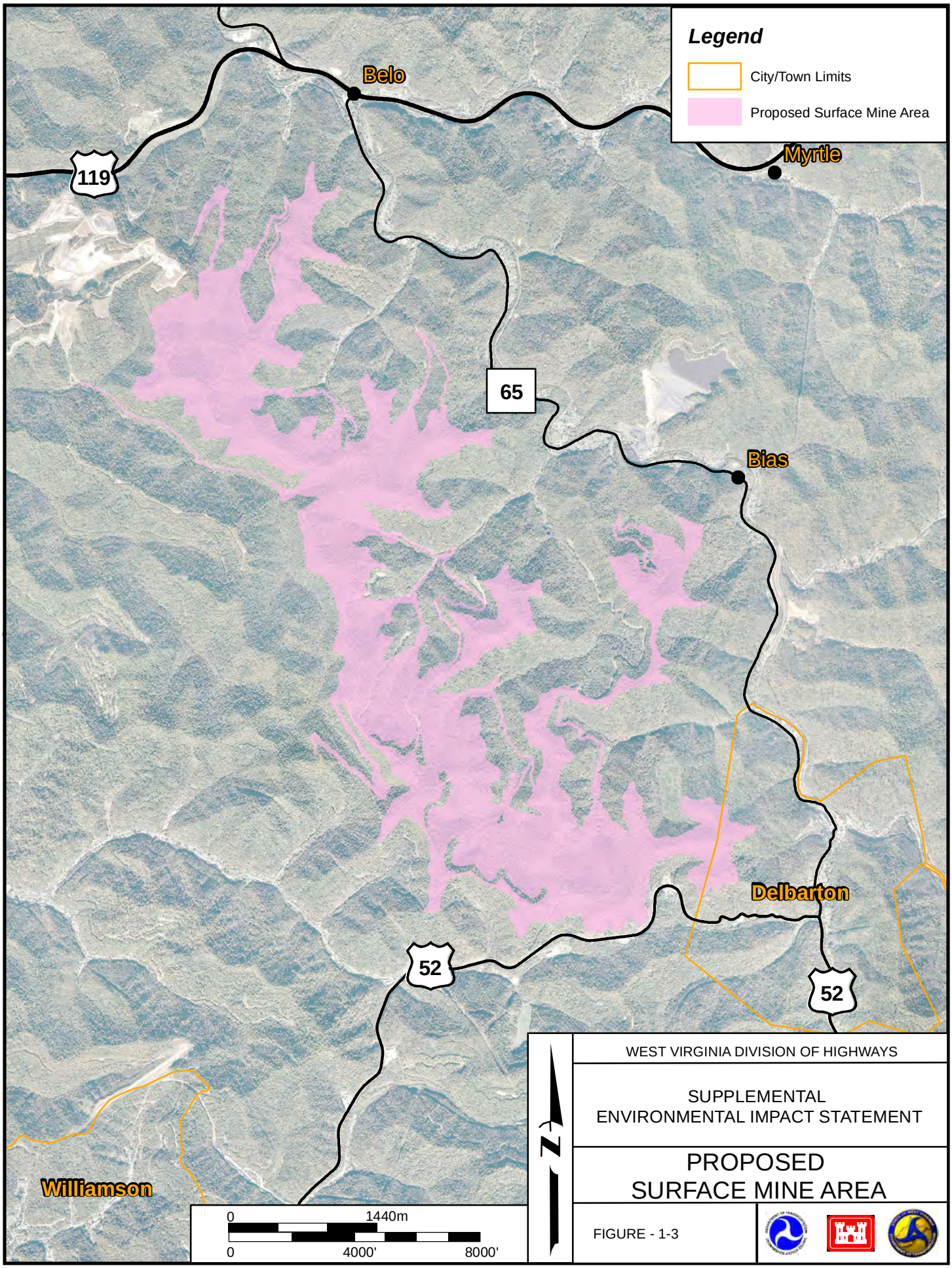
WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

JOINT AGENCY PROCESS

FIGURE - 1-2

SOURCE: WVDOH 2011



WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

PROPOSED
SURFACE MINE AREA

FIGURE - 1-3

Legend
King Coal Highway
Williamson Connector
Constructed/Under Construction
SOURCE: WV GIS TECHNICAL CENTER 2013
0
15km
0
8mi
16mi
N
WEST VIRGINIA DIVISION OF HIGHWAYS
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
STATUS OF KING COAL
HIGHWAY PROJECT
FIGURE - 1-4
Nolan
Borderland
Chattaroy
Delbarton
Ragland
South Williamson
Red Jacket
Rawl
Hampden
Gilbert
Baisden
Justice
North Spring
Hanover
Wharncliffe
Matewan
North Matewan
Thacker
Freeburn
Ransom
McAndrews
Pinsonfork
McVeigh
Majestic
Stopover
Phelps
Isaban
Mohawk
Panther
Iaeger
Hensley
Davy
Twin
Big Branch
Sandy
Capels
Hemphill
Roderfield
Premier
Avondale
Havaco
Kimball
Keystone
Northfork
Worth
Kyle
Powhatan
Eckman
Coalwood
Wilcoe
Gary
Thorpe
Elkhorn
Switchback
Maybeury
Pageton
Leckie
Anawalt
Freeman
Bramwell
Elbert
Skygusty
Wolfe
Jenkinjones
Pocahontas
Nemours
Falls Mills
Bluefield
BLUEFIELD
Boissevain
Rock Montcalm
Hiawatha
Matoaka
Lashmeet
Kegley
Beeson
Camp Creek
Spanishburg
Rocky Gap
Herndon
Covel
Bud
Mullens
Corinne
Stephenson
Amigo
Rhodell
Allen Junction
Wyco
Itmann
New Richmond
Wyoming
Fanrock
Brenton
Marianna
Simon
Clear Fork
Jesse
Rock View
Saulsville
Maben
Helen
Josephine
Ghent
Odd
Flat Top
Princewick
Jonben
Cool Ridge
White Oak
Shady Spring
Crab Orchard
Blue Jay
Daniels
Beaver
Raleigh
Mabscott
Glen Morgan
Raleigh Co Mem Airport
Sophia
Coal City
Lester
Glen White
Slab Fork
Glen Rogers
Ravencliff
Glen Fork
Sabine
McGraws
Oceana
Matheny
Lynco
Coal Mountain
Bruno
Verner
Davin
Mallory
Cyclone
Kopperston
Bolt
Glen Daniel
Surveyor
Fairdale
Eccles
Harper
Saxon
Arnett
Dry Creek
Rock Creek
Prosperity
Piney View
Prince
Lanark
Stanaford
Sprague
Skelton
Yolyn
Lorado
Amherstdale
Accoville
Kistler
Man
Stirrat
Sarah Ann
Omar
Chauncey
Switzer
Lyburn
Whitman
Monaville
Wilkinson
Holden
Cora
Gay
Stollings
Verdunville
Warfield
Naugatuck
Lenore
Varney
Sidney
Belfry
Toler
Canada
Hardy
McCarr
Huddy
Stone
Kimper
Phyllis
Fedscreek
Mouthcard
Lick Creek
Regina
Big Rock
Belcher
Elkhorn City
Breaks
Maxie
Harman
Hurley
Wolford
Bradshaw
Raysal
English
Paynesville
Jolo
Bartley
Caretta
Yukon
War
Warriormine
Berwind
Cucumber
Newhall
Squire
Pilgrims Knob
Whitewood
Vansant
Haysi
Oakwood
Keen Mountain
Mavisdale
Birchleaf
Clinchco
Jewell Ridge
Shortt Gap
Rowe
Red Ash
Raven
Doran
Swords Creek
Honaker
Bandy
Amonate
Bishop
Horsepen
North Tazewell
Virginia
West Virginia

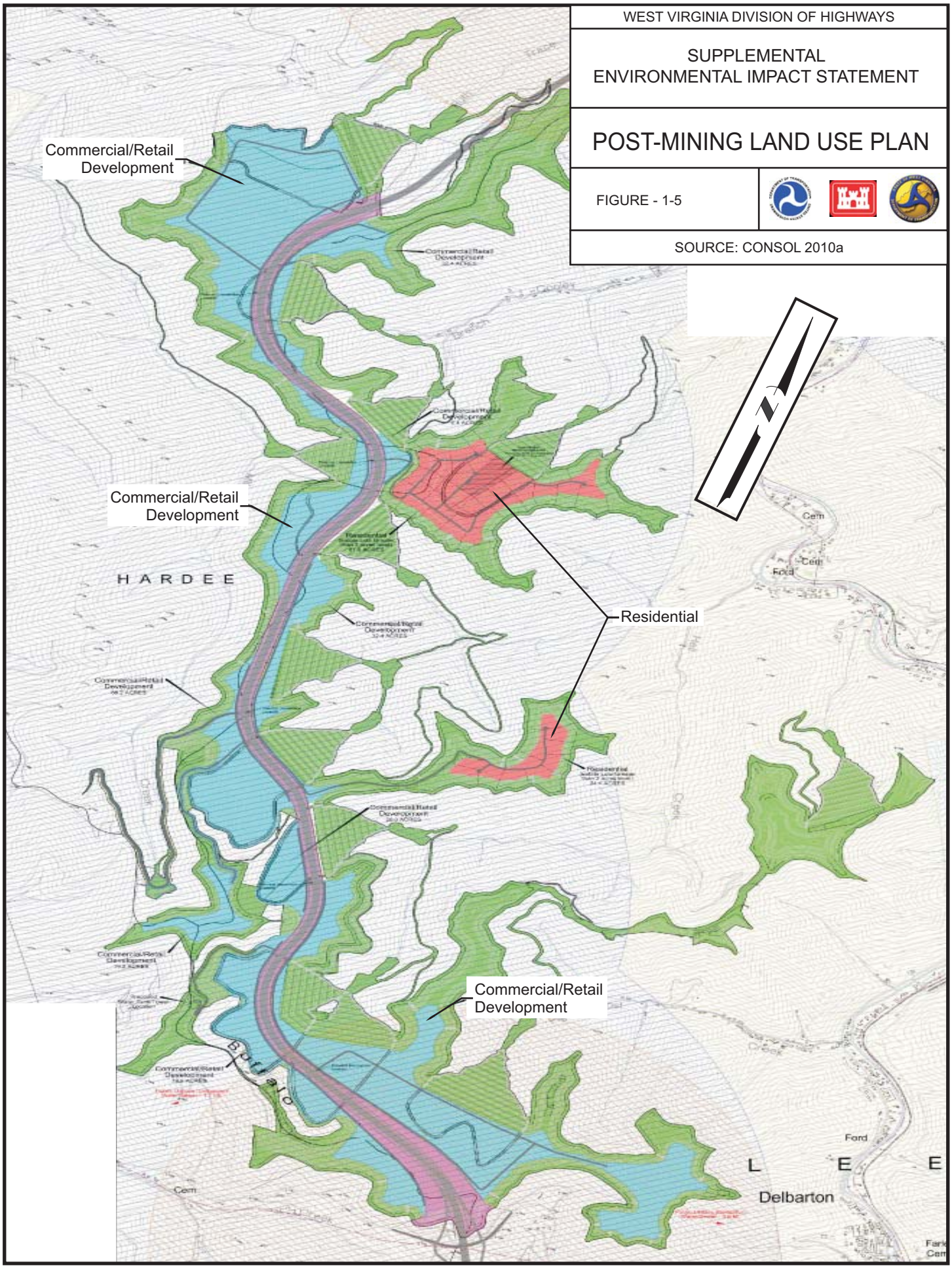
WEST VIRGINIA DIVISION OF HIGHWAYS

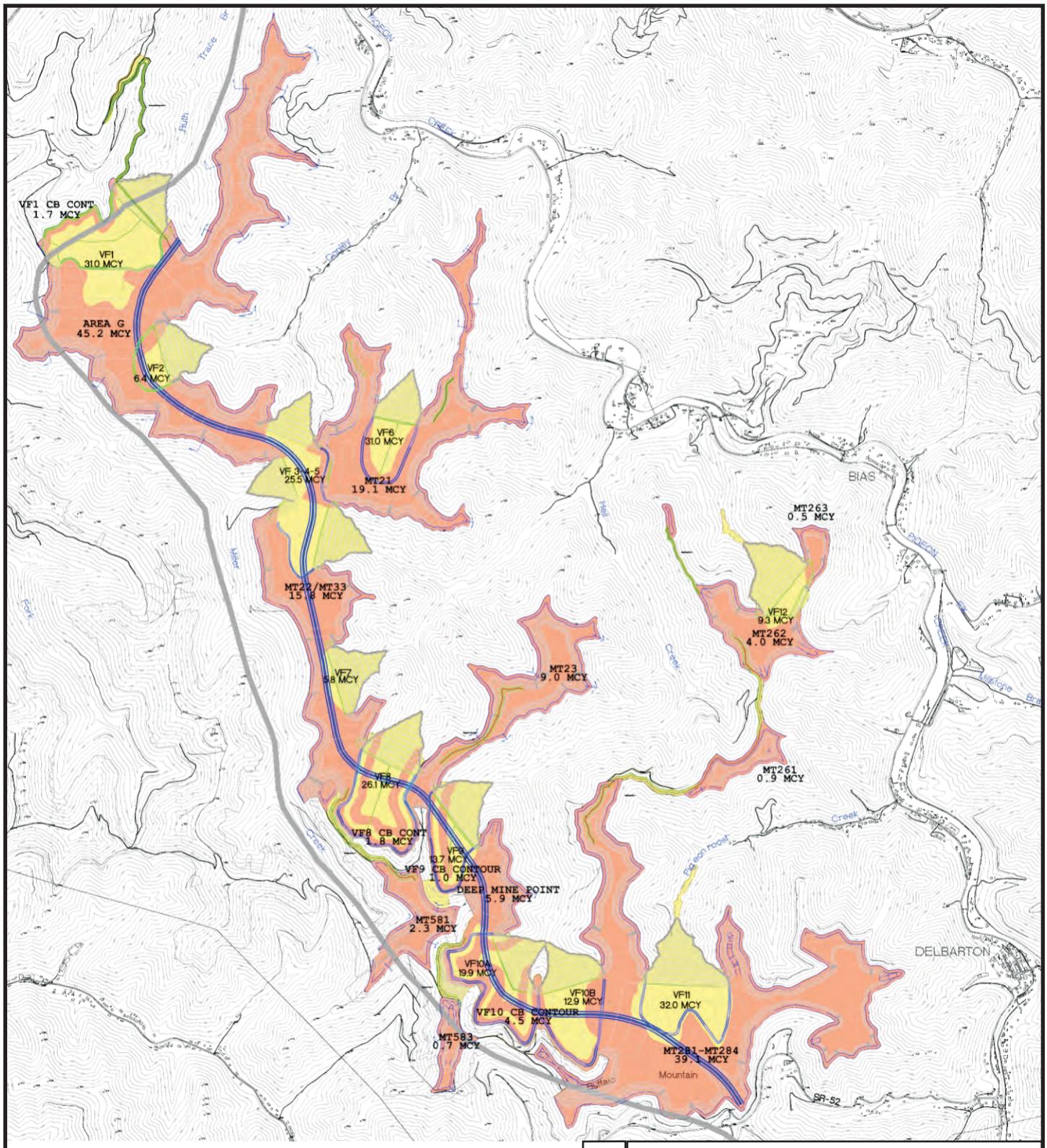
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

POST-MINING LAND USE PLAN

FIGURE - 1-5

SOURCE: CONSOL 2010a





Legend

- Mineral Removal Area
- Disturbed Area
- Coalburg Seam Underground Mine Works
- Approximate Proposed KCH Alignment
- Existing KCH Alignment

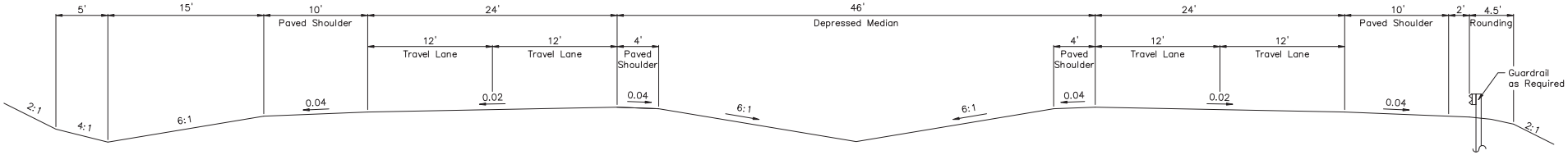
SOURCE:CONSOL 2010b

WEST VIRGINIA DIVISION OF HIGHWAYS

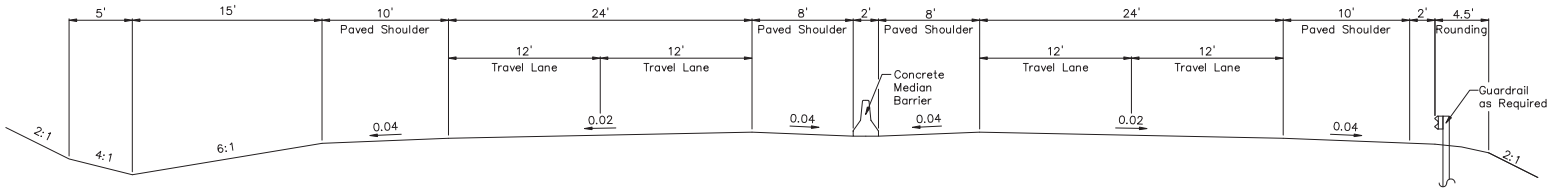
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

LOCATIONS OF VALLEY FILLS

FIGURE - 3-1



NORMAL SECTION



ALTERNATE SECTION

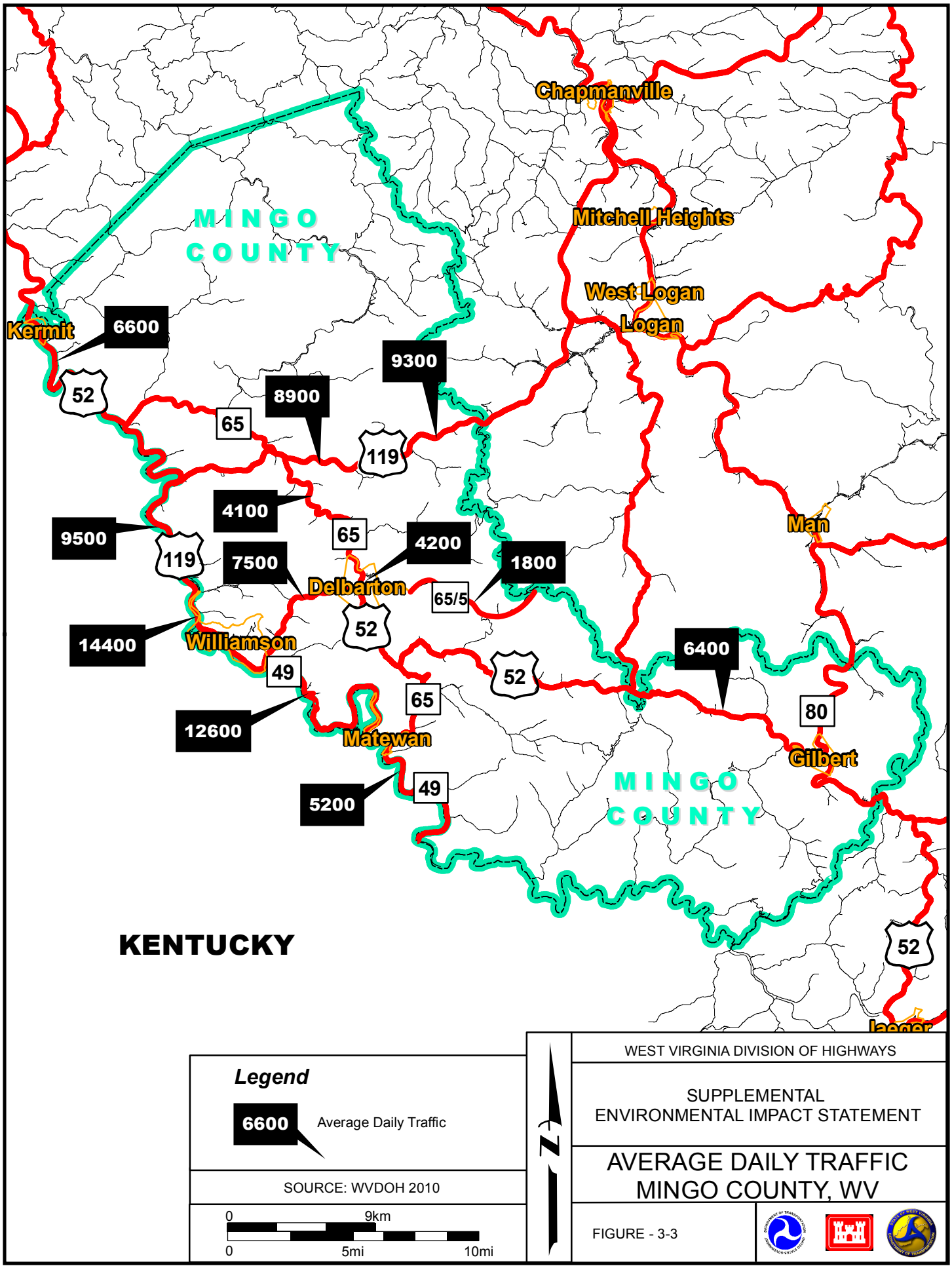
WEST VIRGINIA DIVISION OF HIGHWAYS

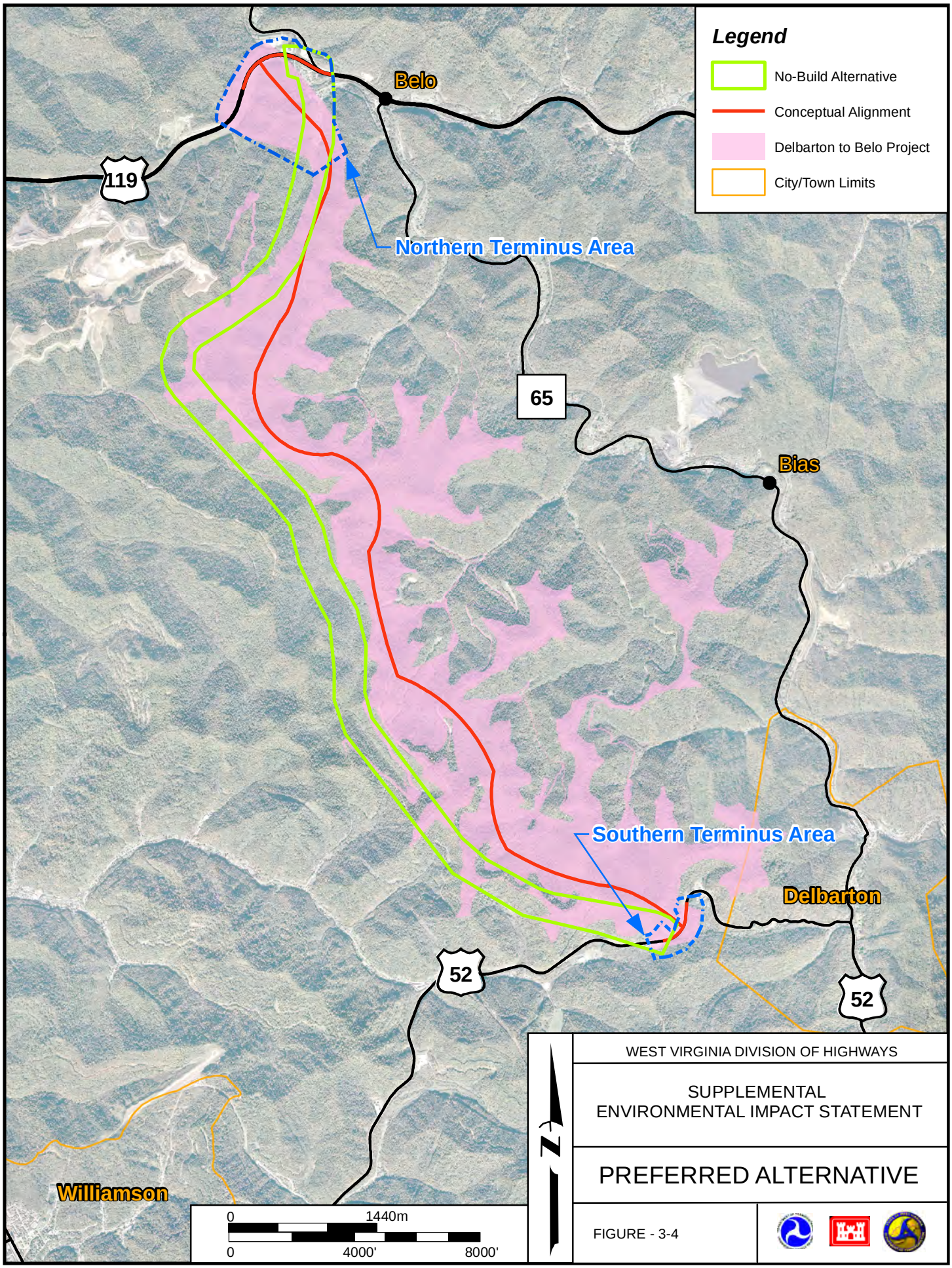
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

TYPICAL SECTION

FIGURE - 3-2

SOURCE: WVDOH 2006


Chapmanville
MINGO COUNTY
Mitchell Heights
West Logan
Logan
Kermit
6600
52
9300
8900
65
119
4100
9500
119
65
4200
7500
Delbarton
1800
65/5
Man
14400
Williamson
52
49
52
6400
65
12600
Matewan
80
Gilbert
5200
49
MINGO COUNTY
KENTUCKY
52
Legend
6600
Average Daily Traffic
SOURCE: WVDOH 2010
0
9km
0
5mi
10mi
N
WEST VIRGINIA DIVISION OF HIGHWAYS
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
AVERAGE DAILY TRAFFIC
MINGO COUNTY, WV
FIGURE - 3-3

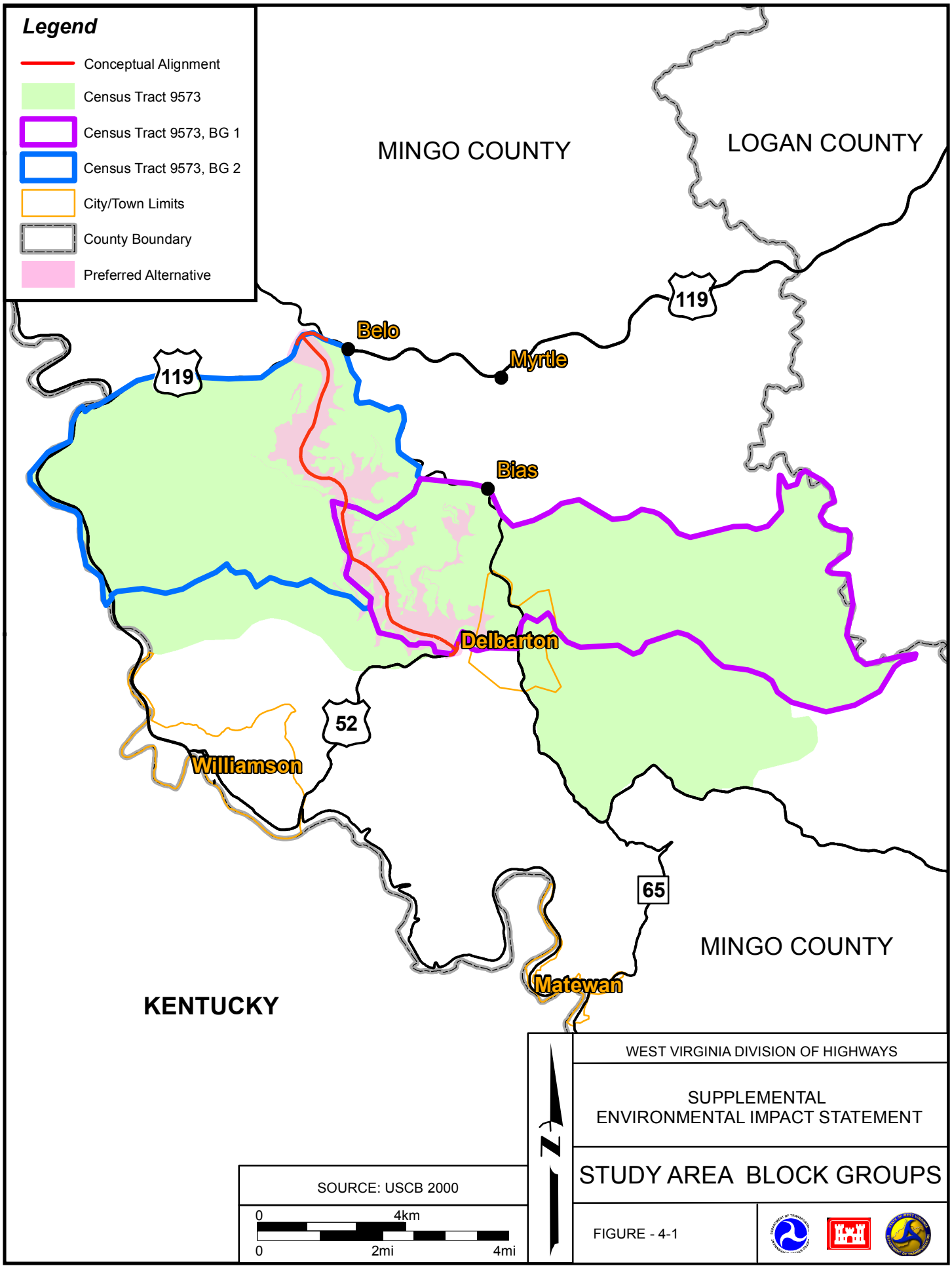


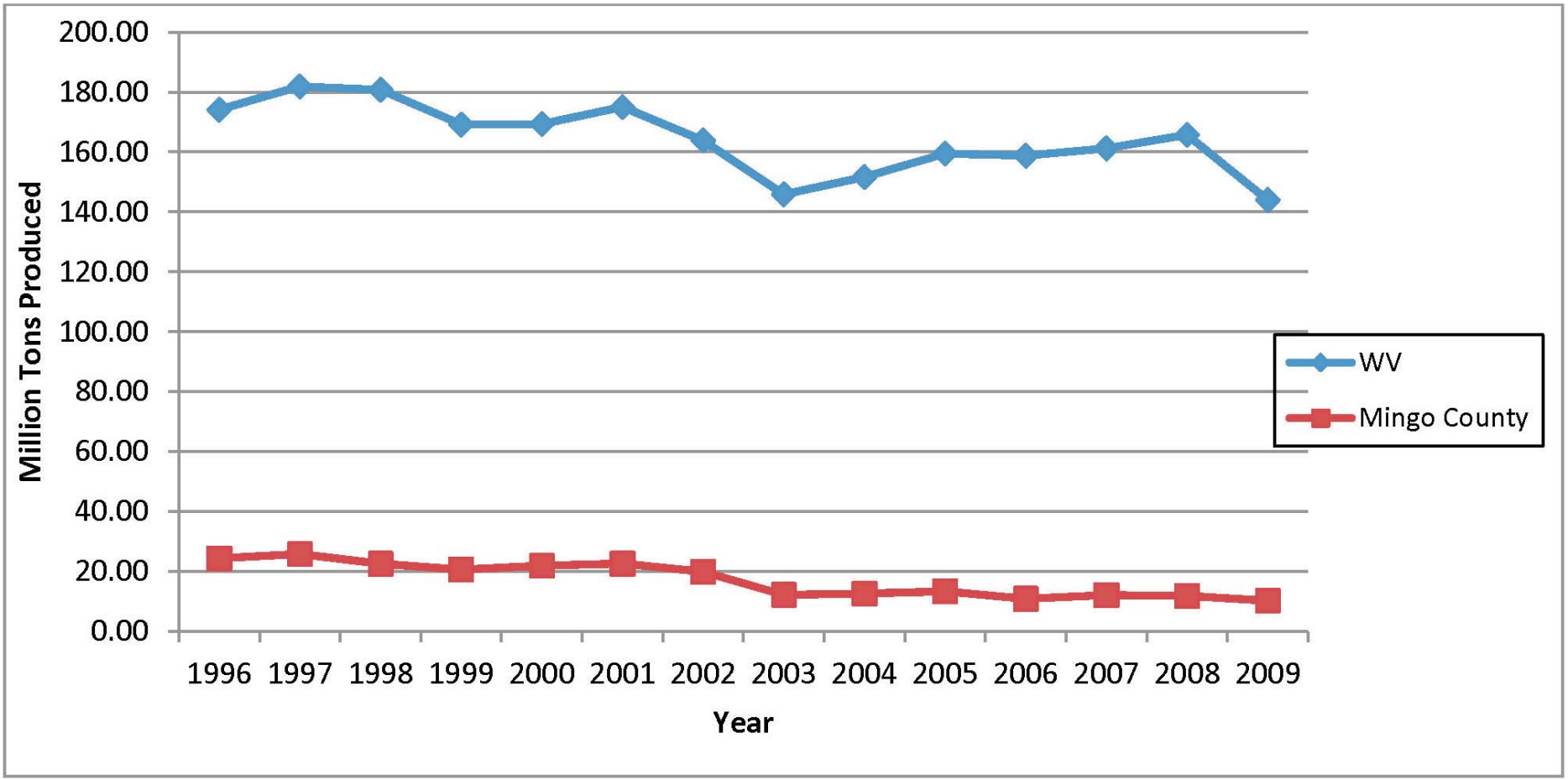
WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

PREFERRED ALTERNATIVE

FIGURE - 3-4


Legend
Conceptual Alignment
Census Tract 9573
Census Tract 9573, BG 1
Census Tract 9573, BG 2
City/Town Limits
County Boundary
Preferred Alternative
MINGO COUNTY
LOGAN COUNTY
119
119
Belo
Myrtle
Bias
Delbarton
52
Williamson
65
MINGO COUNTY
Matewan
KENTUCKY
N
SOURCE: USCB 2000
0
4km
0
2mi
4mi
WEST VIRGINIA DIVISION OF HIGHWAYS
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
STUDY AREA BLOCK GROUPS
FIGURE - 4-1



NOTE: TOTAL TONNAGE INCLUDES UNDERGROUND AND SURFACE PRODUCTION

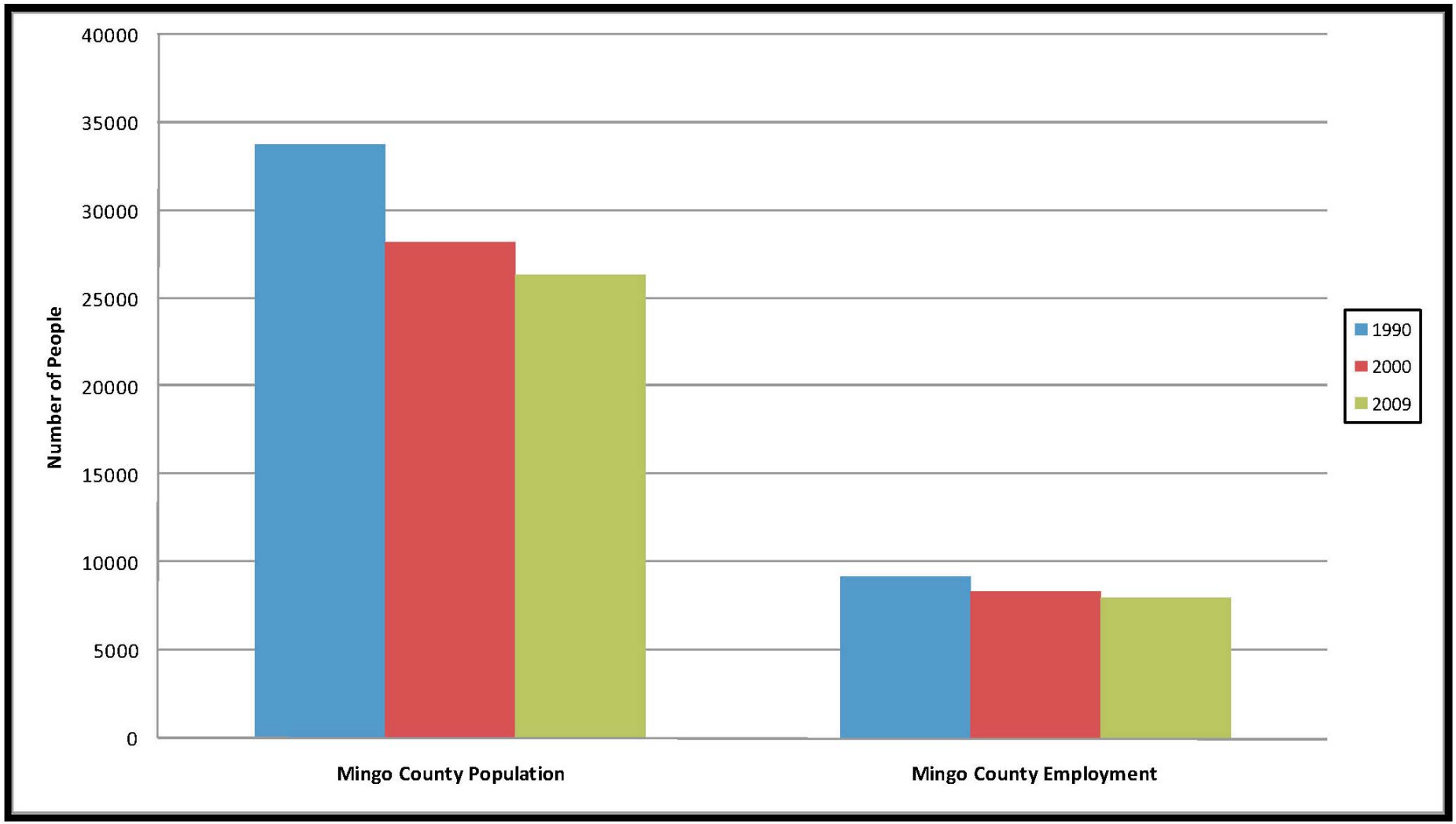
SOURCE: WEST VIRGINIA OFFICE OF MINERS' HEALTH SAFETY AND TRAINING 2010 AND BAKER 2012

WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

COUNTY AND STATEWIDE
COAL PRODUCTION

FIGURE - 4-2



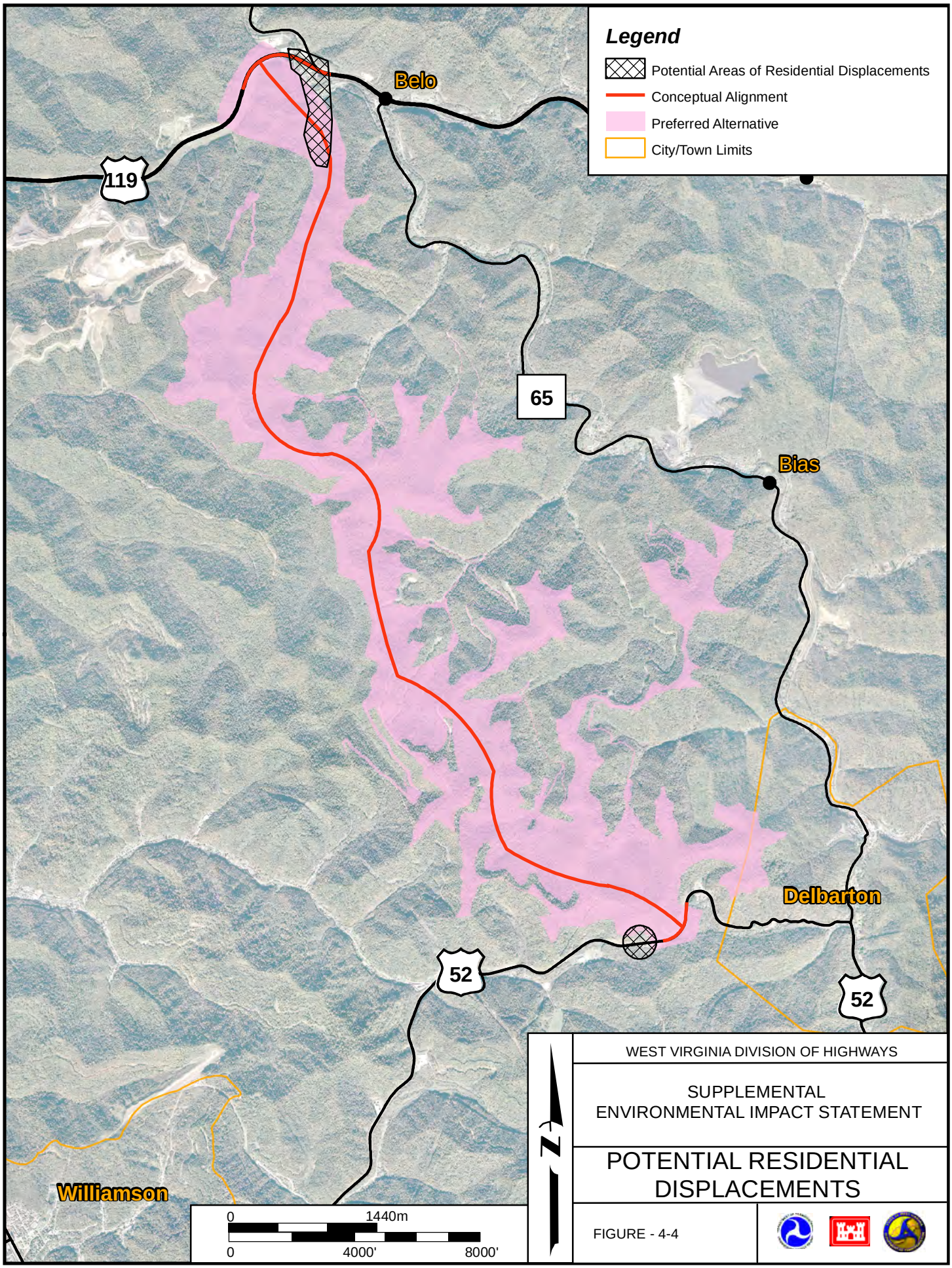
WEST VIRGINIA DIVISION OF HIGHWAYS

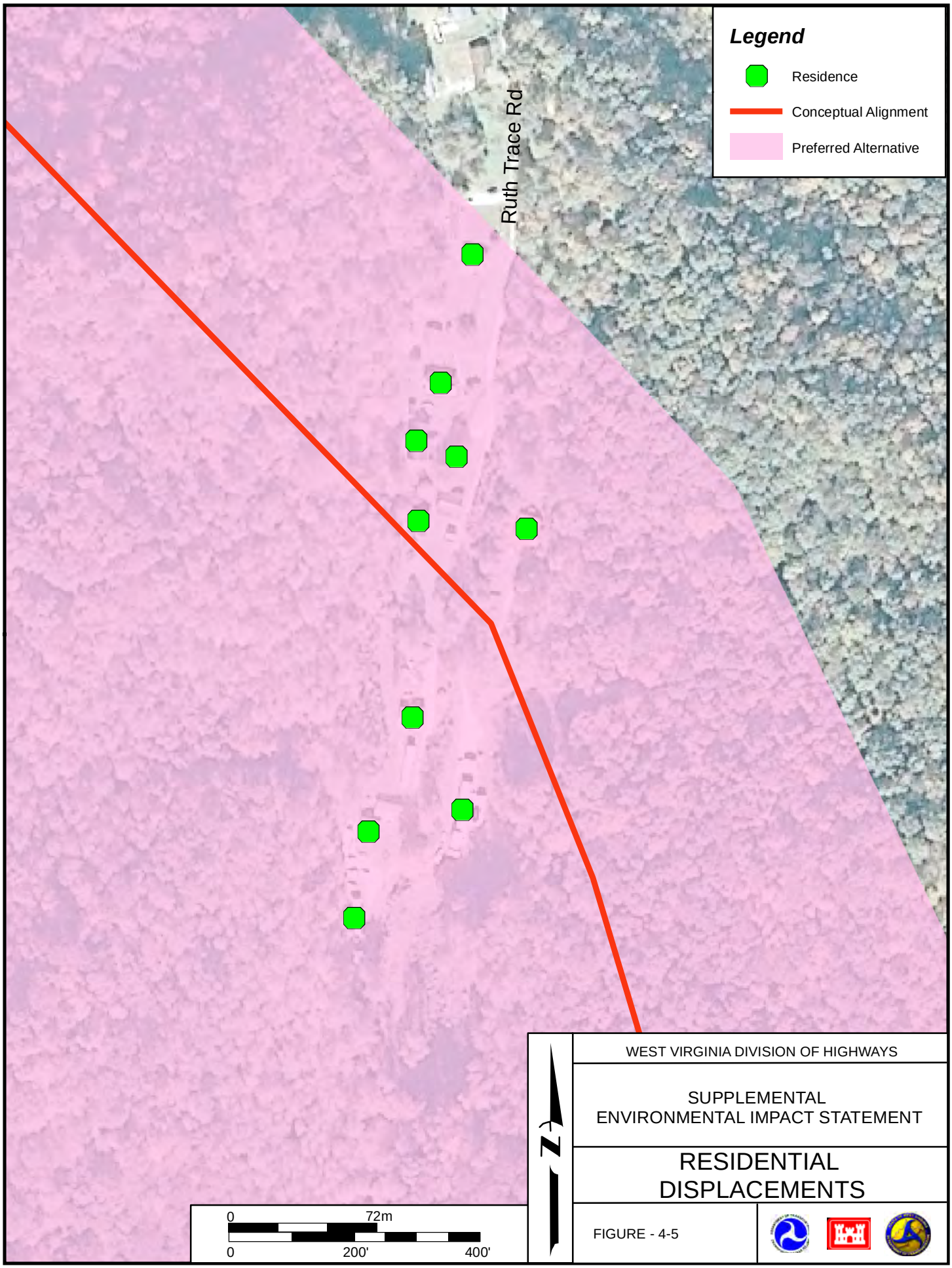
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

POPULATION AND EMPLOYMENT
TRADE FOR MINGO COUNTY
SINCE 1996

FIGURE - 4-3

SOURCE: U.S. CENSUS BUREAU 2010, WEST VIRGINIA BUREAU OF EMPLOYMENT PROGRAMS 2010, AND BAKER 2012


Legend
Potential Areas of Residential Displacements
Conceptual Alignment
Preferred Alternative
City/Town Limits
Belo
119
65
Bias
Delbarton
52
52
Williamson
0
1440m
0
4000'
8000'
N
WEST VIRGINIA DIVISION OF HIGHWAYS
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
POTENTIAL RESIDENTIAL
DISPLACEMENTS
FIGURE - 4-4

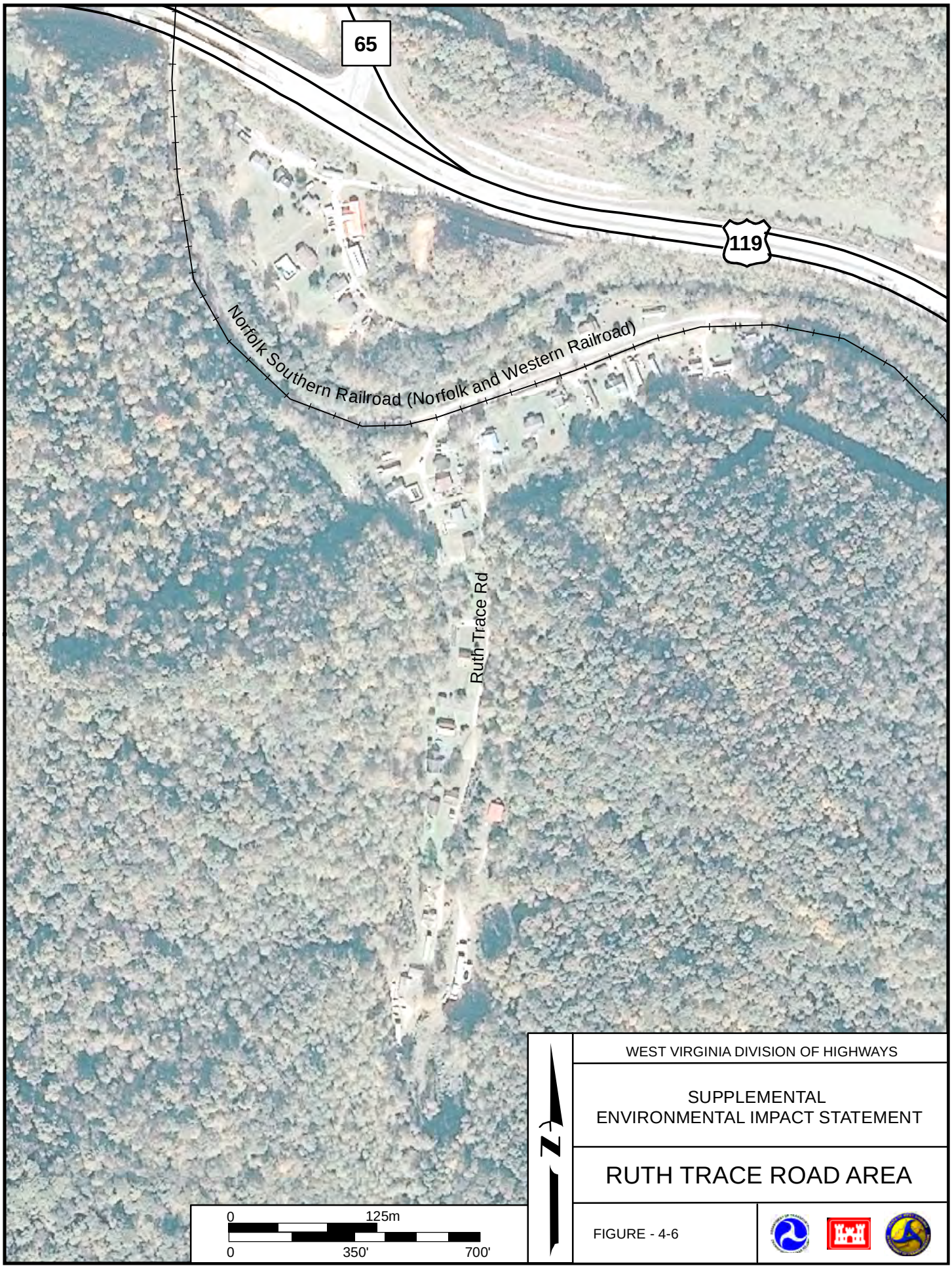


WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

RESIDENTIAL
DISPLACEMENTS

FIGURE - 4-5

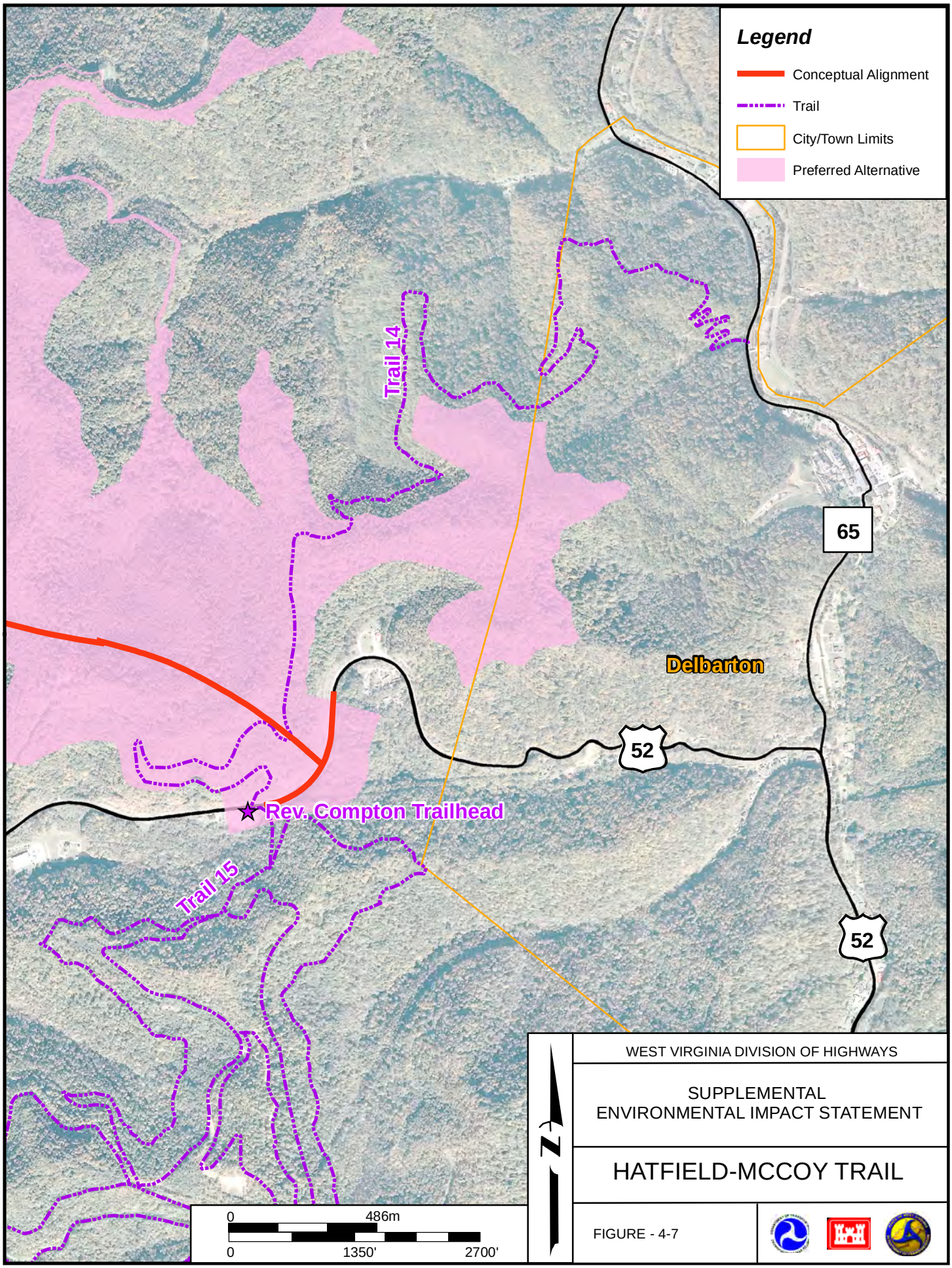


WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

RUTH TRACE ROAD AREA

FIGURE - 4-6

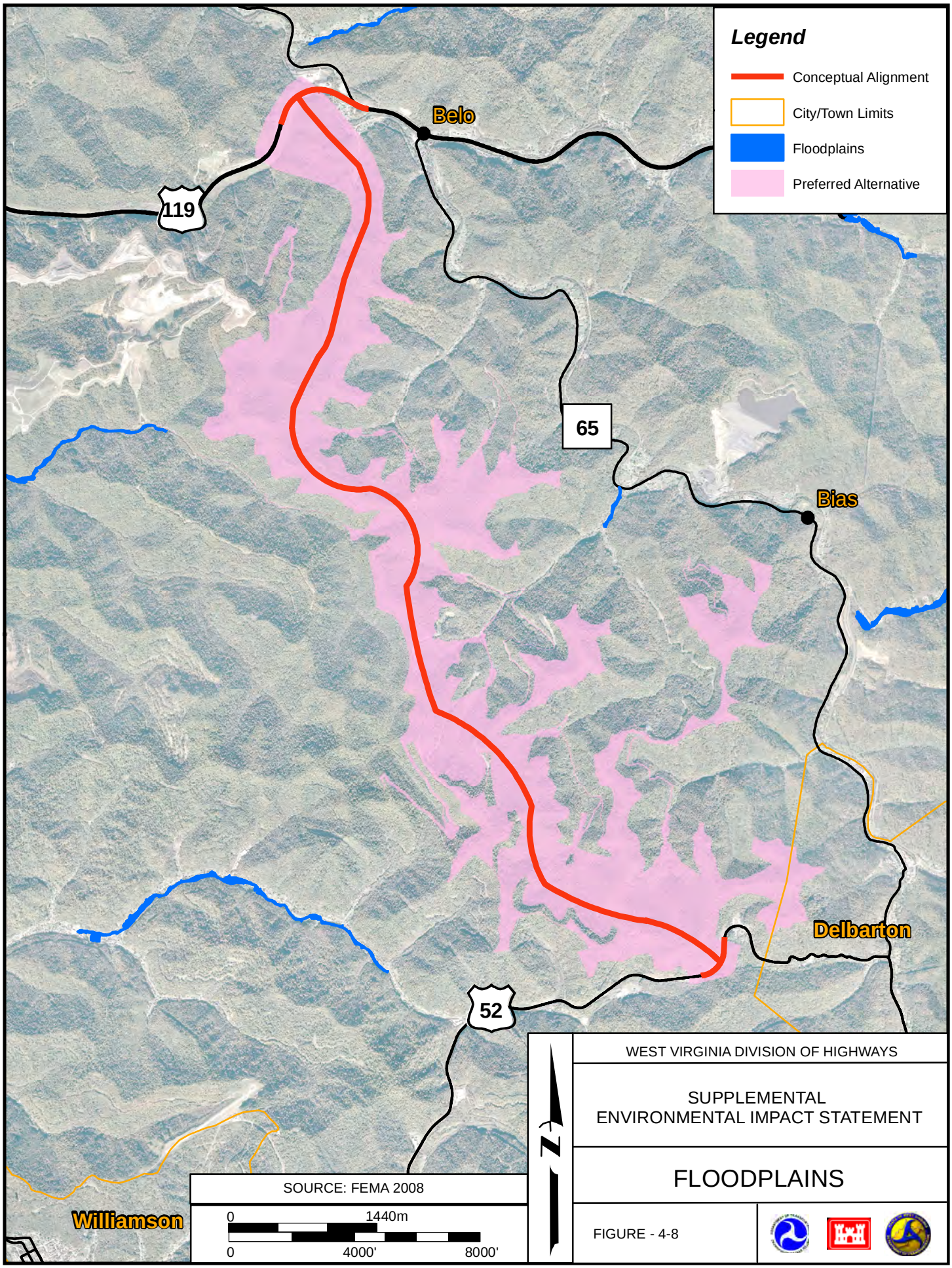


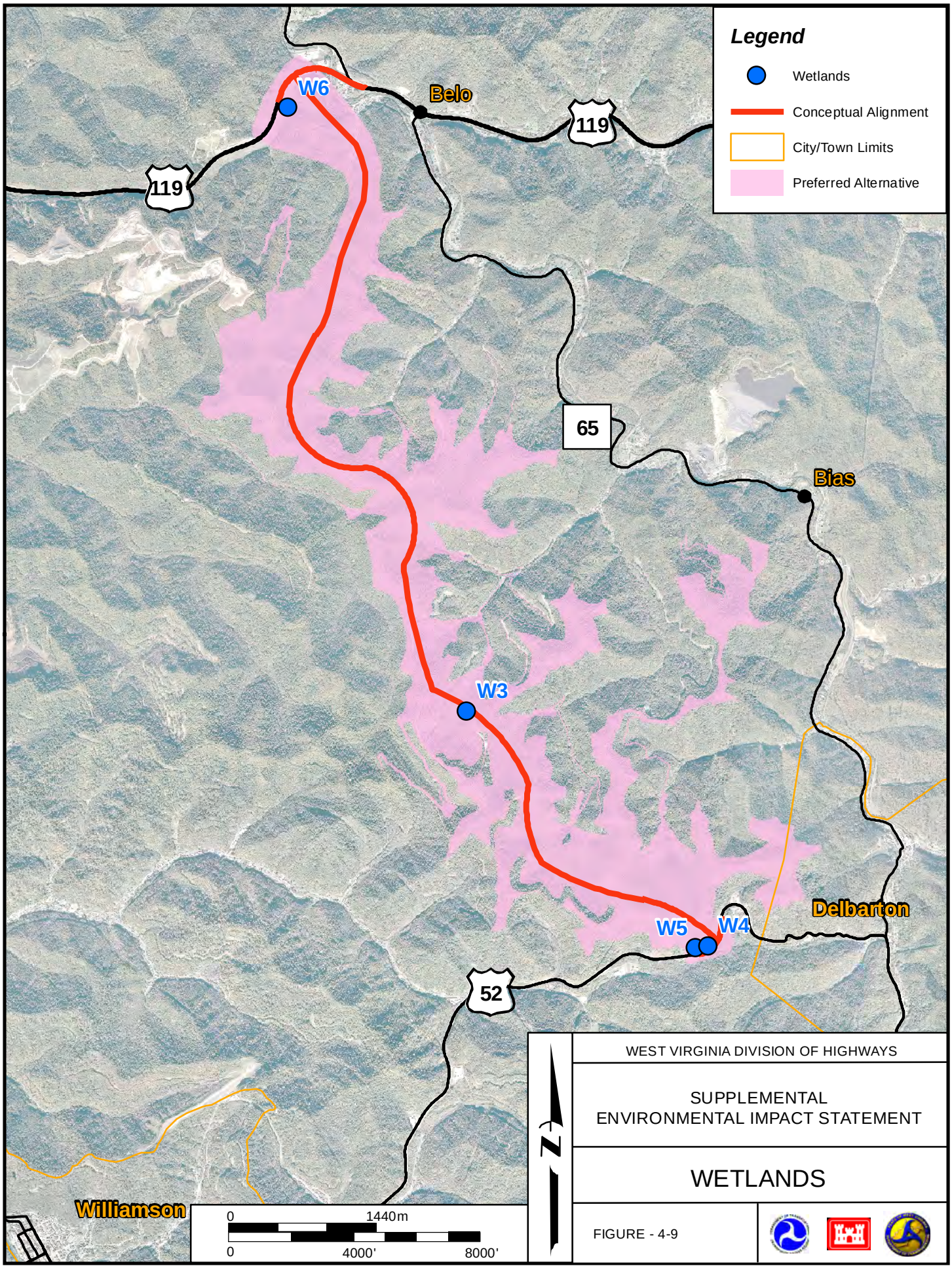
WEST VIRGINIA DIVISION OF HIGHWAYS

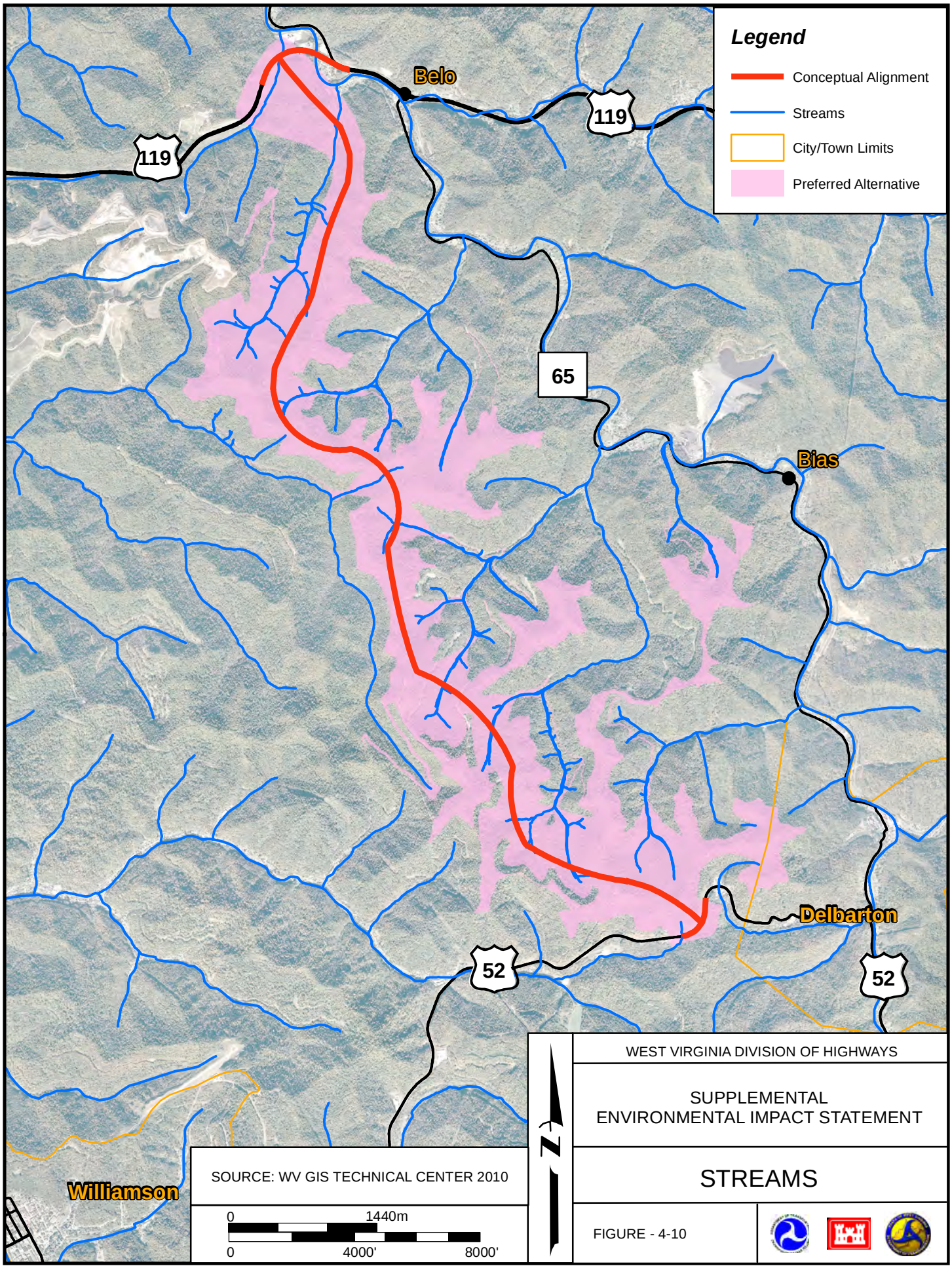
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

HATFIELD-MCCOY TRAIL

FIGURE - 4-7


Legend
Conceptual Alignment
City/Town Limits
Floodplains
Preferred Alternative
Belo
119
65
Bias
Delbarton
52
Williamson
SOURCE: FEMA 2008
0
1440m
0
4000'
8000'
N
WEST VIRGINIA DIVISION OF HIGHWAYS
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
FLOODPLAINS
FIGURE - 4-8


Legend
Wetlands
Conceptual Alignment
City/Town Limits
Preferred Alternative
W6
Belo
119
119
65
Bias
W3
Delbarton
W5
W4
52
Williamson
0
1440m
0
4000'
8000'
N
WEST VIRGINIA DIVISION OF HIGHWAYS
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT
WETLANDS
FIGURE - 4-9

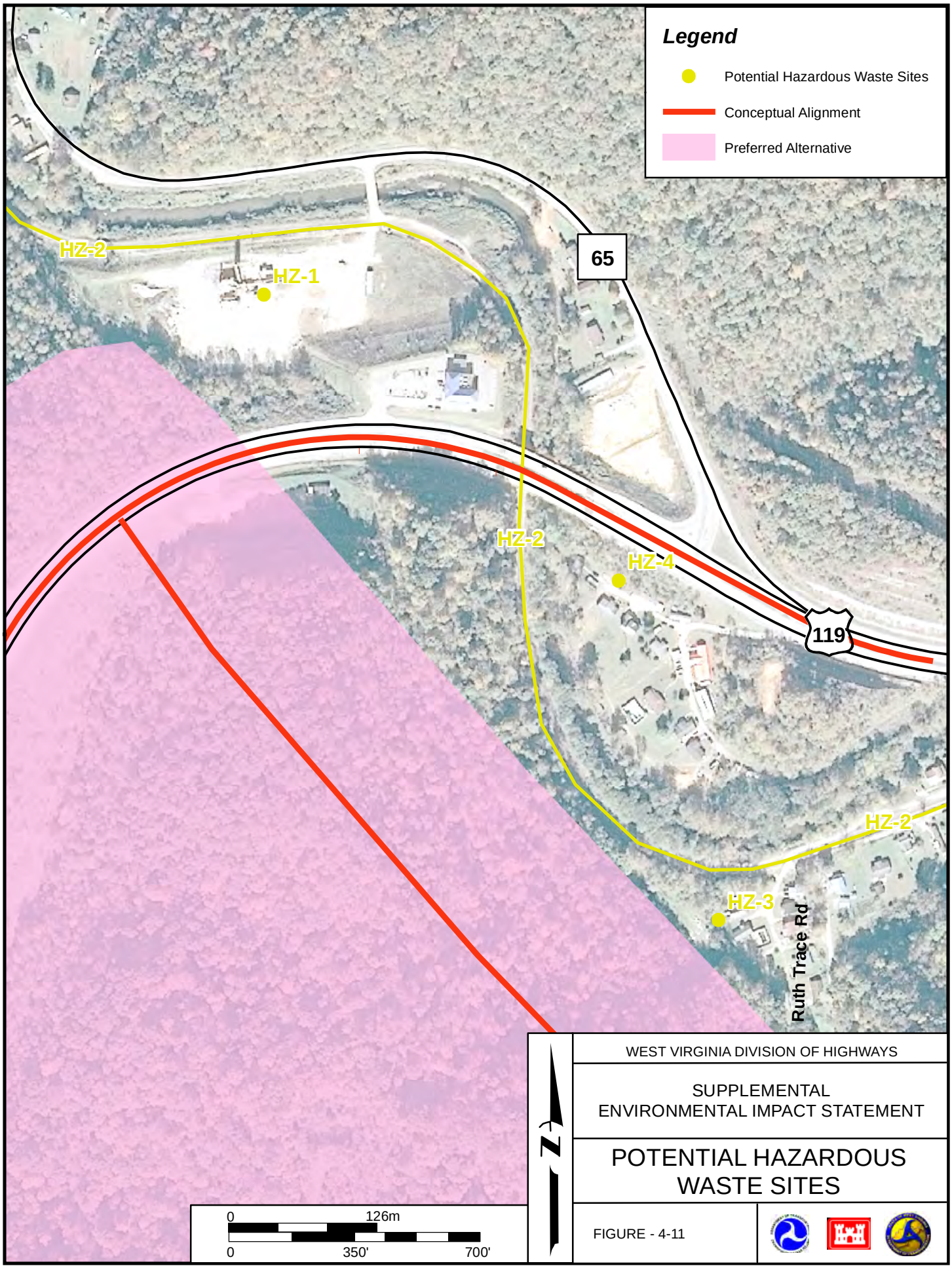


WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

STREAMS

FIGURE - 4-10

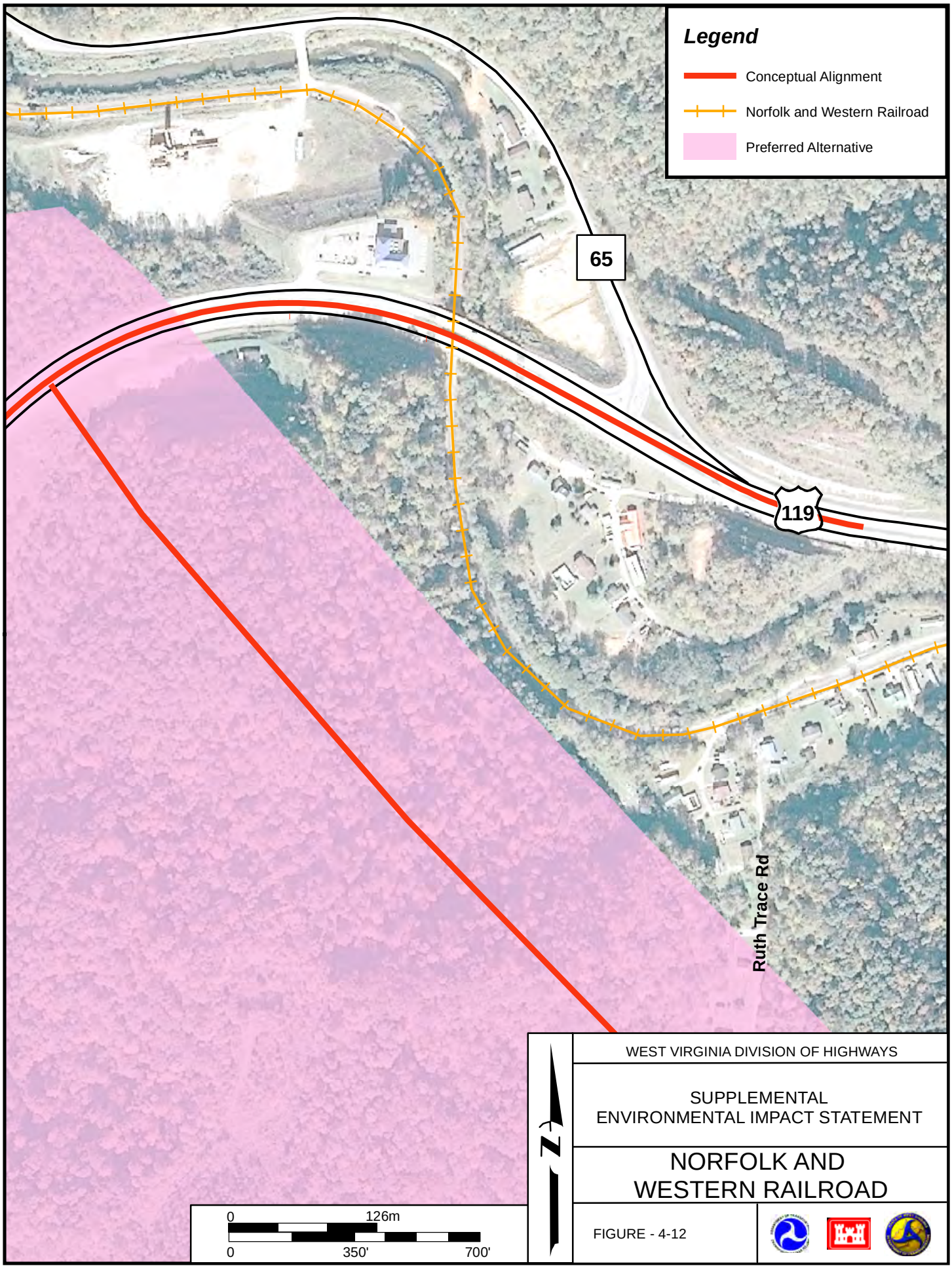


WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

POTENTIAL HAZARDOUS
WASTE SITES

FIGURE - 4-11



WEST VIRGINIA DIVISION OF HIGHWAYS

SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

NORFOLK AND
WESTERN RAILROAD

FIGURE - 4-12

APPENDIX A

FEIS 2000 Record of Decision

FEDERAL HIGHWAY ADMINISTRATION

RECORD OF DECISION (ROD)

KING COAL HIGHWAY

VICINITY OF WILLIAMSON, WEST VIRGINIA TO THE VICINITY OF BLUEFIELD, WEST VIRGINIA

FHWA-WV-EIS-99-03-F

STATE PROJECT: X169-SHA/WN-1 03

FEDERAL PROJECT: DPS-0012(013)

1.0 DECISION / SELECTED ALTERNATIVE

This Record of Decision (ROD) approves the selection of the Preferred Alternative for the King Coal Highway as described in the Final Environmental Impact Statement (FEIS) issued in June 2000. The Preferred Alternative (PA) is a four-lane, divided highway with partially controlled access extending from the vicinity of Williamson, West Virginia to the vicinity of Bluefield, West Virginia, for a length of approximately 151 kilometers (94 miles). The Preferred Alternative incorporates segments of Build Alternatives 2, 2A, 2B, 2C, 2D, and 2E.

The PA begins in Mingo County at the intersection of US 52 and US 119 north of Williamson, West Virginia. The PA follows US 119 northeasterly to approximately 1.6 kilometers (1.0 mile) east of the WV 65 intersection near Belo. At this location, the PA proceeds south and then east crossing Buffalo Mountain and US 52. It proceeds easterly and passes to the south of Delbarton. Near Delbarton, the PA turns southeasterly and generally parallels US 52 which is located north of the alternative. The PA crosses over Mingo County Route 9 and ascends to the ridge top which it follows easterly for approximately 40 kilometers (25 miles). As the PA passes to the south of Coon Knob, Hampden, and Sharon Heights, it turns south and crosses Mingo County Route 10 near Twisted Gun Gap.

The PA continues southeasterly and then easterly, following the ridge line over the Mingo/McDowell and McDowell/Wyoming County lines. The alternative follows Indian Ridge, which is also the Wyoming/McDowell County line, eastward to Crumpler. Near Crumpler, it passes over Flat Top Mountain and parallels Pinnacle Creek. It crosses Pinnacle Creek, Mercer County Route 11, Lambert Browning Mountain, and Bluestone River.

East of the Bluestone River, The PA parallels Sandlick Creek and traverses the summit of Micajah Ridge. The PA continues easterly, crossing WV 20, Mercer County Routes 23 and 36. Atop of Hurricane Ridge, the PA then veers south, crossing WV 123. The PA then traverses Stony Ridge in a southerly direction where it crosses US 19 and US 460 to the intersection with US 52. The PA then follows US 52 northeasterly to its terminus at the US 52/I-77 Interchange.

The PA also includes a connector road (proposed 4-lane limited access highway) to facilitate efficient access to Williamson to and from the PA. The connector will also provide access to the Mingo County Airport. The Williamson Connector is approximately 8 kilometers (4.9 miles) in length. It begins in Mingo County at Goodman along US 52. The Connector proceeds in an easterly direction, paralleling Sugartree Creek to the summit adjacent to the Mingo County Airport. It then passes through the gap north of Sycamore Creek and crosses US 52. The Williamson Connector then proceeds easterly towards Delbarton, where it intersects with the PA.

The selection of the PA is based on studies completed for the *Purpose and Need Study* (1994), *Alternatives Study* (1995), *Pre-Draft Environmental Impact Statement* (1996), *Draft Environmental Impact Statement* (1999), *Final Environmental Impact Statement* (2000), associated technical reports; input from federal, state, local resource agencies; business representatives; and the general public.

The Preferred Alternative provides an optimal Level of Service (LOS) for both local and regional traffic, meets future transportation demands, corrects hazardous road conditions, and links communities, thereby enhancing economic opportunities and services. The Preferred Alternative does not involve a direct or constructive use of any significant park, recreation area, or historic site.

The Preferred Alternative consists of a 300-meter (982-foot) wide corridor. Environmental clearance has been achieved on this corridor through environmental documentation, agency coordination, mitigation commitments, and a Programmatic Agreement. The final alignment of the King Coal Highway will be determined during design phase of the project.

2.0 PROJECT BACKGROUND

In 1991, Congress enacted the Intermodal Surface Transportation Efficiency Act (ISTEA) which provides federal assistance for highway studies, design, and construction. The ISTEA appropriated an initial $14 million for the King Coal Highway. The project was designated in ISTEA as a high priority segment of a high priority corridor on the National Highway System.

On June 9, 1998, the President signed into law PL 105-178, the *Transportation Equity Act for the 21st Century* (TEA-21) authorizing highway, highway safety, transit and other surface transportation programs for the next 6 years. TEA-21 builds on the initiatives established in ISTEA, which was the last major authorizing legislation for surface transportation. This new Act allocated an additional $24.05 million for construction of the King Coal Highway in the state of West Virginia.

The King Coal Highway is the designated I-73/I-74 Corridor in West Virginia. The project is also a component of the State Transportation Improvement Program (STIP) for WVDOT (March 2, 1993). Consequently, WVDOT proceeded with a location study, public informational meetings (1992), Purpose and Need Study (1994), Alternatives Study (1995), Pre-Draft Environmental Impact Statement (PDEIS, 1996), Public Workshops (1998), DEIS, Public Workshops and Hearings (February and March, 2000), and the FEIS (April 2000).

Following Agency review of the PDEIS, WVDOT held a series of public workshops in May of 1998 (identified above). The primary purpose of these meetings was to present the Build Alternatives and to obtain public input and comment. Subsequent to these public meetings and upon review of the environmental consequences for each Build Alternative, a Preferred Alternative (PA) was selected.

The DEIS is based upon technical appendices that inventory social, natural, cultural, and physical resources and have been prepared in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR 1500 et seq.), FHWA regulations (23 CFR 771 et seq.), and the National Environmental Policy Act (NEPA) of 1969. The Preferred Alternative and six Build Alternatives were analyzed in the DEIS.

Following FHWA approval and circulation of the DEIS (December 1999), public meetings and hearings were held (February and March, 2000). After comments on the DEIS were received and considered, the Final Environmental Impact Statement (FEIS) was prepared and approved (June, 2000). The FEIS was published in the Federal Register on July 7, 2000, and comments on the FEIS were received until August 14, 2000.

3.0 ALTERNATIVES CONSIDERED

Four general alternatives were considered for the King Coal Highway Project:

- System Wide Improvements (i.e. Transportation System Management and Improved Roadway Alternatives).
- Transit Alternatives (i.e. Mass Transit and Heavy Rail/Freight Transportation).
- No Build Alternative.
- Build Alternatives.

3.1 SYSTEM WIDE IMPROVEMENTS

The purpose of the Transportation System Management (TSM) Alternative is to make the existing system as efficient as possible. Typically, the TSM approach includes low-cost improvements such as adding widened shoulders and warning signs; constructing minor realignments of horizontal curves; installing traffic signals; or adjusting the timing of traffic signals. Transportation System Management measures are generally considered appropriate in urban areas where the existing facilities operate beyond the designed capacity limits (USDOT, 1987). Capacity constraints along the study route (US 52) are caused by:

- Current and future traffic volumes.
- The physical constraints of the mountainous terrain.
- Numerous communities along the study route (US 52).

Implementation of TSM measures within the rural study area will not adequately address the purpose of and need for the proposed project. As discussed in the *King Coal Highway Purpose and Need Study* (WVDOT, 1994), 67 % of the study route (US 52) and 8 of 14 intersecting segments operated at Level of Service (LOS) D or worse during 1993. By 2013, 90 % of the study route and 13 of 14 intersecting segments will be functioning at LOS D or worse. Transportation system constraints that affect the LOS along the study route (US 52) include:

- 132 kilometers (82 miles) of "No Passing Zones" on US 52 (study route).
- 80 advisory speed zones.
- Grades of over 4 %, which can slow truck traffic.
- Varying lane widths and shoulder widths.
- The presence of 35 towns along the study route (US 52) which results in frequent restrictions of traffic flow due to increased numbers of turning, parking, and stopped vehicles.
- The presence of 320 substandard curves.
- Transportation System Management improvements (e.g. adding widened shoulders, installing traffic signals) will not alleviate the current transportation system constraints. Therefore, the TSM Alternative will not meet the following needs:
- Decrease travel times within the study area and between the termini.
- Improve the operating conditions (LOS) in the study area.
- Reduce accident rates in the study area.
- Improve emergency response times in the study area.
- Improve system linkage in the study area.

- Provide safe and efficient access to the study area.

Although many of the TSM measures will result in localized traffic safety and operational improvements, the practical need is for a facility that will provide efficient access to and through the region. The need for this access was documented in the *King Coal Highway Purpose and Need Study* (WVDOT, 1994). Because it has been demonstrated that the TSM Alternative will not address these project needs, it was eliminated from detailed study.

The Improved Roadway Alternative (IRA) would modify US 52 to provide at least two 3.6 meter (12 foot) lanes and 1.8 meter (6 foot) shoulders on a horizontal alignment designed to meet the requirements for a design speed of 80 kilometers (50 miles) per hour between Williamson and Bluefield, West Virginia. Thirty-two kilometers (20 miles) of the 152 kilometers (95 miles) of existing road between Williamson and Bluefield, West Virginia are rated substandard because the curves are too sharp for safe travel at 80 kilometers (50 miles) per hour.

Within the 152 kilometers (95 miles) of roadway, there are more than 320 substandard curves. The segments that required widening would displace numerous homes and businesses, heavily impacting the surrounding community. Since the IRA would require large numbers of relocations, neither eliminating the safety problems nor increasing access within the study area, it was eliminated from the study.

3.2 TRANSIT ALTERNATIVES

A Mass Transit Alternative was relevant only for urbanized areas with populations of over 200,000 (USDOT, 1987). The study area's population is dispersed throughout the four counties, with no single community nearing 200,000.

The past trend in this region has been towards condensing rail traffic and decreasing coal production. To create a Heavy Rail/Freight Transportation Alternative, rail facilities will have to access approximately 300 mines, scattered throughout the 847 square kilometer (327 square mile) study area. Truck traffic accounted for only 7 to 10 percent of the average daily traffic along the study area. This reduction was not enough to meet transportation needs. The Heavy Rail/Freight Transportation Alternative was not viable and did not address the project's purpose and need.

3.3 NO BUILD ALTERNATIVE

Although the No Build Alternative was found not to meet the needs of the study area, it is retained as a basis for comparison with the various Build Alternatives as required by CEQ regulations (40 CFR 1502.14(d)).

The No Build Alternative consists of a continuation of the existing routes between Williamson and Bluefield, West Virginia. This alternative includes short-term, minor restoration activities such as resurfacing, bridge repairs, and minor widening. These improvements are already a part of the ongoing plan for the continued operation of the existing roadway system.

The existing roadway network is deficient in several ways (safety, travel times, linkage). Motorists will continue to experience inadequate regional and local service as they travel along the study route (US 52). By 2013, 90 % of the study route and 13 of 14 intersecting segments will be operating at LOS D or worse.

3.4 BUILD ALTERNATIVE

The Build Alternative was determined to meet the project's purpose with minimal impact on the study area. The Build Alternative was determined to best address the following purpose and needs:

- Develop a transportation system with minimal geometric constraints.
- Minimize conflicts between interstate/inter-county traffic and local traffic.
- Minimize the conflict between truck traffic and local traffic, residential areas, and towns.
- Decrease travel times between project termini.
- Develop a transportation system that operates at Level of Service (LOS) C for both present and projected traffic volumes.
- Minimize/reduce accident rates within the study area.
- Reduce emergency response times within the study area.
- Develop a transportation system that provides safe and efficient access for the many towns and communities within the study area to the regional roadway network such as Interstate 77 (I-77), US 460 (Corridor Q), and US 119 (Corridor G).
- Provide for increased recreation and tourism (Coal Heritage Trail, Pinnacle Rock State Park, R. D. Bailey Lake WMA, Horse Creek WMA, Hatfield-McCoy trail system, hunting, and fishing).
- Develop a transportation system that supports and is a part of a broader and more comprehensive economic development plan for the study area by improving access to the local and regional communities and economies.

A 5- to 8-kilometer-wide (3- to 5-mile-wide) study area was developed for the King Coal Highway during the initial stages of the project. Twelve Build Alternatives were initially developed within this study area. As a result of a Level II analysis, 6 of the 12 Build Alternatives were eliminated from further study due to their potentially extensive impacts to the natural, cultural, and socio-economic resources of the study area.

Six alternatives and the Preferred Alternative were evaluated in the Environmental Impact Statement. The Preferred Alternative incorporates segments of each of the four alternatives (2, 2A, 2B, 2C, 2D, and 2E). Neither the Preferred Alternative nor any of the six DEIS alternatives is a clear-cut "environmentally preferred alternative" because some have fewer impacts to the physical environment and others have fewer impacts to the biological environment. The Preferred Alternative was selected on the basis of providing a balance between serving regional transportation needs, including direct access to communities within the region, and minimizing natural and human environmental impacts.

The Preferred Alternative consists of a 300-meter (984-foot) wide corridor. The actual alignment of the King Coal Highway will be determined during preliminary and final design. Environmental impacts associated with the Preferred Alternative are summarized in the following list. All efforts will be taken during the design stage to minimize these impacts:

- Structures found within alignment corridors that may or may not be impacted: 277 residences, 7 businesses, and 11 community facilities.
- Effects (not adverse) on 2 individually eligible architectural resources.
- 15 hectares (37 acres) of High Probability Areas for Archaeological Resources.
- Encroachment on approximately 7.06 hectares (17.44 acres) of wetlands.
- 40.99 Kilometers (25.47 miles) of intermittent and perennial stream crossings.
- Encroachment of approximately 29 hectares (71 acres) of floodplain.
- Displacement of possibly 137 hectares (340 acres) of prime/state-wide important soils.

Mitigation measures to reduce or eliminate these environmental impacts are provided in Table 1.

4.0 MEASURES TO MITIGATE HARM

Coordination between WVDOH and interested resource agencies throughout the project development process has resulted in agreement on measures to minimize adverse impacts to environmental resources within the Preferred Alternative. These measures are described in Table 1. In

general, all practicable measures to minimize environmental harm have been incorporated into this decision; however, some measures to minimize harm are unique to the project design phase, which will determine the alignment for this project. These measures, which may serve to avoid, reduce or mitigate corridor-level impacts, are included in Table 1.

5.0 SECTION 106 PROCESS

Section 106 of the National Historic Preservation Act requires that all Federal agencies identify and take into account the effects of their actions on historic resources that are included on or eligible for listing on the National Register of Historic Places. The DEIS documented that there were no state inventoried historic resources and no previously recorded archaeological resource within the study area for the DEIS alternatives. A total of 513 historic architectural resources were identified through field reconnaissance for the DEIS alternatives.

Phase Ia archaeological investigations were conducted within the Preferred Alternative corridor. Regional Archaeological site files were used to construct a Prehistoric Predictive Model. The model was designed as a preliminary step in identifying areas of high, moderate, and low probability for the presence of prehistoric archaeological sites within each of the Build Alternatives.

Prior to the circulation of the DEIS, additional Section 106 investigations were completed for the Preferred Alternative. Historic architectural resource investigations were conducted for resources located within the Area of Potential Effect for the Preferred Alternative. National Register eligible resources located within, or in close proximity to, the proposed right-of-way for the Preferred Alternative consists of two railroads. Two resources included: the Belo Segment, Lenore Branch of the Norfolk and Western Railroad and the Sandlick Creek Segment, Norfolk and Western Railroad.

Specific resources evaluated for this study are detailed in: the Cultural Resources Appendix to the DEIS (Volume II; 1999); the Determination of Eligibility for Cultural Resources, King Coal Highway Preferred Alternative (Volume II; 1999); and the Final Assessment of Adverse Effects Letter Report for Historic Properties in the Preferred Alternative (November, 1999). The West Virginia State Historic Preservation Officer (WVSHPO) granted concurrence on the eligibility of these resources as well as the assessment of no adverse effect. The Advisory Council on Historic Preservation (ACHP) chose not to participate in the project. A Programmatic Agreement has been executed among FHWA, The West Virginia Division of Culture and History (WVDCH) and WVDOH that commits the WVDOH to a process that will fulfill the requirements of 36 CFR part 800 (see FEIS Appendix, Programmatic Agreement).

6.0 SECTION 4 (f) ISSUES

In accordance with Section 4(f) of the U.S. Department of Transportation Act (1966), the Federal Highway Administration cannot approve any project that requires the use of any publicly owned land from a park, recreation area, wildlife or waterfowl refuge, or historic resource unless there is no feasible or prudent alternative to the use of such land; and all possible planning to minimize harm resulting from such use has been incorporated into the project.

The evaluation of alternatives included the identification of potential Section 4(f) resources and development of strategies to avoid and/or minimize impact to these resources. The Preferred Alternative does not result in any

direct use (encroachment) or constructive use of Section 4(f) resources (see FEIS appendix, 4(f) Finding).

7.0 OTHER STATE AND FEDERAL ACTIONS REQUIRED

Other federal and/or state actions required to implement the proposed action are as follows:

- Section 404 permit approval by the U. S. Army Corps of Engineers for stream and wetland encroachment required for roadway construction.
- Section 401 Water Quality Certification from the West Virginia Division of Environmental Protection.
- National Pollutant Discharge Elimination System Permit.

8.0 MONITORING OR ENFORCEMENT PROGRAM

A formal monitoring program has not been proposed. Coordination during design development, right-of-way acquisition, and construction will ensure that environmental commitments will be followed. This coordination will be implemented by inviting participation from resource agencies such as the West Virginia Division of Natural Resources, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and U.S. Environmental Protection Agency.

9.0 COMMENTS ON THE FINAL ENVIRONMENTAL IMPACT STATEMENT

The Notice of Availability of the FEIS was published in the Federal Register on July 7, 2000. Following circulation of the FEIS, two (2) comment letters were received. The US Environmental Protection Agency provided comments on aquatic and terrestrial impacts, as well as on mitigation commitments. Table 2 presents a summary of their comments.

The Kanawha Valley Chapter of Trout Unlimited gave comments concerning unlisted trout streams within the project area. These concerns are identified and addressed in Table 1 of this ROD (Surface Water Resources).

10.0 DECISION

For the reasons identified and consistent with the achievement of the purpose and need for the Project, the Federal Highway Administration has determined to proceed with the continued design and eventual construction of the King Coal Highway extending from the vicinity of Williamson, West Virginia to the vicinity of Bluefield, West Virginia.

Thomas J. Smith

Thomas J. Smith, Division Administrator

8/24/2000

Date

TABLE 1 PROPOSED MITIGATION MEASURES	
SOCIAL ENVIRONMENT	Access is increasingly essential to the communities due to centralization and consolidation of services. Pedestrian and bike access could be permanently and temporarily affected by the project. Design-phase mitigation includes: ◆ When the alignment segregates facilities that generate pedestrian traffic, overpasses and walkways will be considered to overcome the barrier effect of a four-lane divided highway. If warranted, specific locations will be determined during the design phase. ◆ Direct neighborhood impacts will be lessened by local changes in alignment, median reduction, or retaining walls. Construction-phase mitigation of the project includes: ◆ Prudent scheduling and programming of the various construction phases, ◆ Provision of construction detours, ◆ Informative signing, ◆ Maintenance of access to homes, farms, businesses, and community facilities, ◆ Information regarding scheduling, planned road closures, and alternative route designations will be provided to public safety service providers.
DISPLACEMENTS Residences 277 Businesses 7 Community Facilities 11	Minimization of displacement impacts will be incorporated into the final highway design. Where avoidance is not possible, acquisition and relocation will proceed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. The Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, prescribes the procedures and provisions required for persons displaced as a result of federally assisted programs. In addition to providing payment of just compensation for property acquired, additional benefits are available to eligible displaced persons forced to relocate from their residence, business, or farm. The WVDOH will institute a Last Resort Housing Program if comparable housing is not available or is not within the relocatees' financial means. These benefits would put the relocatees in the same ownership or tenancy status that they possessed prior to the displacement. All relocatees will be afforded the rights and protections as outlined in the WVDOH pamphlet "Right of Way; A Guide for Owners and Tenants".
ENVIRONMENTAL JUSTICE	Presidential Executive Order 12898 (1994) states that disproportionately high and adverse human health or environmental effects to low-income and minority populations must be identified and taken into consideration for federal projects. Population statistics for 1990 showed that over 94 percent of the population in the study area was white, with 6 percent of the population consisting of minorities. Based on the economic conditions and minority populations within the study area, the Preferred Alternative will not have a disproportionately high impact to low-income populations or minority populations. Delbarton is the only community affected by the Preferred Alternative where the poverty rate of the local population exceeds the average poverty rate of the respective counties. Delbarton was

ENVIRONMENTAL JUSTICE (Cont)	evaluated for potential disproportionate impacts as a result of the project on low-income communities and minority concentrations. Results of this investigation provided the following: Delbarton is a small town of about 500 homes; Delbarton has no public assistance housing or apartment complexes; rentals within Delbarton are private homes; there are no mobile home parks; and, the Street Corner survey (conducted in 1998) did not identify any neighborhood concentrations of low-income or minority residents. Thus, no disproportionate impacts on low income communities or minority populations are anticipated for Delbarton.
FARMLANDS Hectares / Acres Prime Soils 3.2 8.0 State Wide Impt. Soils 134 332 Total Farmland Soils 137 340	A majority of the Prime Soils found in the Preferred Alternative corridor are not currently farmed. Seventeen active farms were identified within the project area. The Farmland Protection Policy Act states that if the site assessment points for any project alternative is a total score of more than 160 points, then avoidance alternatives should be considered for the site. The Natural Resources Conservation Service has determined that none of the alternatives would approach a score of 160. Therefore, no mitigation is anticipated.
CULTURAL RESOURCES - **National Register Eligible Resources:** - Norfolk and Western Railroad (2 locations)	A Programmatic Agreement has been executed among FHWA, WVDCH, and the WVDOH that commits the West Virginia Division of Highways to a process that will fulfill the requirements of 36 CFR part 800. The West Virginia Division of Culture and History has concurred that this project will have no adverse effect on registered historic properties. A Phase Ib archaeological field survey and, if warranted, Phase II testing will be performed within the construction limits of the Preferred Alternative. Options for mitigation regarding archaeological resources are: ◆ Minor alignment shifts. ◆ Data recovery excavation. Because mitigation programs reflect the particular character of the involved resources, they vary widely in nature, complexity, and scope. Consequently, WVDOH will closely coordinate with the WVDCH and other concerned parties in their development and implementation, as warranted.
SURFACE WATER RESOURCES **Watershed Encroachment** 4219 hectares (10,425 acres) **Surface Water Occurrence** 40.99 kilometers (25.47 miles)	A total of three regional watersheds are located within the study area. The majority of these watersheds are disturbed by mining practices. The Preferred Alternative will not impact Outstanding State Resource Waters, National Resource Waters, or Wild and Scenic Rivers Systems. There are no known populations of federally threatened or endangered aquatic species in the study area. All Alternatives will impact headwater streams because the alignments traverse ridge tops in several locations. This could also impact first and second order streams, erosion, sediment load, quality and quantity of aquatic habitat, and runoff. Two (2) stream systems have been identified as possessing reproducing trout populations. This includes Elkhorn Creek (and several tributaries of Elkhorn Creek; Barlow Hollow and Johns Knob Fork) and Crane Creek. Elkhorn Creek is described in the FEIS and Crane Creek is a small stream (headwaters in the McComas region) and flows east into the Bluestone River at Montcalm. Elkhorn and Crane Creek support trout because of good flow of cool water from abandoned underground mines within each respective watershed. Efforts will be made during the design phase to determine the nature and source of ground water feeding these streams systems and to avoid altering stream flow.

SURFACE WATER RESOURCES (Cont)	During the design phase, impacts to streams will be avoided to the extent possible based on the following set of general guiding principles: ◆ Avoid reproducing and other trout streams (e.g., Elkhorn Creek and Crane Creek); bridge where practicable. ◆ Avoid longitudinal impacts to perennial and headwater streams. ◆ Bridge perennial streams, if practicable, to avoid culverts and/or relocations. ◆ Avoid transverse crossings of perennial streams in order to minimize the length of culverts and pipes. When avoidance is not possible, design and construction considerations will be used to minimize potential impacts: ◆ Development and implementation of an Erosion and Sediment Pollution Control Plan. ◆ Use of properly sized and engineered culverts for stream crossings to minimize impacts attributed to flood height and flood duration. ◆ Construction of detention treatment facilities. ◆ Perpendicular stream crossings. ◆ Enhancements of disturbed first and second order stream systems to mitigate the loss of intermittent and perennial headwater stream habitat. ◆ Stream enhancement techniques may include creating pool and riffle zones, planting stream-shading vegetation, constructing low-flow channels and pools, and placing boulders and channel deflectors. ◆ In areas where the potential for acid drainage is high, additional geotechnical investigations will be conducted to ascertain the potential for acid drainage as a result of construction cuts and the disposal of acid overburden. ◆ Balance cuts and fills to minimize waste. In recognition of the concerns expressed by the U.S. Fish and Wildlife Service and the Environmental Protection Agency regarding disposal of waste in streams, the WVDOH commits to a process of coordination in which the resource agencies can comment on specific sections of the project as contract plans are developed, and can identify specific types of locations where waste material cannot be placed.
WETLANDS Type / Hectares / Acres Palustrine Emergent / 2.24 / 5.54 Palustrine Scrub/Shrub / 4.82 / 11.90	Presidential Executive Order 11990 entitled, "Protection of Wetlands", establishes a National Policy to "avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." This project must comply with the general requirements of Section 404 of the Clean Water Act and State 401 Water Quality Certification. The 404 permit application has been assembled and is scheduled for submission to the Corps of Engineers in the second half of August 2000. The Preferred Alternative's 300-meter (984-foot) wide corridor contains six wetlands, three of which ranked "high" for flood flow alteration, aquatic habitat, and wildlife habitat respectively. The remaining functions and values for the six wetlands included low and moderate functions and values. Avoidance and minimization of impacts will occur throughout the planning and design phase of this project. This can include reducing cut and fill and bridging wetlands. If avoidance is not practicable, compensation can occur through

WETLANDS (Cont)	restoration, enhancement, or replacement. The functions and values of impacted wetlands must also be replaced. During the design phase of this project, coordination with the appropriate federal and state resource agencies will be undertaken to comply with Section 404 of the Clean Water Act and State 401 Water Quality Certification.
FLOODPLAINS AND FLOODWAYS Floodplain Encroachment 29 hectares (71 acres)	The King Coal Highway will not conflict with the existing flood control impoundment, R.D. Bailey Lake, nor with the existing floodwalls within Williamson, West Virginia. The Preferred Alternative will traverse the upper reaches of the Brush Creek watershed, which includes a Natural Resource Conservation Service (NRCS) watershed protection and flood prevention project. Potential impacts from increased sediment runoff as a result of construction and operation of the Preferred Alternative will be addressed during detailed design which will also include appropriate geotechnical investigations. During the design and construction phase of the project, no fill material will be placed within the flood pools of watershed dams, and appropriate sediment and erosion control practices will be employed. Structures (e.g., dams) that may be sensitive to blasting will be identified and measures will be taken to protect their structural integrity. Also, measures to minimize impacts to streams and sensitive flood control resources will be evaluated and employed where warranted. Examples of such measures include: the utilization of best management practices for erosion and sedimentation control during construction and operation of the facility; open box culverts; and bridging. The following mitigation measures will be considered during design to avoid and minimize impacts to floodplains and floodways: ◆ Avoid encroachment into regulated floodways. ◆ Avoid or minimize roadway construction within floodplains. ◆ Use larger or multiple culverts to reduce floodwater elevations. ◆ Lengthen bridges to avoid placing abutments within floodplains.
GEOLOGY, MINERAL RESOURCES, SOILS, AND GROUNDWATER Subsurface mines 0 Surface mines (Active) 24 hectares (59 acres) Surface mines (In-Active) 390 hectares (964 acres) Natural Gas Wells 27	*Mining* Mitigation measures taken during construction through active or reclaimed/non-reclaimed strip mine areas will include the proper treatment or removal of waste products. During construction, surface treatment will be implemented to minimize erosion potential and to provide compaction of the subsoil. Revegetation and proper soil cover procedures will be used to minimize the formation of acid drainage. Subsurface mine mitigation will be based on site-specific circumstances. Measures could include bridging, sealing, subsurface reinforcement, backfilling, or capping the deep mine area. Areas where the coal seams are relatively close to the surface could require saturation grouting with a cement and fly ash mix. Where open cavities are present, underpinning the roof overburden by grout columns could be required. Measures to avoid exposure of coal seams will be considered in the final design. If a coal seam cannot be avoided, exploration borings will be used to determine the exact depth, thickness, and slope of the coal seam to the groundwater table. If the groundwater table is beneath the coal seam, then construction activities and subsequent exposure of the coal seam will not likely produce acid drainage. If the coal seam is located below the local groundwater table and drainage is visible from

GEOLOGY, MINERAL RESOURCES, SOILS, AND GROUNDWATER (Cont)	the seam, then a chemical analysis of the groundwater could be performed to determine whether the groundwater exhibits the typical chemical characteristics of acid drainage. If found to contain acid drainage, then proper diversion and treatment of the acid drainage will be executed so as not to degrade the water quality down gradient of the highway cut. *Acid Drainage* Some geologic formations within the study area contain acid producing coal seams. Due to the low acid producing potential of the Kanawha, New River, and Pocahontas Formations that underlie the study area, the amount of acid and metals released from exposed rocks during highway construction will be relatively low. In areas where acid producing materials are identified, contractors will be required to develop an Acid Producing Materials Handling Plan. This plan will include: ◆ The incorporation of limestone into the roadway subbase in an amount necessary to buffer the acid producing capacity. ◆ Cover or compact any acid producing material within 48 hours of exposure. ◆ In acid producing areas that may be exposed by deep cuts, benching and revegetation will be employed. ◆ Should acid drainage occur following construction, necessary and practicable mitigation measures will be developed. ◆ Disposal of acid producing materials will be according to the plan. *Saline Water Intrusion* The typical grading and excavation of highway projects will not extend to the great depths necessary to expose saline aquifers. Therefore, saline water intrusion into fresh water aquifers will not result from construction of the King Coal Highway. However, exploration wells should be properly capped and sealed to avoid possible contamination of groundwater from highway runoff. Additionally, this may decrease the amount of current saline intrusion in some areas. *Erosion Hazard/Landscape Stability/Groundwater* The erosion hazards found in the study alternative range from slight to severe and moderate to severe. Due to the high percentage of sandstone parent material, the soils in the study area are moderately stable. During the final design, an Erosion and Sediment Pollution Control Plan (ESPCP) will be prepared according to all federal, state, and local regulations. The goal of the ESPCP will be to prevent accelerated erosion of the disturbed land and to reestablish the vegetation removed during construction. The plan will also contain post construction methods to maintain and reestablish wetland and floodplain buffers. These will reduce sedimentation and the delivery of pollutants downstream. Stormwater management facilities will be installed. Appropriate excavation disposal sites will be identified and designed so as not to contaminate surface and groundwater. Facilities such as sedimentation basins, diversion ditches, filter fabric, straw bales, seeding and mulching will be used as temporary erosion control devices. Proper engineering design based on site-specific circumstances will be used to avoid vertical cuts where landscape stability hazards are of concern. The final design for the Preferred Alternative will comply with the requirements of the

	Well Head Protection procedures for public wells established by West Virginia.
RARE, THREATENED, AND ENDANGERED SPECIES RARE, THREATENED, AND ENDANGERED SPECIES (Cont)	Two federally-listed endangered and one federally-listed threatened species were investigated prior to selection of the Preferred Alternative. The three species include the Indiana bat (*Myotis sodalis*), the Virginia big-eared bat (*Plecotus townsendi virginianus*), and the plant, Virginia spiraea (*Spiraea virginiana*). The Virginia big-eared bat is known from four states which include specific counties in West Virginia (Pendleton, Grant and Tucker Counties. Based on correspondence with the USFWS, only transient occurrences of the Virginia big-eared bat are expected in the project area. A Biological Assessment (BA) was completed in November, 1999 for the Indiana bat. The report concluded that that the King Coal Highway would remove only 1.8 percent of the available habitat within a 2 mile radius of the Preferred Alternative. Because Indiana bats might occur in the State during summer months, the following protocol will be implemented prior to construction of the King Coal Highway to avoid the possibility of an incidental take of the Indiana Bat. The WVDOH will utilize mist net surveys and/or PRT removal techniques to reduce the possibility of an incidental take. Mist net surveys are currently the accepted sampling technique used to determine the presence or absence of Indiana bats by the USFWS and state natural resource agencies throughout the United States. Mist net surveys will occur between May 15th and August 15th. If during the survey no Indiana bats are caught, no further mitigation is necessary. If PRTs are to be removed, they will be removed during times of bat hibernation (November 15th to March 31st) to avoid the possibility of an incidental take during construction. This method of habitat removal is consistent with other construction projects and is consistent with USFWS ESA Section 7 protocol for the Indiana bat (WVDOH,1998). The USFWS (letter dated December, 1999) determined that no formal ESA Section 7 consultation or mitigation plans are necessary for the Virginia big-eared bat, Indiana bat, or Virginia spiraea. Mist netting and/or PRT activities will be implemented on designated design segments as needed. Mist net surveys and PRT results will be compiled and submitted to the USFWS for concurrence.
HAZARDOUS MATERIALS No known sites	During design, avoidance of known hazardous material sites will be a priority. When avoidance is not possible, early evaluation of hazardous waste locations will allow time for site management, environmental protection, or mitigation to be in compliance with appropriate state and federal laws.
NOISE	Reasonable and feasible abatement measures will be proposed and studied for those areas that warrant noise abatement consideration. The corridor-level noise analysis indicates that 129 areas have some type of noise impact, but that 36 areas potentially warrant consideration of noise barriers. During the design phase, WVDOH will review the increase or decrease in noise in these areas in greater detail. Specific noise abatement measures will be taken as warranted.
CONSTRUCTION IMPACTS	Construction activities for the Preferred Alternative could affect the residences of the immediate study area and those traveling in the vicinity. The following measures should be implemented to mitigate the short-term effects from construction.

CONSTRUCTION IMPACTS (Cont)	*Air Quality* ◆ Minimizing the area of exposed erodable earth, ◆ Stabilizing exposed earth with cover as soon as possible, ◆ Applying water or stabilizing agents to the working and hauling areas, ◆ Covering, shielding, or stabilizing stockpiled material, and ◆ Using covered haul trucks. *Noise* ◆ The contractor will be required to use construction equipment with operable mufflers. ◆ The contractor will be prohibited from working in residential areas between 10 p.m. and 6 a.m. *Water Quality* The contractor is required to stay within specific compliance of Sections 107 and title 642 of WVDOT's Standard Specifications (1993). The contractor will be required to exercise every reasonable precaution necessary during construction to prevent pollution of rivers, streams, and impoundments. All construction discharge will be adequately filtered prior to discharge into waters and will meet the requirements of the West Virginia Administrative Relations, State Water Resources Board, Chapters 20-5 and 20-5a. The contractor will not establish any spoil disposal sites within or immediately adjacent to any regulated water body. All disposal sites will be properly stabilized following closure or a prolonged period of inactivity. Turbidity control measures will be utilized to control sedimentation of nearby water bodies. In the event the contractor dumps, discharges, or spills any contaminant which may affect water quality, they will be required to immediately notify all appropriate local, state, and federal agencies and will take immediate action to contain and remove the contaminant. *Maintenance and Control of Traffic* The maintenance of traffic, construction sequencing, and detouring will be planned and scheduled to minimize any adverse impacts to the traveling public. Signs will be used and local newspapers notified to provide ample notice of detours, closings, and other construction-related activities in order to plan alternate travel routes and accommodate time delays in advance. Traffic congestion and delays will be controlled where many construction operations are in progress at the same time. Within construction areas, traffic control measures using standard practices will be used, as outlined in West Virginia's *Traffic Control for Streets and Highway Construction and Maintenance* and Virginia's *Work Area Protection Manual.* Access to residences and businesses impacted by the construction will be maintained through construction scheduling, sequencing, temporary driveway construction, and temporary connections. Any disruption to the delivery of community and emergency services will be minimal. Intersections with major local roads will be grade separated or relocated which will allow for continuous operation and access. Local police and fire departments as well as other emergency service providers will be notified well in advance of any construction-related activities to allow for prior planning with other providers, or to select alternate routes.

CONSTRUCTION IMPACTS (Cont)	*Health and Safety* During the course of construction, the contractor will comply with all federal, state, and local laws governing safety, health, and sanitation. All reasonable safety considerations and safeguards necessary to protect the life and health of employees on the job, the safety of the public, and the protection of property in connection with roadway construction, will be taken. *Pollution Control* The construction of the King Coal Highway will consist of roadways and bridges requiring excavation of unsuitable materials, placement of embankments, and use of materials such as aggregates, bituminous concrete, and portland cement concrete. The contractor will be responsible for methods of placing and maintain the necessary features of erosion control on potential polluting areas associated with the construction of the King Coal Highway. Temporary erosion control features could consist of berms, dikes, temporary seeding, sediment traps, fiber mats, silt fences, slope drains, mulches, crushed stone and others. The removal of structures and debris will be in accordance with local and state regulatory agencies permitting this operation. In addition, any interruptions of public utilities will be done under close coordination with the affected utility. During construction, the contractor will make every effort to utilize suitable excess material for forming the base of embankments, connecting roads, ramps, and approaches. For excess or unsuitable waste, the contractor will follow a waste disposal plan. This plan will protect sensitive areas. The final alignment will be placed in the most practical location to avoid construction within problem areas and sensitive natural resource areas. In-depth geotechnical research, reconnaissance, and core borings will be used to make sound engineering judgement to solve construction problems as they arise.

TABLE 2

AGENCY COMMENTS

Reviewing Organization	Comment Number	Reviewing Organization Comment	Response
United States Environmental Protection Agency (Letter received 8/23/00)	EPA-1	EPA suggests continued coordination between the WVDOH, Federal and State resource agencies, and the public during future design efforts.	WVDOH will continue to coordinate with all appropriate resource agencies and the public throughout the development of this project. During design, agencies will be invited to participate in both field and office reviews of the project plans.
	EPA-2	Additional NEPA documentation should be prepared if significant issues arise during the design process.	If during preliminary and final design activities, environmental concerns not adequately addressed in the approved environmental documentation are discovered, additional NEPA documentation will be developed.
	EPA-3	Every effort to avoid the relocation, enclosure, or filling of streams be undertaken.	As noted in the SURFACE WATER RESOURCES section on page 9 of this ROD, during final design the first option will be to avoid direct stream impacts. If avoidance is not possible, efforts will be made to minimize the effects on the resource.
	EPA-4	Every effort to avoid and minimize impacts to wetlands should be incorporated into the design of the project. Compensatory mitigation should be developed through coordination with resource agencies.	As noted in the WETLANDS section of this ROD, during final design the first option will be to avoid wetland impacts through design modifications. If avoidance is not possible, mitigation plans will be developed in cooperation with the appropriate state and federal resource agencies. A Section 404 permit application was submitted to the USCOE on August 24, 2000.
	EPA-5	EPA suggests a compensation plan be developed to mitigate terrestrial impacts.	Given limited financial resources, the WVDOH is unable to directly compensate for the projected 9000 acre loss of forested habitat; however, if during final design activities any unique or critical habitat is identified, WVDOH will consider purchasing these properties from willing sellers. In addition, the WVDOH will

			acquire uneconomic remnants and land-locked properties as mitigation for lost habitat when feasible.
	EPA-6	EPA recommends the development of a mitigation tracking system.	In accordance with WVDOH Design Directive 206, a mitigation checklist will be developed to follow up on all mitigation commitments (including stream, wetland, and terrestrial mitigation). A copy of the checklist will be provided to all appropriate state and federal resource agencies. The checklist will be maintained throughout the design and construction stages of the project.

APPENDIX B

Memorandum of Understanding for a Joint Development Initiative

MEMORANDUM OF UNDERSTANDING
KING COAL HIGHWAY – BUFFALO MOUNTAIN
DEVELOPMENT INITIATIVE

This MEMORANDUM OF UNDERSTANDING (**MOU**) is hereby made and entered into by and between the West Virginia Department of Transportation, Division of Highways (**WVDOH**), the United States Department of Transportation, Federal Highway Administration (**FHWA**), Cotiga Development Company, LP (**COTIGA**), CONSOL of Kentucky, Inc. (**CONSOL**), and the Mingo County Redevelopment Authority (**MCRA**).

A. PURPOSE

The WVDOH is seeking new and innovative methods by which to fund and construct needed highway projects throughout the state. The King Coal Highway has been identified by WVDOH as one important element of the state highway network, is a Congressionally designated high priority segment of a high priority corridor on the National Highway System, has been the subject of a number of Congressional funding appropriations, and is identified as a committed project in the state's six-year Highway Improvement Program. The existing alignment (along US 52) is also included in West Virginia's Coal Resource Transportation System.

CONSOL's proposed Buffalo Mountain Surface Mine project, a private venture, will be located in Mingo County, West Virginia, in the vicinity of Belo and Delbarton, West Virginia. Its proposed location is partially within and in close proximity to approximately six (6) miles of the King Coal Highway Preferred Alternative Corridor. This proximity provides CONSOL an opportunity to assist the state of West Virginia in the construction of a section of the King Coal Highway while completing the Buffalo Mountain Surface Mine project. The successful completion of this undertaking will provide important social and economic benefits to southwestern West Virginia communities and should reduce emergency response times in the region, increase roadway safety, relieve congestion on US 52 and US 119, facilitate interstate travel and commerce, increase recreational opportunities in the region, and minimize overall environmental impacts that could occur if the two projects were constructed independently. The King Coal Highway - Buffalo Mountain Development Initiative will produce an approximate five (5) mile section of line and rough grading for the King Coal Highway, as part of the post-mine land use. This initiative is of tremendous value as an innovative Public-Private Partnership that produces significant savings to the taxpaying public. Typical grade/drain projects in southern West Virginia may cost as much as $25 million per mile, and it is anticipated that this initiative will save as much as $110 million in the cost to construct embankments for future highway construction.

The purpose of this MOU is to establish the framework, roles, and responsibilities by which each party to this MOU will participate towards achieving the multiple goals of incorporating the King Coal Highway into the Buffalo Mountain Surface Mine's post-mine land use plan; providing the line and rough grading of the King Coal Highway's roadbed, right-of-way and utility corridors to appropriate WVDOH line and grade standards; and facilitating the donation to the State of West Virginia of the necessary rights-of-way and easements for the affected section of the King Coal Highway.

B. BACKGROUND

The King Coal Highway in West Virginia is part of the Congressionally designated I-73/74 Corridor, and is to be a four-lane, partially controlled access highway that extends from Williamson, West Virginia, to Bluefield, West Virginia. This approximately 93-mile long highway corridor is intended to improve the transportation system in southern West Virginia while enhancing opportunities for economic development. The estimated construction cost for the entire facility, when completed, is over $2.0 billion.

In 1991, Congress enacted the Intermodal Surface Transportation Efficiency Act (ISTEA) which provided federal assistance for highway studies, design, and construction. The ISTEA appropriated an initial $14 million for the King Coal Highway, which was designated in ISTEA as a high priority segment of a high priority corridor on the National Highway System. Consequently, the WVDOH proceeded with a location study, public informational meetings (1992), Purpose and Need Study (1994), Alternatives Study (1995), Pre-Draft Environmental Impact Statement (PDEIS, 1996), Public Workshops (1998), Draft Environmental Impact Statement (DEIS), Public Workshops and Hearings (February and March, 2000), the Final Environmental Impact Statement (FEIS; June 2000), and Record of Decision (ROD; August 2000).

Following Agency review of the PDEIS, WVDOH held a series of public workshops in May of 1998. The primary purpose of these meetings was to present the Build Alternatives and to obtain public input and comment. Subsequent to these public meetings and upon review of the environmental consequences for each Build Alternative, a Preferred Alternative (PA) was selected.

The DEIS was based upon technical appendices that inventory social, natural, cultural, and physical resources and have been prepared in accordance with CEQ regulations (40 CFR 1500 et seq.), FHWA regulations (23 CFR 771 et seq.), and the National Environmental Policy Act (NEPA) of 1969. The Preferred Alternative and six Build Alternatives were analyzed in the DEIS.

Following FHWA approval and circulation of the DEIS (December 1999), public meetings and hearings were held (February and March, 2000). After comments on the DEIS were received and considered, the FEIS was prepared and approved (June, 2000). The FEIS was published in the *Federal Register* on July 7, 2000, and comments on the FEIS were accepted through August 14, 2000. After receipt and review of public and agency comments on the FEIS, the Federal Highway Administration (FHWA) approved a Record of Decision (ROD) in August 2000.

The ROD approved the selection of a 1000-foot wide corridor through which a final alignment would be designed in the future. This approach was chosen because the study corridor was very long, the environmental impacts were not found to be significant and the cost to perform detailed engineering for multiple alignments within a long corridor was prohibitive. The ROD envisioned that alignment shifts (both within and outside the 1000-foot wide corridor) would be considered during final design in order to both minimize the environmental impacts of the project, and achieve the most cost effective alignment.

Subsequent to approval of the ROD, the WVDOH began final engineering design on certain segments within the 93-mile corridor. These segments included two design sections from near Horsepen Mountain to Gilbert (Mingo County), two design sections near Welch (McDowell County), including the interchange with the Coalfields Expressway, and a section extending from US 460 to Airport Road near Bluefield (Mercer County). Overall, final design and construction progress has been slow primarily due to the considerable expense ($25-$30 million per mile of four-lane highway) of building a highway in this challenging mountainous terrain.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) was enacted, authorizing highway, highway safety, transit, and other surface transportation programs for a 6-year period. TEA-21 allocated an additional $24.05 million for construction of the King Coal Highway in the State of West Virginia. In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorized the federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. SAFETEA-LU included additional dedicated funds for construction of the King Coal Highway (I-73/74 Corridor) in the State of West Virginia.

i) KING COAL HIGHWAY PROJECT PURPOSE AND NEED

The King Coal Highway Purpose and Need Study (WVDOT, 1994) was prepared in accordance with FHWA's Technical Advisory T6640.8A (USDOT, 1987), "Guidance for Preparing and Processing Environmental and Section 4(f) Documents," and FHWA's memorandum entitled, "Purpose and Need in Environmental Documents" (USDOT, 1990) and was re-affirmed in the Record of Decision issued in August, 2000.

The King Coal Highway Purpose and Need Study identifies the deficiencies of the study route (US 52) and in turn presents the need for some form of transportation improvement in the study area. By identifying and evaluating the transportation needs in the study area, the purpose of the King Coal Highway project becomes evident.

ii) PROJECT PURPOSE

The purpose of the King Coal Highway is to develop transportation improvement solutions that satisfy the transportation needs of the study area. The following is a summary of the project purpose:

- Develop a transportation system with minimal geometric constraints (e.g., sharp curves, steep grades, two-lane "No Passing Zones", narrow lanes/shoulders, bridge restrictions, residential/commercial involvement).
- Minimize the conflict between interstate/inter-county traffic and local traffic.
- Minimize the conflict between truck traffic and local traffic, residential areas, and towns.
- Decrease travel times within the study area and between project termini.
- Develop a transportation system that at least operates at Level of Service (LOS) C for both present and projected traffic volumes.
- Minimize/reduce accident rates within the study area, specifically those types of accidents that frequently lead to injury or fatality.
- Reduce emergency response times within the study area for ambulance, police, and fire protection services.
- Develop a transportation system that more safely and efficiently interrelates with the existing railroad system, specifically as it relates to the shipping of coal resources.
- Develop a transportation system that provides safe and efficient access for the many towns and communities within the study area to the regional roadway network such as Interstate 77 (I-77), US 460, and US 119.
- Develop a transportation system that supports and is a part of a broader and more comprehensive economic development plan for the study area by improving access to the local and regional communities and economies

This multi-party initiative will advance the planning and construction of the affected section of the King Coal Highway at a significant cost-savings to the State of West Virginia and contributes to the completion of the King Coal Highway project. In addition to the cost savings, development of this section of the highway will assist in fulfilling the Highway's overall purpose and need.

C. GENERAL RESPONSIBILITIES OF PARTIES

The parties will work collaboratively to advance this initiative. The collaboration will include developing and implementing standards, procedures, and protocols related to integrating the roadway into the post-mining reclamation plan, providing the line and rough grading of the King Coal Highway's roadbed and right-of-way to appropriate WVDOH line and grade standards during mining activities, and donating the rough graded roadbed and right-of-way to the State of West Virginia upon completion of the surface mine project. Each party will assign a liaison to serve as the single point of contact for purposes of this MOU. It is also expected that each party will assign appropriate and adequate staff and resources to carry out responsibilities outlined in Section D of this MOU.

D. SPECIFIC ROLES AND RESPONSIBILITIES OF EACH PARTY

i) CONSOL

By entering this MOU, CONSOL will:

- Incorporate the King Coal Highway and facilitate the ancillary development of adjoining lands into its post-mine land use plans through collaboration with all parties to this MOU.
- Facilitate an approximate five-mile section of the King Coal Highway to reasonable, industry standard and appropriate WVDOH design standards, guidelines and criteria, including those related to the Coal Resource Transportation System.
- Provide WVDOH with reproducible copies of the line and grade plans for review and approval, prior to line and rough grade construction work.
- Make available project-specific environmental data to FHWA and WVDOH for use in conducting an environmental reevaluation of the King Coal Highway 2000 Final Environmental Impact Statement (FEIS).
- Prior to and during providing line and rough grade construction work for the King Coal Highway's roadbed and right-of-way component of the project, CONSOL shall notify WVDOH of the construction schedule for the line and rough grading and shall provide WVDOH the right at all times to inspect the work. The WVDOH and CONSOL will endeavor to enter into an agreement that details acceptable standards and specifications of roadway valley fill (stepped-fill) and cut design construction standards/methods and maximum costs to be incurred by CONSOL for the line and rough grading work.
- Rely on its consultant, WVDOH, and FHWA to review and/or provide standards, guidelines and criteria as they relate to highway line and grade standards
- Be entitled to rely on the accuracy and completeness of information, surveys and reports provided by or on behalf of the other parties hereto.
- Take field measurements and gather data related to its portion of the initiative; however such measurements and information are for the purpose of facilitating line, rough grading and other mine-related activities and not for the purpose of conducting final design roadway engineering or roadbed construction.
- Provide WVDOH with the right to make reasonable use of the line and graded right-of-way (during construction) for purposes of ingress and egress at the site as may be necessary for WVDOH's periodic inspection.
- In performing the line and rough grading work, shall comply with all applicable federal, state and local environmental regulations including, but not limited to, Section 404 of the Clean Water Act (CWA), Section 106 of the National Historic Preservation Act (NHP), Section 7 of the Endangered Species Act, State 401 Water Quality Certification, and the Surface Mining Control and Reclamation Act of 1977 (SMCRA).
- Secure the approvals and/or permits required by other governmental agencies for the initiative, and shall provide the WVDOH with copies of any such approval or permit, upon request of WVDOH. The parties' signatory to this MOU will work in good faith to support the post mine land use and assist CONSOL in addressing any issues that may develop with various government agencies in the permit and approval process. In the event CONSOL cannot secure the required permits and approvals, this initiative shall be terminated.
- Be responsible for the necessary relocation of existing utilities located within the proposed highway route and right-of-way corridors. These utility relocations will be installed within the designated WVDOH right-of-way and shall be performed in accordance with the West Virginia Division of Highways manual entitled, "Accommodation of Utilities on Highway Right of Way and Adjustment and Relocation of Utility Facilities on Highway Projects, December 2003," or later version.

- Plan the design for the rough grade construction work to include the rights of way and easements necessary for utility development along the route of this proposed project. This "utility corridor" will be approximately 15 feet in width and run within the boundaries of and parallel to the proposed right-of-way of the King Coal Highway line and grade. Install utility conduits crossing the right-of-way of the King Coal Highway in various locations designated by COTIGA, and its successors or assigns, to facilitate the development of land adjacent to the roadway.

ii) WVDOH

By entering this MOU, WVDOH agrees to:

- Assist FHWA by preparing an environmental reevaluation of the 2000 King Coal Highway FEIS for any alignment shifts or other required Federal actions.
- Provide the necessary staff to provide timely reviews of CONSOL's preliminary and final line and grade and right-of-way plans provided by CONSOL and to approve, when appropriate, the plans for construction to line and grade standards. These reviews and approvals by WVDOH will be provided in a timely fashion to assure that CONSOL's mining schedules are not adversely affected by these reviews and approvals.
- Coordinate with FHWA, CONSOL, COTIGA and the MCRA to identify access locations to be developed for the adjacent lands.
- Inspect, as necessary, CONSOL's construction work to ensure compliance with initiative requirements.
- Provide COTIGA with an estimate of potential just compensation associated with the undeveloped land that is to be donated to the WVDOH. The cost estimate will be based on the procedures outlined in the WVDOH Right of Way Manual.
- Conduct and certify an analysis of the cost the state may have incurred to engineer and construct (to line and grade standards) the segment of roadway within the previously approved Preferred Alternative corridor and for the optimized corridor in an approved environmental reevaluation. This information shall be made available to CONSOL as soon as practicable.
- Upon donation of right-of-way to WVDOH, the WVDOH shall take the action necessary to formally accept into the State Road System the roadbed constructed under this MOU.
- If invited by the U.S. Army Corps of Engineers (USACE), participate as a cooperating agency in the NEPA process in order to secure a surface mine-related CWA 404 Individual Permit (IP).
- Participate in meetings as they relate to the CWA 404 IP process, agency scoping meetings, and public outreach.
- Coordinate with CONSOL and MCRA to locate the rights of way and easements necessary for utility development that will be approximately 15 feet in width and run within the boundaries of and parallel to the proposed right-of-way for the King Coal Highway line and grade. Approve the location and installation of utility conduits by CONSOL crossing the right-of-way of the King Coal Highway in various locations designated by COTIGA, and its successors and assigns, to facilitate the development of land adjacent to the roadway.

iii) FHWA

By entering this MOU, FHWA agrees to:

- Conduct a reevaluation of the 2000 King Coal Highway FEIS based on existing and new information provided by CONSOL in accordance with 23 CFR 771.
- Coordinate with WVDOH CONSOL, COTIGA, and the MCRA to identify (and approve if such approvals are necessary under FHWA regulations) access locations to be developed for the adjacent lands.

- If invited by the USACE, participate as a cooperating agency in the NEPA process in order to secure a surface mine-related CWA 404 IP.
- Participate in meetings as they relate to the CWA 404 IP process, agency scoping meetings, and public outreach.

iv) COTIGA

By entering this MOU, COTIGA agrees to:

- Convey to WVDOH the rights-of-way and easements necessary for the defined section of the King Coal Highway in accordance with those project plans approved by WVDOH. COTIGA shall convey to WVDOH said right-of-way and any easements free and clear of all encumbrances with covenants of special warranty as soon as practicable following construction of the rough graded roadbed for this part of the roadway. The right to receive such rights-of-way and easements is vested solely in the WVDOH, and any entity identified in future as the specific replacement agency for the WVDOH.
- Convey to MCRA the rights-of-way and easements necessary for utility development along the route of the King Coal Highway. It is anticipated that this utility corridor will be approximately 15 feet in width and run within the boundaries of and parallel to the proposed right-of-way of the King Coal Highway line and grade. Cotiga shall convey to MCRA said rights of way and easements free and clear of all encumbrances, with covenants of special warranty, following the construction of this portion of the rough graded roadbed for this part of the roadway. In that conveyance, Cotiga, and its successors or assigns, may retain the right to construct, install, maintain, repair and remove its utilities and associated facilities in this utility corridor so long as such usage does not unreasonably interfere with the use of such rights-of-way and easements by MCRA. The right to receive such rights-of-way and easements is vested solely in the MCRA, and any entity identified in future as the specific replacement entity for the MCRA.
- Waive its right to just compensation for the donated property.

v) MCRA

By entering this MOU, MCRA agrees to:

- Collaborate with CONSOL and COTIGA to insure that the post-mine land use plan is consistent with Mingo County's Master Land Use Plan.
- Participate in public and agency meetings as the project progresses.
- Assist and coordinate in securing meeting locations.
- Coordinate with WVDOH, FHWA, CONSOL, and COTIGA to identify access and utility locations to be developed for the adjacent mined lands.

E. AMENDMENT OF THE MEMORANDUM

This MOU may be amended at any time by mutual agreement of the parties. Such amendments shall not be binding upon each party unless they are in writing and signed by personnel authorized to bind each of the parties.

F. TERMINATION OF MEMORANDUM

Any party may terminate this MOU upon 30 days prior written notification to all other parties. If this MOU is terminated by any party, each party shall be liable only for its respective performance rendered and its costs incurred prior to the effective date of termination. No party shall be liable for the performances rendered or the costs incurred by any other party during the term of the MOU. Upon termination of this MOU, no party shall have any duty to render any further performance or incur any further obligations pursuant to this MOU. If CONSOL is unable to procure any required permit or any permit issued modifies the permit as applied for in a manner which will adversely affect the mining project as determined by Consol or other approval necessary to proceed and complete CONSOL's King Coal Highway - Buffalo Mountain Development

Initiative, then in that event this MOU is terminated and CONSOL has no further duties or obligations pursuant to this MOU. If any of these events occur, although the MOU terminates by its own terms, Consol will provide a courtesy notice to the other parties.

G. COSTS

Any and all expenses incurred by each respective participant in this collaborative project are the sole responsibility of that participant, and none of the participants shall be liable for the costs and expenses incurred by any other participant.

H. ENTIRE AGREEMENT

The parties acknowledge that this MOU is a preliminary agreement, and that the parties contemplate the negotiation of a "final detailed definitive agreement," as noted in Paragraph K of this MOU. This MOU, contains the full and entire agreement between the parties regarding the initial commitment of the parties to the initiative, and the parties shall not be bound by any terms, statements, conditions or representations, oral or written, express or implied, even if contained in this MOU until a definitive agreement is signed by all parties.

I. INDEPENDENT CONTRACTORS

The parties shall perform their respective responsibilities as independent entities and nothing in this MOU shall be construed as creating an employment relationship, partnership, or joint venture between the parties.

J. THIRD PARTY BENEFICIARIES

Nothing contained in this MOU shall create a contractual relationship with or a cause of action in favor of any third party against the other parties hereto.

K. DEFINITIVE AGREEMENT

Notwithstanding anything herein to the contrary, unless and until a definitive final agreement has been executed by all parties and approved by their respective executive management, and Board if necessary, and delivered, no party shall have any legal obligation of any kind whatsoever with respect to any such installation or transaction by virtue of this MOU or any other written or oral expression with respect to such installation or transaction except, in the case of this MOU, for the matters specifically agreed to herein. Issues regarding any warranties and representations made by and liabilities, indemnities and duties of the respective parties related to the project, including but not limited to items such as unknown conditions and damages will be negotiated and if mutually agreed upon included in the final definitive agreement.

IN WITNESS WHEREOF, the parties hereto have caused their respective names to be signed by their duly authorized officers.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION,
DIVISION OF HIGHWAYS

By Paul A. Mattox, Jr. Date 10/23/07
Paul A. Mattox, Jr., P.E.
Secretary of Transportation / Commissioner of Highways

UNITED STATES DEPARTMENT OF TRANSPORTATION,
FEDERAL HIGHWAY ADMINISTRATION
WEST VIRGINIA DIVISION

By Thomas J. Smith Date 10/23/07
Thomas J. Smith, P.E.
WV Division Administrator

CONSOL OF KENTUCKY INC.

By Date 10/23/07
Bart Hyita
CONSOL Energy Coal Group Chief Operating Officer

COTIGA DEVELOPMENT COMPANY, LIMITED PARTNERSHIP
A West Virginia Limited Partnership
By: Tigaco, Inc.
A Pennsylvania Corporation
Its: General Partner

By Date 10.23.07
Richard Wood Snowden
Its: President

MINGO COUNTY REDEVELOPMENT
AUTHORITY

By Mike Whitt Date 10/23/07
Mike Whitt
Executive Director

APPENDIX C

U.S. Army Corps of Engineers Public Interest Review Factors

CELRH RD-E 19 February 2013

MEMORANDUM FOR RECORD

SUBJECT: Summary of Public Interest Review Factors related to Buffalo Mountain Surface Mine in accordance with 33 CFR 320.4 (a) regarding the proposed discharges of fill material in waters of the United States in association with this proposed surface mining operation (2008-491-TUG—Ruth Trace Branch)

1. This Memorandum documents compliance with the United States Army Corps of Engineers (Corps) general policies for evaluating permit applications regarding the public interest review factors as specified in 33 CFR 320.4 (a) for the proposed Buffalo Mountain Surface Mine. It is being incorporated into the Draft Environmental Impact Statement for "King Coal Highway Delbarton to Belo Project and Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application" (DEIS) as an Appendix.

2. **Applicant**: Consol of Kentucky, Inc.
1800 Washington Rd.
Pittsburgh, Pennsylvania 15241

3. **Project Location and Description**: Under the applicant's Preferred Alternative (PA), they propose to discharge dredged and/or fill material into approximately 48,500 linear feet (lf), or 5.948 acres (ac), of jurisdictional stream and 0.02 ac of jurisdictional wetland in conjunction with the construction, operation and reclamation of the Buffalo Mountain Surface Mine (approved under Surface Mining Control and Reclamation Act (SMCRA) Permit S-5018-07 and National Pollutant Discharge Elimination System (NPDES) Permit WV1029690). The proposed project would be located approximately 3.0 miles northwest of Delbarton, in the Hardee, Lee, and Tug River Districts of Mingo County, West Virginia. The project area can be found at latitude 37° 43' 34" and longitude 82° 14' 11" on the Naugatuck, Delbarton, Myrtle, and Williamson USGS 7.5-minute quadrangles. The proposed project would be constructed in the watersheds of/and unnamed tributaries of Ruth Trace Branch of Pigeon Creek, Conley Branch of Pigeon Creek, Hell Creek of Pigeon Creek, Pigeonroost Creek of Pigeon Creek, Stonecoal Branch of Pigeon Creek, Pigeon Creek, and Miller Creek. Pigeon Creek and Miller Creek are tributaries of the Tug Fork River, a traditional navigable water.

Under the applicant's preferred alternative, project components would include 12 valley fills, several mine-through areas, 18 temporary drainage control structures (ponds) and six temporary stream crossings for the purpose of providing draining and erosion control (treatment facilities), access to the site, and mineral removal for a surface mine. The applicant proposes to permanently discharge fill material into 11,137 lf of perennial stream, 21,116 lf of intermittent stream and 7,032 lf of ephemeral stream, for a total of 39,285 lf of stream. The project would also include the permanent discharge of fill material into 0.02 ac of wetland. The applicant also proposes to temporarily discharge fill material into 7,182 lf of perennial stream, 2,938 lf of intermittent stream and 95 lf of ephemeral stream. The purpose of the proposed project is to construct attendant and associated features (i.e. overburden disposal, coal recovery, sediment

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control, etc.) and to facilitate efficient extraction of 16,784,000 tons of coal reserves in the SMRCA permitted area (2,283 acres, of which 1,648.4 acres would encompass the proposed mineral removal activities) for a period of approximately 15 years. Coal removed from the project area would be processed and moved offsite for delivery to customers. The proposed project would also include the construction of fills to accommodate the future construction of approximately 5.1 miles of the King Coal Highway between Delbarton and Belo in Mingo County, West Virginia (some fills associated with the disposal of overburden would also function as support for the proposed roadbed).

3. **Regulatory Authority**: This Memorandum documents compliance with the Corps' regulatory policies established at 33 CFR 320.4. Specifically, the expected, accrued benefits must be balanced with the reasonably foreseeable detriments to the public interest in association with the proposed discharges of dredged or fill material under Section 404 of the Clean Water Act.

4. **Public Interest Review**: The majority of the information related to this analysis is contained in the DEIS, and relevant sections of that document are referenced herein. Table 1 below summarizes the conclusions of the Corps' analysis of these public interest review factors:

Table 1
Public Interest Review Factors

Public Interest Review Factor	Adverse Effect	Negligible Effect	Beneficial Effect	Neutral Effect (result of mitigative action)
Conservation		X		
Economics			X	
Aesthetics				X
Wetlands		X		
Historic Properties				X
Fish & Wildlife Values				X
Flood Hazards		X		
Floodplain Values		X		
Land Use			X	
Navigation		X		
Shore Erosion and Accretion		X		
Recreation		X		
Water Supply & Conservation		X		
Water Quality				X
Energy Needs			X	
Mineral Needs			X	
Safety		X		
Food & Fiber Production		X		

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Public Interest Review Factor	Adverse Effect	Negligible Effect	Beneficial Effect	Neutral Effect (result of mitigative action)
Consideration of Property Ownership				X
General Environmental Concerns		X		
Needs & Welfare of the People			X	

4.1 Conservation

Broadly defined, conservation is the planned management of natural resources in order to prevent or minimize exploitation, destruction or neglect. As discussed in the DEIS Chapter 4 Section 4.4.8, the proposed Buffalo Mountain Surface Mine would result in negligible effects on conservation values.

4.2 Economics

As discussed in the DEIS Chapter 4 Sections 4.2 and 4.7.1, the Buffalo Mountain Surface Mine and would be anticipated to provide economic benefits to the applicant. The inclusion of a portion of the King Coal Highway would provide indirect economic benefits to the local and state population resulting primarily from the over $100 million savings in construction costs of the King Coal Highway (savings compared to construction of the Highway in the original corridor proposed and selected by the West Virginia Department of Highways).

4.3 Aesthetics

As discussed in the DEIS Chapter 4 Section 4.2.9, although the impacts on aesthetics in association with the Buffalo Mountain Surface Mine would temporarily be adverse, reclamation of the mine would result in removal of these adverse effects as much of the mine would be returned to forestland. Forestland comprises the majority of the pre-mining land use.

4.4 Wetlands

As discussed in the DEIS Chapter 4 Section 4.3.5, the proposed Buffalo Mountain Surface Mine would have minor adverse effects on wetlands. However, given the small amount of proposed loss due to the discharges of fill material and the emergent nature of the impacted wetlands, these adverse effects are negligible.

4.5 Historic Properties

As discussed in the DEIS Chapter 4 Section 4.5, the proposed Buffalo Mountain Surface Mine would have adverse effects on archaeological resources. However, Section 106 (of the National Historic Preservation Act of 1966) consultation has been completed in association with the

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proposed project. A Memorandum of Agreement between the West Virginia Division of Culture and History, the West Virginia Department of Environmental Protection (WVDEP) and the applicant includes stipulations that would mitigate for the adverse effects on these resources.

4.6 Fish & Wildlife Values

As discussed in the DEIS Chapter 4 Sections 4.3.1 and 4.3.2, the proposed Buffalo Mountain Surface Mine would have temporary adverse effects on wildlife values (the streams proposed for the discharges of fill material do not support large or diverse fish populations). However, reclamation of the mine would return the majority of the mine area, including many of the temporarily impacted streams, to their pre-mining wildlife values. The applicant has proposed (and received authorization under SMCRA) for the majority of the SMCRA permit area to be reclaimed to forestland, which comprises the majority of the current land use.

4.7 Flood Hazards

As discussed in the DEIS Chapter 4 Section 4.3.4, the applicant would construct and manage sediment and water control structures which would ensure no increase in flood hazards in association with the Buffalo Mountain Surface Mine.

4.8 Floodplain Values

As discussed in the DEIS Chapter 4 Section 4.3.3, the proposed Buffalo Mountain Surface Mine would have negligible effects on floodplain values. The proposed mining area would be located outside of any Federal Emergency Management Agency-designated floodplains.

4.9 Land Use

As discussed in the DEIS Chapter 4 Section 4.2.3, the proposed Buffalo Mountain Surface Mine would have beneficial effects on land use associated with the construction of a portion of the King Coal Highway.

4.10 Navigation

As discussed in the DEIS Chapter 4 Section 4.2.2.3, the proposed Buffalo Mountain Surface Mine would not be located on any commercially navigable waterways.

4.11 Shore Erosion & Accretion

As discussed in the DEIS Chapter 4 Section 4.3.9, the proposed Buffalo Mountain Surface Mine would have no effect on this public interest review factor.

4.12 Recreation

As discussed in the DEIS Chapter 4 Sections 4.2.8, the proposed Buffalo Mountain Surface Mine would have no effect on recreation. The potential impacts associated with the Hatfield-McCoy Trail would be located outside of the mine permit boundary and would be associated with the

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connector pieces of the King Coal Highway. The connector pieces of the Joint Development Initiative alternative would result in negative impacts to Trail 14 and the Reverend Compton Trailhead of the Hatfield-McCoy Trail. The WVDOH has indicated they would provide alternative trails and relocate the trailhead should the Joint Development Initiative alternative be selected.

4.13 Water Supply & Conservation

As discussed in the DEIS Chapter 4 Section 4.3.1, the proposed Buffalo Mountain Surface Mine would have no effect on water supply and conservation.

4.14 Water Quality

As discussed in the DEIS Chapter 4 Section 4.3.6, the proposed Buffalo Mountain Surface Mine would have some negative effects on water quality. However, the applicant has developed a compensatory mitigation plan in accordance with 33 CFR 332 to partially offset the negative effects to water quality. In addition, the applicant has received Section 401 water quality certification from the WVDEP, issued on November 23, 2011 for this mine. The applicant also received Section 402 (NPDES) authorization from the WVDEP on October 29, 2012 for this mine. For the NPDES permit, the applicant developed (and received approval from the WVDEP for) an Aquatic Ecosystem Protection Plan (AEPP), which would further ensure compliance with NPDES limits associated with this mine. Compliance with the approved NPDES permit and AEPP would ensure neutral effects on water quality. The AEPP and NPDES permit are also discussed in the DEIS Chapter 4 Section 4.3.6.

4.15 Energy Needs

As discussed in the DEIS Chapter 4 Section 4.4.6, the proposed Buffalo Mountain Surface Mine would have a positive effect on energy needs based on the anticipated supply of coal for energy production from this mine.

4.16 Mineral Needs

The proposed Buffalo Mountain Surface Mine would have beneficial effects on mineral needs through the extraction of coal to provide a supply of this mineral for energy production.

4.17 Safety

As discussed in the DEIS Chapter 4 Section 4.4.7, the proposed Buffalo Mountain Surface Mine would have negligible effects on safety.

4.18 Food & Fiber Production

As discussed in the DEIS Chapter 4 Section 4.2.4 regarding effects on farmlands, the proposed Buffalo Mountain Surface Mine would have negligible effects on food and fiber production.

4.19 Consideration of Property Ownership

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As discussed in the DEIS Chapter 4 Section 4.2.1.3, the proposed Buffalo Mountain Surface Mine would have beneficial effects on property owners within the SMCRA-permit boundary. Effects on property owners adjacent to the SMCRA-permit boundary are generally speculative, but may be negative in the short term (during mining and immediately post-mining), but the long-term effects would be anticipated to be neutral as reclamation would be completed and the majority of the post-mining land is returned to forestland (the majority of the proposed mine area currently consists of forestland).

4.20 General Environmental Concerns

This section discusses issues which do not fall within other Public Interest Factors. Potential adverse effects from fugitive dust and noise associated with the mine area is regulated by SMCRA, Clean Air Act, the West Virginia Air Pollution Control Act, and the Mine Safety and Health Administration (MSHA) to assure adequate protection of public safety, health and property. Potential effects associated with noise and dust are discussed in the DEIS Chapter 4 Sections 4.2.1.4, 4.2.6.3, 4.2.7 and 4.4.5 (noise) and Sections 4.2.1.4, 4.2.2.4, 4.2.7 and 4.2.9.3. The USEPA enforces National Ambient Air Quality Standards. SMCRA requires that the applicant comply with applicable air and water quality regulations as well as applicable health and safety standards (30 USC 1258(a)). The SMCRA permit includes a variety of regulations to assure public safety. The SMCRA program addresses aspects of construction and filling activities on natural and human environments through performance standards to avoid and minimize adverse effects concerning soils; land uses; air quality; noise and vibration; explosives; community integrity and quality of life; reclamation; post-mining land use; fill stability; re-vegetation; sediment control; and roads. The Corps defers to the regulatory authority and oversight of these agencies for adequate assurances that the activities for which a Section 404 permit is required, is conducted to avoid and minimize these potential impacts. The proposed fill activity would not be expected to have more than a minor, direct, indirect or cumulative adverse effect on the general environment.

4.21 Needs & Welfare of the People

This public interest factor includes analysis of potential effects on environmental justice populations as defined in Executive Order 12898 (dated February 11, 1994). Needs and welfare of the people are discussed in the DEIS Chapter 4 Section 4.2.7 and potential environmental justice impacts are discussed in Section 4.2.6 of the DEIS Chapter 4. As discussed in these sections, the proposed Buffalo Mountain Surface Mine would have temporary adverse effects on environmental justice populations due to its proposed location near residents living below the poverty level. These effects would mainly be due to aesthetics and potential noise and dust from the surface mine operation. However, post-mining and during reclamation, the noise and dust from mining would cease, and as most of the post-mining land use would be forestland, the aesthetics of the area would be returned to an approximate pre-mining condition.

Impacts to environmental justice populations outside of the SMCRA permit boundary in association with the connector pieces of the King Coal Highway are discussed in the same Sections of the DEIS Chapter 4 as indicated in the paragraph above. These impacts are outside of the scope of the Corps' regulatory authority but are included in the FHWA's scope of review

for the Joint Development Initiative Alternative (which would include the Section 404 authorization of the Buffalo Mountain Surface Mine).

Although mining would have temporary adverse effects on environmental justice populations, inclusion of a portion of the King Coal Highway as part of the post-mining land use of the Buffalo Mountain Surface Mine would also have beneficial effects on these populations as well as the needs and welfare of the people. The construction costs of the highway in association with the Buffalo Mountain Surface Mine would save local and state taxpayers approximately $100 million, according to information provided by the FHWA.

Based on the above discussion and the analysis contained in the DEIS Chapter 4 Sections 4.2.6 and 4.2.7, the proposed Buffalo Mountain Surface Mine would have neutral effects on environmental justice populations and the needs and welfare of the people.

5. **Conclusion**: Based on this Memorandum and the referenced sections of the DEIS Chapter 4 contained herein, I find that issuance of a Department of the Army permit ☒is not/☐is contrary to the public interest.

PREPARED BY: _____ Date:

James B. Spence
Regulatory Project Manager
Energy Resource Branch

APPROVED BY: _____ Date:

Ginger Mullins, Chief
Regulatory Division

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APPENDIX D

U.S. Army Corps of Engineers 404 (b)(1) Guidelines Analysis and LEDPA Determination

CELRH-RD-E 6 Mar 2013

MEMORANDUM FOR RECORD

SUBJECT: Analysis of Buffalo Mountain Surface Mine in accordance with the Section 404 (b) (1) Guidelines (40 CFR 230) regarding the proposed discharges of fill material in waters of the United States in association with this mine (2008-491-TUG—Ruth Trace Branch)

1. This Memorandum documents compliance with the Section 404 (b) (1) Guidelines (the Guidelines) for the proposed Buffalo Mountain Surface Mine. It is being incorporated into the Draft Environmental Impact Statement for "King Coal Highway Delbarton to Belo Project and Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application" (DEIS) as an Appendix.

2. **Applicant**: Consol of Kentucky, Inc.
1800 Washington Rd.
Pittsburgh, Pennsylvania 15241

3. **Project Location and Description**: Under the applicant's Preferred Alternative (PA), they propose to discharge dredged and/or fill material into approximately 48,500 linear feet (lf), or 5.948 acres (ac), of jurisdictional stream and 0.02 ac of jurisdictional wetland in conjunction with the construction, operation and reclamation of the Buffalo Mountain Surface Mine (approved under Surface Mining Control and Reclamation Act (SMCRA) Permit S-5018-07 and National Pollutant Discharge Elimination System (NPDES) Permit WV1029690). The proposed project would be located approximately 3.0 miles northwest of Delbarton, in the Hardee, Lee, and Tug River Districts of Mingo County, West Virginia. The project area can be found at latitude 37° 43' 34" and longitude 82° 14' 11" on the Naugatuck, Delbarton, Myrtle, and Williamson USGS 7.5-minute quadrangles. The proposed project would be constructed in the watersheds of/and unnamed tributaries of Ruth Trace Branch of Pigeon Creek, Conley Branch of Pigeon Creek, Hell Creek of Pigeon Creek, Pigeonroost Creek of Pigeon Creek, Stonecoal Branch of Pigeon Creek, Pigeon Creek, and Miller Creek. Pigeon Creek and Miller Creek are tributaries of the Tug Fork River, a traditional navigable water.

Under the applicant's preferred alternative, project components would include 12 valley fills, several mine-through areas, 18 temporary drainage control structures (ponds) and six temporary stream crossings for the purpose of providing draining and erosion control (treatment facilities), access to the site, and mineral removal for a surface mine. The applicant proposes to permanently discharge fill material into 11,137 lf of perennial stream, 21,116 lf of intermittent stream and 7,032 lf of ephemeral stream, for a total of 39,285 lf of stream. The project would also include the permanent discharge of fill material into 0.02 ac of wetland. The applicant also proposes to temporarily discharge fill material into 7,182 lf of perennial stream, 2,938 lf of intermittent stream and 95 lf of ephemeral stream. The purpose of the proposed project is to construct attendant and associated features (i.e. overburden disposal, coal recovery, sediment control, etc.) and to facilitate efficient extraction of 16,784,000 tons of coal reserves in the SMRCA permitted area (2,283 acres, of which 1,648.4 acres would encompass the proposed

mineral removal activities) for a period of approximately 15 years. Coal removed from the project area would be processed and moved offsite for delivery to customers. The proposed project would also include the construction of fills to accommodate the future construction of approximately 5.1 miles of the King Coal Highway between Delbarton and Belo in Mingo County, West Virginia (some fills associated with the disposal of overburden would also function as support for the proposed roadbed).

3. **Regulatory Authority**: This document, and the alternatives analysis contained in the DEIS Chapter 3 Section 3.4, fulfills the requirements of the Guidelines. The purpose of this analysis is to identify and evaluate practicable alternatives (40 CFR 230.3) to the proposed discharges of dredged or fill material in association with the proposed Buffalo Mountain Surface Mine. The Guidelines are the substantive criteria with which the proposed discharges of dredged or fill material must comply before a Section 404 (of the Clean Water Act) permit may be issued by the Corps. The Guidelines have been developed by the United States Environmental Protection Agency in coordination with the Corps.

4. **Purpose of Project**: The basic purpose and overall purpose of the proposed project are contained in the DEIS Chapter 2 at section 2.3.1.

5. **Alternative Analysis**: The basic purpose of the proposed project is to remove bituminous coal reserves as indicated in the DEIS Chapter 2 section 2.3.1. The overall purpose of the project is to attendant and associated features, including permanent excess overburden storage areas, construction of required sediment and drainage control structures, and the extraction of bituminous coal reserves underlying stream channels, to facilitate the extraction of minable coal reserves from 10 bituminous coal seams located within the 2,283-acre SMCRA permit boundary (S-5018-07), and to allow for the construction of a portion of the King Coal Highway between Delbarton and Belo. The alternative analysis, is included in the DEIS Chapter 3 at section 3.4. Based on the analysis, it has been determined mining Alternative 5 (see DEIS Chapter 3 section 3.5.2.4) was the only practicable mining alternative for the proposed project that meets the overall project purpose. Alternative 5 would consist of area/mountaintop mining of the Middle Kittanning, Five Block, Stockton, Coalburg Rider and Coalburg seams in specific areas combined with contouring of the Coalburg, Buffalo, Lower Buffalo, and Winifrede seams adjacent to and within potential valley fill locations and augering and/or highwall mining along the contour areas. In relation to the disposal of excess overburden associated with mining Alternative 5, it has further been determined the construction of 12 valley fills within the SMCRA-permitted area was also part of the only practicable alternative for the proposed project. The location of the proposed valley fills would be in association with the Joint Development Initiative as described in the DEIS Chapter 3 section 3.5.2.6. These locations would ensure the proposed project meets a part of the overall purpose of the mine (i.e. accommodation of the construction of the King Coal Highway Delbarton to Belo Project). Alternative Mining Method 5 along with the on-site disposal of excess overburden in adjacent valleys and the in-stream construction of sediment control structures was determined to be the only practicable alterative. As such, it is the least environmentally damaging practicable alternative (LEDPA) that meets the overall project purpose. However, the applicant is also required to avoid and minimize impacts associated with the proposed discharges of fill material into waters of the U.S. under the LEDPA. For those unavoidable discharges of fill material remaining after all avoidance and minimization, the applicant is to provide appropriate compensatory mitigation.

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6. **Description of Dredged or Fill Material (40 CFR 230.60)**:

6.1 General Characteristics of Material

The proposed fill material to be discharged into waters of the U.S. would be 80 percent durable rock, which does not slake when exposed to water, according to analysis conducted by the applicant in support of the approved SCMRA permit associated with this mine. This resistance to degradation inhibits the oxidation and weathering of rock and the subsequent exposure of fresh surfaces. This lessened exposure in turn inhibits the formation of suspended solids and sedimentation from the discharged fill material associated with the disposed overburden. Material identified as potential sources of acid or toxic materials within the overburden material would be disposed in accordance with the materials handling plan, also approved in association with the SMCRA permit.

As part of the SMCRA approval process, the applicant gathered acid/base accounting data for the proposed project to provide a means of assessing the potential adverse impacts of specific strata, should it be exposed to the environment. This analysis identified isolated strata that have a net deficiency, as well as the strata with an excess neutralization potential, measured in tons $CaCO_3$ (calcium carbonate) per thousand tons of material. The acid/base accounting identified a limited amount of overburden strata as potentially acidic and/or toxic material in the area to be mined. The strata with the potential for generating acid drainage would be some of the actual coal seams to be removed by the proposed operation in addition to thin bands of shale and mudstone immediately adjacent to the coal seams to be removed.

Also in association with the SMCRA review process, the applicant conducted analyses to determine the selenium concentrations within the coal and overburden in the proposed project area. Materials identified as having selenium levels in excess of one (1) mg/kg included: the mudstone above and the mudstone and shale below the Middle Kittanning, the sandstone and shale below and the roof material of the Five Block, the sandstone above and the shale below the Stockton, the mudstone and shale above the Coalburg Rider Lower Split, the mudstone and shale above and the mudstone below the Coalburg, and the shale and mudstone below the Buffalo.

The potential for adverse effects due to the discharges of pollutants to waters of the U.S. was also evaluated in association with the NPDES permit and the Section 401 water quality certification (WQC). Both of these permits were evaluated by the West Virginia Department of Environmental Protection (WVDEP). The NPDES permit was issued on October 29, 2012 and the WQC was issued on November 23, 2011.

6.2 Quantity of Material

The amount of fill material proposed to be discharged in association with the proposed project is detailed in the table below:

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Table 1

	Stream	Proposed Fill Discharge Amount (yd^3)	Linear Feet of Impact due to Permanent Discharge of Fill Material	Linear Feet of Impact due to Temporary Discharge of Fill Material
Valley Fill 1	Ruth Trace Branch and unnamed tributaries	563.01	7,928 (includes 90 lf due to mine-through	
Pond No. 1	Ruth Trace Branch	38.76		999
IUAR* No. 1	Ruth Trace Branch	10.06		65
Valley Fill 2	Right Fork of Conley Branch	177.21	2,366	
Pond No. 2A	Right Fork of Conley Branch	7.31		405
Pond No. 2B	Right Fork of Conley Branch	6.15		595
Valley Fill 3	Unnamed tributary to Right Fork of Conley Branch	88.52	1,195	
Pond No. 3	Unnamed tributary to Right Fork of Conley Branch	11.77		395
IUAR No. 3	Unnamed tributary to Right Fork of Conley Branch	4.86		55
Valley Fill 4	Unnamed tributary of Miller Creek	310.82	2,087 (includes 132 lf due to mine-through)	
Pond No. 4A	Unnamed tributary to Miller Creek	12.35		180
Pond No. 4B	Unnamed tributary to Miller Creek	16.17		315
Valley Fill 5	Unnamed tributary of Right Fork of Hell Creek	343.15	3,240	
Pond No. 5	Unnamed tributary to Right Fork of Hell Creek	11.45		535

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	Stream	Proposed Fill Discharge Amount (yd^3)	Linear Feet of Impact due to Permanent Discharge of Fill Material	Linear Feet of Impact due to Temporary Discharge of Fill Material
Valley Fill 6	Left Fork of Conley Branch	219.03	2,152	
Pond No. 6A	Left Fork of Conley Branch	12.98		431
Pond No. 6B	Left Fork of Conley Branch	5.67		154
Valley Fill 7	Unnamed tributary of Right Fork of Hell Creek	119.42	1,505	
Pond No. 7A	Unnamed tributary of Right Fork of Hell Creek	12.01		455
Pond No. 7B	Unnamed tributary of Right Fork of Hell Creek	7.32		695
IUAR No. 7	Unnamed tributary of Right Fork of Hell Creek	1.3		90
Valley Fill 8	Right Fork of Hell Creek	427.24	4,440 (including 40 lf due to mine-through)	
Pond No. 8A	Right Fork of Hell Creek	10.87		280
Pond No. 8B	Right Fork of Hell Creek	5.97		480
IUAR No. 8	Right Fork of Hell Creek	0.8		40
Valley Fill 9	Unnamed tributary of Left Fork of Hell Creek	640.7	3,315 (including 500 lf due to mine-through)	
Pond No. 9A	Unnamed tributary of Left Fork of Hell Creek	15.7		385
Pond No. 9B	Unnamed tributary of Left Fork of Hell Creek	36.1		400
Valley Fill 10A	Left Fork of Hell Creek	374.11	3,195 (including 90 lf of mine-through)	
Valley Fill 10B	Unnamed tributary of Left Fork of Hell Creek	625.55	4,158 (including 295 lf of mine-through)	
Pond No. 10A	Left Fork of Hell Creek	14.66		770

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	Stream	Proposed Fill Discharge Amount (yd^3)	Linear Feet of Impact due to Permanent Discharge of Fill Material	Linear Feet of Impact due to Temporary Discharge of Fill Material
Pond No. 10B	Left Fork of Hell Creek	29.06		600
IUAR No. 10	Left Fork of Hell Creek	4.89		55
Valley Fill 11	Pigeonroost Creek	440.24	4,520 (includes 140 lf due to mine-through)	
Pond No. 11A	Pigeonroost Creek	19		347
Pond No. 11B	Pigeonroost Creek	21.72		528
IUAR No. 11	Unnamed tributaries of Pigeonroost Creek**			314**
Valley Fill 12	Unnamed tributary to Pigeon Creek	158.25	1,330	
Pond No. 12	Unnamed tributary to Pigeon Creek	12.69		552
IUAR No. 12	Unnamed tributary to Pigeon Creek**	4.32		95**
Additional Mine-Through	Unnamed tributary to Stonecoal Branch of Pigeon Creek	4.94	100	
Totals		4,799.9	41,651	10,215

*IUAR: Infrequently Used Access Road

**Access road would have more than one stream crossing

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6.3 Source of Material

For the proposed discharges of fill material associated with the valley fills, the material would consist of the overburden within the SMCRA-approved mining areas, with constituents described above. While the total volume of overburden fill in association with valley fills would be 148,575,084 yd^3, only approximately 4,800 yd^3 would be discharged into waters of the U.S. in association with the proposed project. For the proposed discharges of fill material into waters of the U.S. in association with the mine-through areas, the material would also be overburden fill.

For the proposed discharges of fill material associated with the ponds, the material would consist of native soils and subsoil in the immediate vicinity of the proposed pond embankments.

For the proposed IUAR fill discharges, they would consist of corrugated metal pipe culverts. The inlet ends of the culverts would consist of a headwall of durable material and the slope at the outlet end would consist of an apron of rock rip-rap. Culverts would be installed such that backfill material would be placed at a finished height of half the pipe diameter or a minimum of 1 foot, whichever would be greater. Backfill material would be compacted. The proposed culverts were designed and spaced in a manner to safely intercept ditch flows and upland surface runoff. All culverts will have the minimum capacity to convey a 10 year-24 hour storm event.

6.4 Discharge Site Description

The streams proposed for the discharge of fill material are described in the DEIS Chapter 4 section 4.3.6.

6.5 Disposal Method

The discharges of fill material into waters of the U.S. in association with the valley fills would be initiated seven months after Corps' authorization for the project, should the Corps issue a permit, and the applicant would proceed in phases for approximately 11 years, according to the applicant. As required under the WVDEP's SMCRA regulations, the discharges of fill material into waters of the U.S. in association with the proposed ponds would precede the development of the valley fills by a number of weeks or months (varies by proposed pond and valley fill location and mine phasing). For instance, during Phase I of the mining project, Pond Nos. 8A and 8B would be constructed during the initial six months following potential Corps' authorization. Valley Fill 8, which would drain to these two sediment ponds, would be constructed The ponds would be completely constructed and functioning in accordance with the requirements of the SMCRA and NPDES permits prior to any discharge of fill material into waters of the U.S. in association with the valley fills. The ponds are designed to manage runoff from the proposed valley fills as well as runoff from the overall mining and disturbance areas. Thus the outlets of each pond are regulated outlets under the approved NPDES permit.

The valley fills would be constructed using a "bottom-up" method of construction. In other words, the toes (or "bottoms") of the valley fills would be established, and a rock underdrain would be established prior to successive lifts of overburden fill material in each valley fill. The purpose of the rock underdrain is to ensure stormwater is routed to the toe of the proposed valley fill and directed into the sediment pond downstream of the valley fill. The location of the

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underdrains may or may not coincide directly with the existing stream beds; however, in most cases these underdrains would essentially be located in the existing stream beds. Successive lifts would be compacted and stabilized to minimize the potential for later slumping or destabilization of the fills.

Subsequent to the completion of construction of the valley fills, these areas would be reclaimed per the requirements of the approved SMCRA permit and associated post-mining land use plan. Some of the tops of the valley fills would be utilized for the road base of the King Coal Highway Delbarton to Belo project. Others would be reclaimed to forestland, light industry and commercial uses, public services or residential uses. The faces of the fills would be revegetated according to the approved SMCRA permit.

7. **Factual Determination of the 404(b) (1) Guidelines (40 CFR 230.11)**:

7.1 Physical Substrate Determinations (40 CFR 230.11 (a))

This determination is related to the substrate within the streams proposed to be impacted by the discharges of fill material. In accordance with 40 CFR 230.20, a comparison is being made between the existing substrate to the physical characteristics of the fill material proposed to the discharged into these same waters of the U.S. In addition, a discussion of the anticipated impacts of the proposed discharges of fill material into waters of the U.S. in relation to the biological, chemical and physical attributes of the substrate is included.

7.1.1 Existing Conditions

The impacted stream substrate consists of the stream bottoms and banks. The pre-mining soil types within the proposed project area are Matewan-Highsplint-Guyandotte Association, Fiveblock-Kaymine soils, and Highsplint channery loam. The Matewan-Highsplint-Guyandotte soils comprise the majority of the stream bank soil. These soils are very rocky, and tend to be loamy in character.

According to information provided by the applicant, the existing substrates of the project streams consist of larger diameter particles with a tendency toward gravel, cobble and boulder sizes. Some of the streams' substrates also have a major component of bedrock. The majority of the streams are very high gradient, falling into the Rosgen A and Aa classification. Throughout all the streams, there is an overall lack of epifaunal substrate and bedform diversity throughout the proposed permit area. Sedimentation was moderate to heavy throughout much of the proposed permit area as well. In general, bank erosion scores were consistent with the lateral stability analysis results, showing the banks were stable. In summary, habitat assessments were mostly poor to moderate, with moderate embeddedness and low bedform diversity.

7.1.2 Impacts due to Discharges of Fill Material

The substrate under the proposed valley fill locations would be permanently covered with fill material. The biological habitat that exists, as indicated by the benthic survey prepared by the applicant, would be eliminated within the footprints of the valley fills. These fills would have rock underdrains that would likely yield discharge of water throughout most of the year.

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Given the proposed fill material to be discharged into these streams would consist of mainly durable material (i.e. larger-sized particles), this is consistent (although not identical) to the physical characteristics of the existing stream substrates and stream bank/riparian area soils. In accordance with SMCRA regulations, the applicant would ensure the discharged fills would remain stable throughout the life of the mine and post-reclamation by implementation of the SMCRA-approved reclamation plan.

Drainage and sediment control structures (ponds) have been designed to produce discharges which comply with the requirements of the NPDES permit for the project. After Phase II bond release, the valley fills would drain directly to the stream segments below and, as the valley fills would have rock underdrains, would generally create a more consistent perennial flow pattern downstream. During the mining process, the existing substrate would cease to function as biological habitat. However, these areas would be re-established after Phase II bond release (post-mining and post-reclamation).

Chemical and physical changes to the substrate downstream of the drainage control structures (ponds) would be expected to be limited by the project's sediment control measures and the isolation of potentially toxic material in accordance with the applicant's approved NDPES permit and materials handling plan (as approved under SMCRA).

7.2 Water Circulation, Fluctuation and Salinity Determinations (40 CFR 230.11 (b))

This discussion focuses primarily on the alteration of water circulation and fluctuation patterns attributed to the proposed discharges of fill material into waters of the U.S. Salinity, as described in 40 CFR 230.25, refers to the mixing of salt water and fresh water, occurring mainly in coastal estuarine environments. Therefore, the proposed project would have no effect on salinity based on its location within the Appalachian region of West Virginia.

In addition, although water chemistry, salinity, clarity, color, odor, taste, dissolved gas levels, temperature, nutrients, and eutrophication are listed in association with this determination, most of these characteristics are analyzed and addressed through the WQC and NPDES review processes. The WQC addresses potential impacts to state water quality standards associated with the proposed discharges of fill material. The NPDES addresses the discharges of pollutants (such as suspended solids, dissolved aluminum, selenium, etc) into waters of the U.S. Particularly in relation to the NPDES and SMCRA requirements, the applicant has designed the handling of materials as well as the storm water management plan (but also including the handling and characteristics of fill material proposed to be discharged into waters of the U.S.) to ensure NPDES-regulated pollutants do not exceed limits set by the state of WV. As indicated in the DEIS, the NPDES was also reviewed by the USEPA prior to their allowing the WVDEP to issue the NPDES permit for this proposal (as WVDEP did on October 29, 2012).

However, a brief description of all of these factors is included in the Existing Conditions section (Section 7.2.1, below).

7.2.1 Existing Conditions

The applicant conducted water quality sampling in support of the SMCRA and NPDES permit submittals in 2006 at various locations throughout the proposed project area. Field measurements included temperature, dissolved oxygen, pH and specific conductance. In addition, water quality samples were sent to an approved laboratory to test for acidity, aluminum, alkalinity, dissolved aluminum, iron, manganese, selenium, specific conductance, sulfate, total dissolved solids (TDS) and total suspended solids (TSS).

Within the Ruth Trace Branch watershed, pH was determined to be slightly acidic (~5), but all other water quality parameters fell within the range conducive for freshwater organisms, with relatively low conductivity (as measured under specific conductance) ranging from 44 to 45 microsiemens per centimeter (µS/cm).

Within the Conley Branch watershed, pH was generally within the slightly acidic (low of 5.2) to neutral (high of 6.8) range. Some of the streams sampled had slightly low alkalinity values (less than 10 mg/L), indicating these streams have lower buffering capacity related to acids. Some of the streams also had elevated iron levels (greater than 1 mg/L), with values as high as 5.3 mg/L in one stream. The remaining parameters fell within the ranges conducive for freshwater organisms, with relatively low conductivity values (49 – 71 µS/cm).

Within the Right Fork of Hell Creek watershed, pH was generally within the neutral range (one value of 5.8 with remaining values ranging from 6 to 7). Some of the streams have lower acid buffering capacities (demonstrated by alkalinity values of less than 10 mg/L). A couple of the sampling stations showed slightly elevated iron concentrations. However, all other parameters fell within acceptable ranges, with conductivity values ranging from 48 to 171 µS/cm.

Within the Left Fork of Hell Creek watershed, pH was within the neutral range (6 to 7), but alkalinity values were generally low (less than 10 mg/L), indicating these streams have low buffering capacities for acidic materials. However, all other parameters fell within acceptable ranges, with low conductivity values ranging from 46 to 73 µS/cm.

Within the unnamed tributary to Pigeon Creek watershed (proposed for Valley Fill No. 12 and associated mining), pH was within the neutral range (6 to 7) for the sampled streams. However, the sampling stations indicated low alkalinity (and thus low buffering capacities). All other parameters fell within acceptable ranges, with low conductivity (52 µS/cm).

Within the Pigeonroost Creek watershed, sampling indicated pH values in the neutral range (between 6 and 7) but streams with low acid buffering capacities (as demonstrated by alkalinity values less than 10 mg/L). All other parameters were within acceptable ranges, with low conductivity values (46 to 48 µS/cm).

Within the unnamed tributary to Miller Creek watershed, pH was within the neutral range (6 to 7) but the streams had low acid buffering capacities (alkalinity less than 10 mg/L) and iron ranges slightly higher than acceptable (approximately 1.6 to 2.1 mg/L, where acceptable ranges are less than 1 mg/L). All other parameters were within acceptable ranges, with low conductivity values (71 µS/cm).

The streams proposed for discharges of fill material (both permanent and temporary) range in

flow regime from ephemeral to intermittent to perennial. The streams are mainly high to very high gradient (Rosgen streams types mainly B, A, Aa, and Aa+).

7.2.2 Impacts Due to Discharges of Fill Material

In accordance with the Aquatic Ecosystem Protection Plan (AEPP) approved as part of the NPDES permit issued on October 29, 2012, potentially acid- or toxic-producing materials would be kept from direct contact with waters of the U.S. Water quality impacts are addressed through various implementations of the AEPP and by compliance with the NPDES permit and 401 WQC.

The proposed discharges of fill material would interrupt the normal current and circulation patterns of these streams. In the areas of the proposed valley fills, rock underdrains would be constructed which would concentrate flows such that the toes of the valley fills would likely discharge perennially (although currently the proposed toes would be located in perennial reaches for ten of the 12 proposed valley fills). Drainage structures along the sides of the valley fills would likely experience ephemeral flows during times of precipitation. During the mining process, the proposed sediment ponds would capture drainage from the toes of the valley fills as well as drainage from other areas of the mining process, changing the flow patterns in the area of the ponds from the current lotic system to a lentic system. The ponds would continue to discharge flow downstream; however, the current hydrographs of these streams would be altered due to the interruptions in normal flow patterns. Upon completion of mining and reclamation of the pond areas, the ponds would be removed. Although normal water fluctuations would continue to be altered by the concentration of flows by the valley fills, downstream areas (after pond removal) would be anticipated to experience more typical, pre-mining fluctuations due to precipitation events. The applicant, as part of the SMCRA approval process, completed a Surface Water Runoff Analysis (SWROA) to ensure no adverse effect to the hydrologic balance off the permitted area both during and post-mining.

In the areas of proposed temporary discharges of fill material associated with IUARs, current flow patterns and fluctuations would be maintained through the use of adequately-sized culverts. These areas would be re-established to pre-mining conditions upon completion of reclamation.

7.3 Suspended Particulate/Turbidity Determinations (40 CFR 230.11 (c))

In accordance with the regulations, consideration is given to the diameter of the particles within the material proposed for discharge, the shape and size of the plume of suspended particulates, the duration of the discharge and resulting plume and whether or not the potential changes would cause violations of applicable water quality standards.

7.3.1 Existing Conditions

As indicated above, the substrates in the waters of the U.S. proposed for the discharges of fill material consist mainly of sand, gravel, cobble, boulders and some bedrock. The applicant also collected total dissolved solids (TDS) and total suspended solids (TSS) information as part of the baseline water quality sampling for the NPDES permit in 2006. Although specific ranges have not been developed for acceptable amounts of TDS, conductivity can be used as a surrogate to explain the levels of TDS (the secondary drinking water standard for TDS is 500 mg/L or less).

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Although not considered a primary pollutant, higher levels of TDS can indicate the presence of different chemical ions which may have a detrimental effect on the quality of freshwaters.

According to the applicant, TSS in the range of 10 to 400 mg/L is acceptable for freshwater organisms based on research conducted by the Conservation Fund's Freshwater Institute. Higher levels of TSS reduce the clarity of water and can prevent sunlight from penetrating streams, for example, and thereby reduce primary production.

Based on the existing water quality data for the streams on the project site, TDS (as indicated by conductivity values) are low for all the impact streams. In addition, the levels of TSS range from less than 5 mg/L up to a high of 119 mg/L, well within the acceptable range for freshwater organisms.

7.3.2 Impacts due to Discharges of Fill Material

Within the areas proposed for the discharges of fill material associated with valley fills, these streams would be eliminated. During mining, routing stormwater runoff through the proposed sediment control structures (including the ponds) would reduce potential impacts to downstream areas. As part of the approved NPDES permit, TSS would be measured and specific limits have been set such that an exceeding of these limits would constitute a violation of the NPDES permit. The applicant has also provided an AEPP in association with the approved NPDES permit that further provides triggers related to conductivity values that would prevent downstream impacts due to TDS.

7.4 Contaminant Determinations (40 CFR 230.11 (d))

This determination includes the degree to which the material proposed for discharge would introduce, relocate, or increase contaminants. This determination considers the material to be discharged, the aquatic environment at the proposed disposal site, and the availability of contaminants.

7.4.1 Existing Conditions

The applicant collected acid/base accounting data for the proposed project to provide a means of assessing the potential adverse impacts of specific excavated strata (coal and non-coal). This analysis identified isolated strata that have a net deficiency, as well as the strata with an excess neutralization potential, measured in tons $CaCO_3$ per thousand tons of material. The acid/base accounting identified a limited amount of overburden strata as potentially acidic and/or toxic material in the area to be mined. The strata with the potential for generating acid drainage are some of the actual coal seams to be removed by the proposed operation and thin bands of shale and mudstone immediately adjacent to the coal seams to be removed.

The applicant also conducted analyses to determine the selenium concentrations within the coal and overburden in the proposed project area. Materials identified as having selenium levels in excess of one (1) mg/kg included: the mudstone above and the mudstone and shale below the Middle Kittanning coal seam, the sandstone and shale below and the roof material of the Five Block, the sandstone above and the shale below the Stockton, the mudstone and shale above the

Coalburg Rider Lower Split, the mudstone and shale above and the mudstone below the Coalburg, and the shale and mudstone below the Buffalo.

7.4.2 Impacts due to Discharges of Fill Material

Based on implementation of the approved materials handling plan, the proposed discharges of fill material would not include any of the above materials. The applicant would blend the above materials with those with a net excess of neutralization potential or otherwise with non-toxic and/or non-acidic materials to minimize their exposure to water (either flowing or precipitation-driven). This would minimize, to the maximum extent practicable, the ability of these contaminants to be discharged into waters of the U.S.

7.5 Aquatic Ecosystem and Organism Determinations (40 CFR 230.11 (e))

7.5.1 Existing Conditions

The applicant conducted benthic macroinvertebrate sampling studies both within and downstream of the streams proposed for the discharges of fill material. The applicant used the West Virginia Stream Condition Index (WVSCI) protocol to determine the current biological quality of these streams. This protocol was developed by Tetra Tech, Inc. for the WVDEP and is a multi-metric analysis used to measure aquatic ecosystem health, biological integrity, and to detect impairment based on comparison to reference conditions. The index was developed specifically for West Virginia and its bio-regions. The WVSCI uses six biological metrics that represent the structure and function of the bottom-dwelling macro-invertebrate assemblage. The categories measure taxonomic richness and composition, functional feeding groups, habits, and degree of tolerance of macroinvertebrate species. The six categories are listed below:

1. % EPT Species - percentage of Ephemeroptera (E-mayflies), Plecoptera (P-stoneflies), and Trichoptera (T-caddisflies) present within a sample. EPT species are pollutant sensitive and their presence are indicative of good stream quality;
2. % Chironomidae Species – percentage of Chironomidae (midges) present within a sample. Chironomidae is a pollutant tolerant species and can be indicative of impaired stream quality;
3. Total Taxa – the number of taxa found in the sample and is a measure of the overall variety of the macroinvertebrate assemblage;
4. EPT Taxa – the sum of E, P, and T present in a sample;
5. %2 Dominant Taxa – the two most abundant taxa in a sample;
6. HBI Index – Hilsenhoff Biotic Index, which defines the abundance weighted average tolerance (to organic pollution) of the assemblage of organisms in a sample.

Using these metrics, Tetra Tech, Inc. calculated a biological index and rating scale for this bio-assessment tool (see Table 2 below). The WVSCI is the standard protocol for the state of West Virginia and is required for all individual NPDES and WQC permits.

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Table 2
WVSCI Rating Scale

WVSCI Scores	Rating	Stream Quality
>78.0-100	Non-impaired – highly comparable to reference sites (>25th percentile)	Very Good to Excellent
>68.0-78.0	Non-impaired – comparable to below average reference sites (5th – 25th percentile)	Good
>60.6-68.0	Moving towards impairment	Gray Zone
>45-60.6	Slightly Impaired	Fair
>22.0-45.0	Moderately Impaired	Poor
0.0-22.0	Severely Impaired	Very Poor

The results of the applicant's sampling are shown in Table 3, below (data collected March through May of 2006):

Site Name	Individuals (#)	Taxa (#)	EPT Taxa (#)	% Mayfly	mHBI	WVSCI	Ranking
Ruth Trace Branch	178-180	12-18	10-11	67-78	2.4-2.9	87-91	Very Good
Conley Branch	14-148	9-16	4-12	13-77	1.8-5.0	52-91	Fair to Very Good
Right Fork Hell Creek	63-144	8-19	6-13	40-68	2.6-3.7	76-93	Good to Very Good
Left Fork Hell Creek	46-81	13-17	10-12	11-65	2.9-3.8	87-89	Very Good
UN Trib to Pigeon Creek	54-77	13-15	9-11	44-56	2.3-3.3	73-93	Good to Very Good
Pigeonroost Creek	158-232	18-25	13-15	40-48	3.0-3.4	95-100	Very Good
UN Trib to Miller Creek	44-50	13-16	8-10	32-46	2.7-2.8	81-86	Very Good

Subsequent to the above sampling, the applicant conducted sampling in the fall of 2006; in general, the score ranges were the same as indicated during the spring sampling. Some sampling points indicated lower WVSCI scores while others were higher, but still within the ranges as indicated above.

In the spring of 2012, the applicant conducted benthic sampling downstream of the proposed discharges of fill material in association with the AEPP of the NPDES permit. All of the

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downstream areas were found to be in the Very Good range of the WVSCI (scores ranging from 84.8 to 95.1).

Fish were also sampled in 2008 within the streams proposed for the discharges of fill material (confined to perennial reaches). The results indicated the fish population consists mainly of pollution-tolerant species such as blacknose dace and creek chubs.

More information on the current condition of these streams is included in the DEIS in Chapter 4, Section 4.3.6.

7.5.1.1 Special Aquatic Sites

Based on an evaluation of the proposed project area, only one wetland exists within the site that would be impacted by the discharge of fill material. This wetland is a small (0.02-acre), palustrine emergent wetland located on an abandoned railroad in the Right Fork of Hell Creek watershed. No sanctuaries or refuges are located within the proposed project area. The project area also does not contain any mudflats, vegetated shallows or coral reefs. Due to the higher gradient of the streams proposed for the discharges of fill material, no riffle and pool complexes exist within the project area.

7.5.1.2 Threatened and Endangered Species

See the DEIS Chapter 4, Section 4.3.2 for information on existing conditions (and potential environmental consequences) of threatened and endangered species on the project site.

7.5.1.3 Other Wildlife

The majority of the riparian areas of the streams proposed for the discharges of fill material are forested and utilized by some semi-aquatic species, such as salamanders.

7.5.2 Impacts due to Discharges of Fill Material

For the existing benthic macroinvertebrate populations of the streams proposed for the permanent discharges of fill material, these populations would be permanently eliminated in these areas. These populations in streams proposed for the temporary discharges of fill material would also be eliminated; however, upon reclamation of the mine and re-establishment of these stream channels, it would be anticipated these areas would be re-populated with similar macroinvertebrates as existed prior to the discharges of fill material.

Since fish were found in the perennial portions of the streams proposed for the discharges of fill material, these fish would likely move downstream outside of the footprint of the permanent and temporary discharges of fill material. Thus these populations would not be anticipated to be impacted by these discharges of fill material.

The proposed discharges of fill material would not be likely to have an adverse effect on any threatened or endangered species (see DEIS Chapter 4, Section 4.3.2 for more information).

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The proposed permanent discharges of fill material would also eliminate the riparian areas of these streams. For species that require access to aquatic areas during a portion of their life histories (i.e. salamanders), that habitat would be eliminated. Some of the more mobile species may be able to move to adjacent, unimpacted areas.

7.6 Proposed Disposal Site Determinations (40 CFR 230.11 (f))

The streams proposed for the temporary and permanent discharges of fill material are specified above in Section 6.2, including the linear feet and acreage of streams to be filled. In accordance with the SMCRA-approved mining plan, the mining would occur in phases over a 15-year period. Thus the discharges of fill material would also occur in phases over the life of the mine. As mining would move into watersheds proposed for valley fills, the proposed sediment ponds would be constructed first to contain runoff from the disturbed mining areas. Subsequent to any upland reclamation with overburden from the mining area, the excess would be discharged in valley fills with a bottom-up method, starting with the toes of the valley fills and working upstream.

7.6.1 Compliance with Applicable Water Quality Standards

The applicant received NPDES-approval for their preferred alternative on October 29, 2012. The applicant also received 401 WQC for this alternative on November 23, 2011. Both of these authorizations were completed by the WVDEP; however, the NPDES was approved after being reviewed by the USEPA. It is anticipated that compliance with the requirements of both these permits would ensure the proposed discharges of fill material would maintain compliance with the applicable water quality standards.

7.6.2 Effects on Human Use Characteristics

The proposed discharges of fill material into waters of the U.S. would be located outside of any municipal or private water supply intakes. The streams proposed for the discharges of fill material are not considered recreational or commercial fisheries. Compliance with the NPDES permit conditions would ensure any secondary effects of the discharges of fill material would be contained on the site during mining and until reclamation would be completed. The streams and adjacent riparian zones proposed for the discharges of fill material do not support water-related recreation due to their headwater nature (and relative lack of water). There are no parks, national or historic monuments, national seashores, wilderness areas, research sites or other similar preserves on the project area.

The proposed discharges of fill material, especially in relation to the proposed valley fills, would have temporary, but relatively long-term, effects on the aesthetics of the area. Currently the headwaters of these watersheds are forested and within view of some of the local residents of these watersheds. During mining and the construction of the valley fills, these forested areas would be eliminated. However, upon completion of mining and reclamation (with both occurring in phases throughout the life of the mine), the majority of these areas would be reclaimed to forestland, particularly around the boundaries of the proposed project area (i.e. where viewshed impacts would most likely be experienced). The West Virginia Division of Culture and History has concurred that there are no resources listed on or eligible for listing on

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the National Register of Historic Places that would experience viewshed impacts in association with the proposed project. Related to the waters of the U.S. proposed for the discharges of fill material, one of the proposed valley fills would be visible from residences within the Conley Branch watershed. However, as all of the proposed valley fills would be returned to forestland after the completion of mining and reclamation, it would be anticipated these aesthetic impacts would be temporary in nature. The variance from approximate original contour (AOC) approved under SMCRA for this project would also result in aesthetic impacts due to the construction of the King Coal Highway. However, due to the steep topography of the area (even in light of the variance from AOC), these aesthetic impacts would be limited to a band along the proposed alignment of the road.

7.7 Cumulative Effects on the Aquatic Ecosystem (40 CFR 230.11 (g))

The review of potential cumulative effects in association with the requirements of the National Environmental Policy Act is included in the DEIS Chapter 4 Section 4.7.1. However, that discussion does not include the more specific review of cumulative impacts in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material. This analysis uses information from the following sources:

1. The Corps OMBIL Regulatory Module (ORM) database (a review of all Section 404 permits issued within the Headwaters Pigeon Creek, Outlet Pigeon Creek and Miller Creek-Tug Fork watersheds);
2. WVDEP – eDEP database (www.wvdep.wv.gov);
3. Section 404 Permit Application and "Environmental Information Document – Buffalo Mountain Surface Mine, WVDEP Permit No. S-5018-07;"
4. Kentucky Division of Mine Reclamation online records;
5. "Rapid Watershed Assessment for the Big Sandy River Basin in West Virginia" by the United States Department of Agriculture Natural Resources Conservation Service (NRCS, June 2008);
6. WVDEP "Tug Fork Watershed, A Summary of the Watershed Assessment Section's 1998 & 2003 Monitoring Efforts;"
7. "Metals and pH TMDLs for the Tug Fork River Watershed, West Virginia" by the United States Environmental Protection Agency, Region 3 (September 2002).

Each of the HUC-12 watersheds associated with the proposed project is discussed below. Based on the Corps knowledge of pre-SMCRA mining activities; it is assumed that many ephemeral and intermittent stream channels may have been impacted by both pre and post SMCRA activities that did not require authorization and/or notification to this office. In looking at the larger watershed information, the NRCS has pointed out (2008) that the Big Sandy River basin (the Tug Fork River is a major tributary to the Big Sandy River, and each of the watersheds below is a subwatershed of the Tug Fork River) continues to experience adverse impacts due to abandoned mine lands. Within the West Virginia portion of the Big Sandy River watershed, a total of 11,275 ac is experiencing impacts from abandoned mine lands. Water-related problems account for 1,503 ac (all within McDowell County, WV), or 13.3%, of this amount. The three watersheds below are all within either Mingo County, WV with a portion of the Miller Creek-Tug Fork watershed within Pike County, Kentucky. The vast majority (1,088 ac) of abandoned mine land problems in Mingo County (as well as the larger Big Sandy River basin in WV) are

associated with abandoned highwalls. The NRCS report indicated untreated sewage remains the single largest water quality problem in the Big Sandy River watershed.

Further discussion of water quality and overall cumulative effects of the LEDPA associated with this project is contained in the DEIS Chapter 4. The analysis below is restricted to past, present and potential future discharges of fill material into waters of the U.S., and compensatory mitigation to offset the approved discharges.

7.7.1 Headwaters Pigeon Creek (HUC 050702010401)

Baseline: Approximately 0.1% of the watershed area is wetland. There are also approximately 119.7 USGS blue-line stream miles contained within the watershed comprised of 25.7% perennial, 61.1% intermittent, and 0% ephemeral tributaries. Corps permits for the period 1984 through 2012 have authorized the discharge of fill material into approximately 42,021 linear feet (lf) of stream, with 31,100 lf being permanent discharges and 10,921 lf being temporary discharges. Of the 31,100 lf of permanent discharge, 9,288 lf was perennial, 7,098 lf was intermittent and 14,714 lf was ephemeral. Of the 9,821 lf of temporary discharge, 5,659 lf was perennial, 2,958 lf was intermittent and 2,304 lf was ephemeral. A total of 65 Section 404 permits have been issued/verified during the time frame indicated above. The total linear feet of stream impacted by the discharges of fill material indicated above does not include information from all 65 projects. Twenty of the 65 projects do not have specific linear feet of discharge of fill material information (or mitigation); however, the descriptions of the types of permits below cover all of these projects.

Of the 65 permitted projects, a total of 35 of these projects were authorized by one of two regional general permits (RGPs). The majority of these RGPs consisted of projects performed by the West Virginia Conservation Agency for stream restoration. Although many of these projects resulted in permanent discharges of fill material into waters of the U.S., by definition the results of the projects were an improvement in stream stability and quality. The other RGP was for the restoration of areas (including waters of the U.S.) associated with abandoned mine lands. By definition, these projects also resulted in improvements in water quality even if they involved the permanent discharges of fill material into waters of the U.S.

For those discharges of fill material that are or were temporary, by definition these areas were restored or will be restored to pre-construction conditions upon the conclusion of the activity. A total of ten projects were authorized under Nationwide Permit (NWP) 12 (utility lines), all of which involved temporary discharges of fill material. One project involving the temporary discharge of fill material into waters of the U.S. was associated with NWP 33, for temporary construction access.

For projects involving the permanent discharges of fill material into waters of the U.S., three projects involved NWP 13, which by definition involved improvements in stream stability as NWP 13 involves bank stabilization activities. One project involved NWP 3 for maintenance activities, which typically do not result in changes in stream quality but sometimes reduce erosion due to failing structures or fill. Two coal mining-related projects were authorized under NWP 26 involving the permanent discharges of fill material into 440 lf of perennial stream (NWP 26 no longer existed after the issuance of the 2002 NWPs). Two NWP 27 projects were

also verified during the above time frame: these projects by definition also result in aquatic lift. Five other NWP-authorized projects involved utility lines, bridge replacements and maintenance. Although little information exists on the exact discharges of fill material into waters of the U.S. associated with these projects, they by definition were minimal individually and cumulatively (in order to meet the terms and conditions of the NWPs that existed at the time of authorization).

Discharges of fill material into 700 lf of perennial stream were authorized under NWP 42 in 2010 in association with the Burch High School baseball field in Mingo County. No compensatory mitigation was provided in association with this project; however, the discharges of fill material involved the piping of the stream to facilitate the construction of the field and therefore perennial flow has been maintained through the pipe.

Of the remaining projects involving the discharges of fill material into waters of the U.S., two projects were authorized under NWP 21 (as described in the 1996 NWPs), the NWP for surface coal mining activities. ORM records do not indicate the amount of discharges of fill material into waters of the U.S. associated with these two projects, although the permittees were to provide either Office of Surface Mining or state-approved mitigation plans for these projects. Two additional projects were also authorized under NWP 21 (as described in the 2002 NWPs). One of these NWP 21 projects only involved 1,100 lf of temporary discharge of fill material into ephemeral streams. The other NWP 21 project involved the permanent discharge of fill material into 4,800 lf of intermittent and 13,839 lf of ephemeral stream and the temporary discharge of fill material into 1,419 lf of intermittent and 1,204 lf of ephemeral stream. As compensatory mitigation, the permittee provided 10,278 lf of perennial stream and 13,942 lf of ephemeral stream (compensatory mitigation described as over and above the restoration of temporary discharges of fill material).

Finally, one mining project was authorized in 2006 under an individual permit (IP). This project involved the permanent discharge of fill material into 2,048 lf of intermittent and 875 lf of ephemeral stream and the temporary discharge of fill material into 1,521 lf of intermittent stream. For compensatory mitigation (over and above restoration of temporary discharges of fill material), the permittee provided 1,700 lf of perennial (enhancement), 3,000 lf of intermittent (establishment) and 5,720 lf of ephemeral (establishment) stream mitigation.

At this time of this document, only one project is pending that would involve the discharge of fill material into waters of the U.S. This project is associated with the Mountaineer Alma A Mine and is currently being reviewed for potential verification under NWP 27. As indicated above, NWP 27 authorizes discharges of fill material in waters of the U.S. associated with improvements in aquatic habitat.

According to WVDEP records, there are no other pending coal mining permits in this watershed. However, this office completed a jurisdictional determination in January 2011 for a possible surface mine in this watershed. Although at this time the requestor does not appear to have submitted an application to the WVDEP under SMCRA, based on the mapping provided by them to this office (late 2010/early 2011), the surface mine would involve three valley fills and associated ponds, all of which would involve the discharge of fill material into waters of the U.S. Specifically, the project would result in the permanent discharge of fill material into 1,450 lf of intermittent stream and 2,770 lf of ephemeral stream and the temporary discharge of fill material

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into 875 lf of intermittent stream and 140 lf of ephemeral stream. Should this project be proposed as indicated on the mapping provided, the potential applicant would be required to obtain a permit under Section 404 and would also be required to provide adequate compensatory mitigation for the unavoidable discharges of fill material into waters of the U.S.

Another underground mine that has been approved under SMCRA could potentially result in the discharge of fill material into up to 475 lf of intermittent stream. At this time, this office has only completed a jurisdictional determination for the project and the SMCRA permit was approved by the WVDEP November 15, 2012. According to the approved SMCRA permit, the project would involve the relocation of a stream on the site. Based on the limited amount of information, the project may only involve temporary discharges of fill material into waters of the U.S. (for instance, to temporarily construct a deep mine face-up). However, and as indicated above, the potential applicant would be required to obtain a permit under Section 404 and would also be required to provide adequate compensatory mitigation for the unavoidable discharges of fill material into waters of the U.S.

Currently, this office is reviewing a jurisdictional determination request by a mining company for a study area within this watershed. Although this office has not completed the determination, the initial submittal indicates the potential presence of approximately 1,575 lf of ephemeral stream and 1,625 lf of intermittent stream. This determination is not currently associated with a specific SMCRA mining permit (pending or approved). Therefore it is unclear whether this project would result in the discharges of fill material into waters of the U.S.

As indicated above, Corps permits for the period 1984 through 2012 have authorized the discharge of fill material into approximately 42,021 lf of stream, with 31,100 lf being permanent discharges and 10,921 lf being temporary discharges. By definition, temporary discharges of fill material would be restored upon completion of the authorized project. Based on current records, compensatory mitigation has been provided for some of the authorized permanent discharges of fill material in the form of 34,640 lf of stream. This compensatory mitigation was reviewed and approved under the Corps' regulations and guidance applicable at the time of approval (Regulatory Guidance Letter 02-02 and associated regulations). Although the approved compensatory mitigation is currently at various stages of completion, it is anticipated the past and currently approved discharges of fill material are more than adequately mitigated, and the addition of the currently proposed discharges of fill material under the Buffalo Mountain Surface Mine would not result in adverse cumulative effects to waters of the U.S.

7.7.2 Outlet Pigeon Creek (HUC 050702010403)

Baseline: Approximately 0.37% of the watershed area is wetland. There are also approximately 111.9 USGS blue-line stream miles contained within the watershed comprised of 24.1% perennial, 60.2% intermittent, and 0% ephemeral tributaries. Corps permits for the period 1996 through 2012 have authorized the discharge of fill material into approximately 40,733 lf of stream, with 28,918 lf being permanent discharges and 11,815 lf being temporary discharges. Of the 28,918 lf of permanent discharge, 6,190 lf was perennial, 14,777 lf was intermittent and 7,951 lf was ephemeral. Of the 11,815 lf of temporary discharge, 5,005 lf was perennial, 5,910 lf was intermittent and 900 lf was ephemeral. A total of 18 Section 404 permits have been issued/verified during the time frame indicated above. The total linear feet of stream impacted

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by the discharges of fill material indicated above does not include information from all 18 projects. Two of the 18 projects do not have specific linear feet of stream (or acres of wetland) discharge of fill material information (or mitigation); however, the descriptions of the types of permits below cover all of these projects.

Of the 18 permitted projects, a total of five of these projects were authorized by RGP, consisting of projects performed by the West Virginia Conservation Agency for stream restoration. Although many of these projects resulted in permanent discharges of fill material into waters of the U.S., by definition the results of the projects were an improvement in stream stability and quality.

For those discharges of fill material that are or were temporary, by definition these areas were restored or will be restored to pre-construction conditions upon the conclusion of the activity. A total of six projects were authorized under NWP 12, all of which involved temporary discharges of fill material. One project involving the temporary discharge of fill material into waters of the U.S. was associated with NWP 14, for linear transportation projects.

Two additional projects were also authorized by NWP 14. Typical discharges of fill material associated with NWP 14 involve the installation of road crossing culverts and pipes, where normal conditions remain upstream and downstream of the crossings and normal flow rates are maintained through the pipes/culverts. One project, involving the permanent discharge of fill material into 480 lf of intermittent stream was authorized under NWP 39 (as described under the 2002 NWPs) for residential, commercial or institutional developments.

In association with coal mining, one NWP 21 was verified in 2004 for the applicant's MT-13 Surface Mine. This project involved the permanent discharge of fill material into 1,195 lf of intermittent and 1,141 lf of ephemeral stream and the temporary discharge of fill material into 550 lf of intermittent and 640 lf of ephemeral stream. As compensatory mitigation (over and above the restoration of temporary discharges of fill material), the applicant provided 4,433 lf of intermittent and 4,450 lf of ephemeral stream. One project was authorized by NWP 50 (as described in the 2007 NWPs) for underground mining. This project involved the temporary discharge of fill material into 871 lf of intermittent stream.

Finally, one mining project was authorized in 2006 under an individual permit (IP), the applicant's MT-500 Surface Mine. This project involved the permanent discharge of fill material into 13,102 lf of intermittent and 6,810 lf of ephemeral stream and the temporary discharge of fill material into 200 lf of perennial, 2,606 lf of intermittent and 260 lf of ephemeral stream. For compensatory mitigation (over and above restoration of temporary discharges of fill material), the permittee provided 7,635 lf of perennial, 15,769 lf of intermittent and 7,360 lf of ephemeral stream mitigation.

At this time of this document, there are no additional proposed projects that would involve the discharge of fill material into waters of the U.S. According to the WVDEP online records, there are also no pending coal mining applications in this watershed.

As indicated above, Corps permits for the period 1996 through 2012 have authorized the discharge of fill material into approximately 40,733 lf of stream, with 28,918 lf being permanent

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discharges and 11,815 lf being temporary discharges. By definition, temporary discharges of fill material would be restored upon completion of the authorized project. Based on current records, compensatory mitigation has been provided for some of the authorized permanent discharges of fill material in the form of 39,647 lf of stream. This compensatory mitigation was reviewed and approved under the Corps' regulations and guidance applicable at the time of approval (Regulatory Guidance Letter 02-02 and associated regulations). Although the approved compensatory mitigation is currently at various stages of completion, it is anticipated the past and currently approved discharges of fill material are more than adequately mitigated, and the addition of the currently proposed discharges of fill material under the Buffalo Mountain Surface Mine would not result in adverse cumulative effects to waters of the U.S.

7.7.3 Miller Creek of Tug Fork (HUC 050702010506)

Baseline: Approximately 0.61% of the watershed area is wetland. There are also approximately 112.7 USGS blue-line stream miles contained within the watershed comprised of 59.4% perennial, 21.0% intermittent, and 0% ephemeral tributaries. Corps permits for the period 1996 through 2012 have authorized the discharge of fill material into approximately 97,832 lf of stream, with 82,099 lf being permanent discharges and 15,733 lf being temporary discharges. Of the 49,803 lf of permanent discharge, 1,763 lf was perennial, 47,380 lf was intermittent and 32,956 lf was ephemeral stream. Of the 15,733 lf of temporary discharge, 300 lf was perennial, 10,868 lf was intermittent and 4,565 lf was ephemeral stream. In addition, a total of 1.36 acres of wetland were permanently impacted by the discharge of fill material. A total of 17 Section 404 permits have been issued/verified during the time frame indicated above. The total linear feet of stream impacted by the discharges of fill material indicated above does not include information from all 17 projects. Six of the 17 projects do not have specific linear feet of stream (or acres of wetland) discharge of fill material information (or mitigation); however, the descriptions of the types of permits below cover all of these projects.

Of the 17 permitted projects, one of these projects was authorized by RGP, consisting of a project performed by the West Virginia Conservation Agency for stream restoration. Although this project resulted in permanent discharges of fill material into waters of the U.S., by definition the results of the project were an improvement in stream stability and quality.

For those discharges of fill material that are or were temporary, by definition these areas were restored or will be restored to pre-construction conditions upon the conclusion of the activity. One project was authorized under NWP 12 involving temporary discharges of fill material. One project involving the temporary discharge of fill material into waters of the U.S. was associated with NWP 33, for temporary construction access.

One project involving the permanent discharge of fill material (only 40 lf) was authorized under NWP 14. Typical discharges of fill material associated with NWP 14 involve the installation of road crossing culverts and pipes, where normal conditions remain upstream and downstream of the crossings and normal flow rates are maintained through the pipes/culverts. A maintenance project was authorized under NWP 3 only involving permanent discharges of fill material into only 20 lf of stream. Another project authorized by NWP (likely NWP 3) involved the replacement of an existing bridge. A project involving the Mingo County Landfill was authorized under NWP 26 for the permanent discharge of fill material into 60 lf of stream.

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A total of four coal mining projects (involving the discharges of fill material into waters of the U.S.) were authorized under NWP 21 from 1996 to 2004 in this watershed (none since 2004). Two of these mines (both verified under NWP 21 in 1996) do not have complete records on the discharges of fill material into streams or wetlands. However, given the location of these records, it does not appear these projects were ever built (current aerial photography indicates these areas are forested). Or it they were incorrectly mapped, they likely involve mining permits that were later authorized under different SMCRA permits and Corps permits (the latter if they involved the discharges of fill material in waters of the U.S.). One project verified under NWP 21 in 2002, associated with an underground mine (permitted under SMCRA by the current applicant), involved the temporary discharge of fill material into 485 lf of intermittent stream. The final NWP 21-associated project was also verified for the applicant and is described below as it is closely associated with other projects authorized under Section 404 for the current applicant.

One project verified under NWP 21 is the MT-13 Surface Mine. This mine is closely associated with the applicant's other mines in this watershed. The applicant also has four surface mines (MT-11, MT-34, MT-500 and Peg Fork) and one underground mine (Alma Deep Mine), involving the discharges of fill material into waters of the U.S., that were authorized by IP. All of these projects are located in the West Virginia portion of this watershed. A sixth mine authorized by IP occurs in the Kentucky portion of this watershed, and was authorized for ICG Eastern, Inc. For this latter mine, permanent discharges of fill material were authorized for 14,367 lf of intermittent stream and 17,929 lf of ephemeral stream and temporary discharges of fill material were authorized for 4,564 lf of intermittent stream. Besides the restoration of temporary discharges, the permittee provided 13,518 lf of intermittent and 32,277 lf of ephemeral stream mitigation. The permittee also provided in-lieu fee payments to cover the remaining functional losses (both temporary and permanent) associated with the permitted discharges of fill material.

For the following discussion of the applicant's other mines (besides the currently proposed Buffalo Surface Mine) in this watershed, "mitigation" refers to compensatory mitigation provided for the permanent discharges of fill material into waters of the U.S. It does not include the restoration of temporary discharges of fill material. For the MT-13 mine (authorized under NWP 21 in 2004), it involved the permanent discharge of fill material into 1,195 lf of intermittent and 1,141 lf of ephemeral stream and temporary discharge of fill material into 550 lf of intermittent and 640 lf of ephemeral stream. Mitigation was comprised of 4,433 lf of intermittent and 4,450 lf of ephemeral stream. This mine is closely associated with two additional mines authorized under IP for the current applicant: MT-11 and MT-34. The latter two projects were reviewed and authorized in association with one IP (in 2005), and the compensatory mitigation for the two mines was also combined with the mitigation plan for the MT-13 mine. However, the lf of mitigation indicated for each mine is separated in this document. For the MT-11 mine, it involved the permanent discharge of fill material into 1,486 lf of intermittent and 586 lf of ephemeral stream and the temporary discharge of fill material into 910 lf of intermittent and 1,550 lf of ephemeral stream. Mitigation was comprised of 4,433 lf of intermittent and 4,450 lf of ephemeral stream. For the MT-34 mine, it involved the permanent discharge of fill material into 1,961 lf of intermittent and 1,089 lf of ephemeral stream and the temporary discharge of fill material into 990 lf of intermittent and 1,670 lf of ephemeral stream.

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Mitigation was comprised of 4,150 lf of intermittent and 5,125 lf of ephemeral stream. The table below (Table 4) illustrates the permanent and temporary discharges of fill material and mitigation for these three closely associated mines:

Table 4

Mine	Permanent Intermittent (lf)	Permanent Ephemeral (lf)	Temporary Intermittent (lf)	Temporary Ephemeral (lf)	Intermittent Mitigation (lf)	Ephemeral Mitigation (lf)
MT-11	1,486	586	910	1,550	4,433	4,450
MT-13	1,195	1,141	550	640	4,433	4,450
MT-34	1,961	1,089	990	1,670	4,150	5,125
Total	4,642	2,816	2,450	3,860	13,016	14,025

For the applicant's MT-500 Surface Mine, the IP (issued in 2006) authorized the permanent discharge of fill material into 19,912 lf of intermittent stream and 6,810 lf of ephemeral stream and the temporary discharges of fill material into 200 lf of perennial stream, 2,909 lf of intermittent stream and 260 lf of ephemeral stream. Compensatory mitigation was provided in the form of 7,635 lf of perennial, 15,769 lf of intermittent and 7,360 lf of ephemeral stream.

For the applicant's Peg Fork Surface Mine, the IP (issued in 2009) authorized the permanent discharge of fill material into 1,743 lf of perennial stream, 8,359 lf of intermittent stream and 5,401 lf of ephemeral stream and the temporary discharge of fill material into 100 lf of perennial stream, 50 lf of intermittent stream and 445 lf of ephemeral stream. Compensatory mitigation was provided in the form of 15,265 lf of perennial and 11,949 lf of ephemeral stream.

At this time of this document, there are two projects that are being proposed that would involve the discharge of fill material into waters of the U.S. Although specific amounts of discharges of fill material are not available, both projects are associated with sewer lines and are currently being reviewed for potential verification under NWP 12. As typical utility pipes involve temporary discharges of fill material into waters of the U.S., it would be anticipated that these two projects would not result in additional, permanent adverse effects to waters of the U.S. based on the proposed discharges of fill material.

According to online information for the WVDEP, there are no pending coal mining permit applications in this watershed (the currently proposed Buffalo Mountain Surface Mine has already been approved under the SMCRA). According to online information for the Kentucky Division of Mine Reclamation, a total of four coal mining projects were pending as of May 12, 2011 (the latest records provided). Three of the four projects are amendments to the currently approved SMCRA permits. The fourth project is being proposed as a new mining project. However, of the approximately 2,843 acres of pending mining project area, a total of approximately 2,826 ac would be comprised of underground mining and only 17 ac would constitute surface mining acreage. Therefore these pending projects would not be as likely to involve the discharges of fill material into waters of the U.S.

As indicated above, Corps permits for the period 1996 through 2012 have authorized the discharge of fill material into approximately 40,733 lf of stream, with 28,918 lf being permanent discharges and 11,815 lf being temporary discharges. By definition, temporary discharges of fill

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material would be restored upon completion of the authorized project. Based on current records, compensatory mitigation has been provided for some of the authorized permanent discharges of fill material in the form of 39,647 lf of stream. This compensatory mitigation was reviewed and approved under the Corps' regulations and guidance applicable at the time of approval (Regulatory Guidance Letter 02-02 and associated regulations). Although the approved compensatory mitigation is currently at various stages of completion, it is anticipated the past and currently approved discharges of fill material are more than adequately mitigated, and the addition of the currently proposed discharges of fill material under the Buffalo Mountain Surface Mine would not result in adverse cumulative effects to waters of the U.S.

7.8 Secondary Effects on the Aquatic Ecosystem (40 CFR 230.11 (h))

Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Secondary, or indirect, effects typically would occur in streams downstream of the discharges of fill material.

For the proposed project, the approved (under the SMCRA) materials handling plan would ensure the fill material used as direct discharges into waters of the U.S. would be free of toxic or harmful materials. During the mining process, the proposed in-stream sediment control ponds would ensure the anticipated increased flows during mining would not adversely affect downstream areas due to erosion. Although typically the toes of the proposed valley fills would discharge more frequent flows post-mining and post-reclamation, the valley fills and previously disturbed mining area would mainly be vegetated with forested cover, which would attenuate the higher flows over time. In addition, the applicant's SWROA has indicated the peak discharges for both the "during mining" and "post-mining" conditions would be lower than or equal to that of the "pre-mining" conditions for the proposed project during a 25-year, 24-hour storm event. Therefore the risk of adverse effects due to flooding would actually be reduced in these watersheds upon completion of the project.

8. **Avoidance and Minimization Measures (40 CFR 230.70 – 230.77)**:

As indicated in 40 CFR 230.10 (d), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which would minimize potential adverse impacts of the discharge on the aquatic ecosystem. In addition to the technical factors considered below and during review of the project for potential authorization under Section 404, the applicant has removed Valley Fill No. 2 from the mining project proposal. The fill to be discharged in association with this fill would now be backstacked on top of Valley Fill No. 1. This avoidance/minimization measure would reduce the permanent discharge of fill material into waters of the U.S. by 2,366 lf and the temporary discharge of fill material into waters of the U.S. by 1,000 lf. The resultant project design still met the overall project purpose of economically extracting coal and accommodating a portion of the King Coal Highway between Delbarton and Belo.

8.1 Actions Concerning Location of Discharge (40 CFR 230.70)

One of the processes used for minimizing the potential discharges of fill material in association

with valley fills is the use of the AOC (Approximate Original Contour)+ Determination Model. This model details an extensive yet reproducible method for determining valley fill locations such that fill sizes are optimized to reduce stream impacts. Although the applicant received a variance from AOC in order for the WVDEP to approve the accommodation of the highway post-mining, this accommodation would not result in the extension of the applicable valley fill toes further downstream. Part of the model analysis also includes identifying potential valley fill locations where stable slopes could be developed, thereby minimizing the potential for post-fill discharge plumes.

8.2 Actions Concerning Material to be Discharged (40 CFR 230.71)

During review of the project for potential authorization under the SMCRA, the applicant conducted slake durability testing. This testing determines the likelihood the proposed discharged material would likely be reduced to smaller-sized (sand, silt, etc.) particles upon exposure to water. Based on the results of the testing and the fill material thus planned for direct discharge into waters of the U.S., this material would not be expected to degrade upon exposure to water.

In addition, the applicant (also during the SMCRA approval process for the mine) developed a materials handling plan to address the potential for acidic and/or toxic material being introduced into waters of the U.S. A limited amount of this material was identified within the strata to be mined or disposed of as excess overburden. However, in accordance with the approved plan, the applicant would blend these materials with non-acidic/non-toxic fill and the blended material would only be placed in the backstack areas (upland portions of proposed valley fills) and not be transported or exposed to waters of the U.S. The segregated materials would also include strata with selenium levels greater than 1 mg/kg of material. The latter would be placed on encapsulation pads (with at least 10’ of non-toxic/non-acidic durable material on the bottom) and have at least 4’ thick of non-toxic, alkaline material placed on top.

The applicant would also conduct contemporaneous reclamation during mining (i.e. while new areas would be mined, previously mined areas would also be revegetated) in order to reduce the exposure of the mined area to the elements. In addition, no more than 500 ac of surface would be disturbed at any one time during the mining project.

8.3 Actions Controlling the Material after Discharge (40 CFR 230.72)

The design of the proposed valley fills includes achieving a minimum, long-term static safety factor of 1.5 (essentially this means the fill design anticipates the amount of environmental stresses expected at the location and incorporates features that would withstand that stress plus an additional 50% of stress). This design would reduce/minimize the likelihood of post-fill slumping, erosion and/or sedimentation into waters of the U.S.

In addition, runoff drainage and sediment control structures on the mining area are designed to minimize and/or eliminate increases in suspended solids from off the proposed project area. These structures include the proposed ponds located downstream of the toes of the proposed valley fills.

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The construction of the proposed valley fills would occur using a bottom-up method (i.e. starting at the toe of the proposed fill and filling upstream/upslope). This construction method would allow the revegetation of these fills to occur much earlier in the process than the traditional top-down method (where fill material would be dumped at the top of the hill and allowed to "fill in" the proposed valley fill design).

8.4 Actions Affecting the Method of Dispersion (40 CFR 230.73)

The proposed valley fill rock underdrains would provide flow into downstream areas during and post-mining, thereby minimizing undesirable obstructions of water current or circulation patterns. The outfalls of the proposed in-stream sediment ponds would discharge in response to precipitation (but are designed to capture sediment runoff from the mining site) and therefore normal flow patterns and circulation below these ponds would be anticipated to be maintained. As indicated, these ponds are designed to reduce and/or eliminate the potential for downstream impacts due to suspended particulates and turbidity.

The AOC+ Model was also used to locate the proposed valley fills as high in the watersheds as possible, thereby reducing the likelihood of discharges of fill material into perennial streams. The vast majority of the proposed discharges of fill material would occur in ephemeral and intermittent stream reaches.

8.5 Actions Related to Technology (40 CFR 230.74)

The applicant has designed the project to conduct mining and reclamation using the best available technology and mining techniques. These activities were reviewed as part of the SMCRA approval process. A part of the mine operation design includes a specific petroleum and petroleum by-products handling plan; this plan is related to maintaining proper equipment on the mining site and the proper response to a potential spill of these materials.

The proposed access and haul road crossings would be comprised of culverts to maintain normal and high flows after installation. In addition, the applicant would maintain these roads to limit fugitive dust, in accordance with the approved mining plan.

8.6 Actions Affecting Plant and Animal Populations (40 CFR 230.75)

The proposed discharges of fill material would not occur in any riffle and pool complexes or other special aquatic sites other than 0.02 ac of wetland (discharge of fill material associated with mine-through activities). Chapter 4 Section 4.3.2 of the DEIS contains information on how the proposed project would not affect any threatened or endangered species or their habitat.

The applicant has also proposed a compensatory mitigation plan to offset the unavoidable discharges of fill material into waters of the U.S. A description of this plan and its compliance with the requirements of 33 CFR 332 is contained in the DEIS Chapter 4 Section 4.3.6.13. This plan would include ways to increase habitat development and restoration in the mitigation stream reaches. In addition, implementation of the plan would include the construction of new sewage lines in the Hell Creek watershed. This installation would eliminate the untreated sewage currently discharging into Hell Creek and therefore improve water quality both within and

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downstream of Hell Creek.

8.7 Actions Affecting Human Use (40 CFR 230.76)

During the mine design phase, the applicant considered the line of sight impacts of the proposed valley fills both on populated areas (such as the town of Delbarton) as well as historic resources and cemeteries. Based on the location of the proposed valley fills, viewshed impacts would be minimized for residences (both in Delbarton and elsewhere in these watersheds) and would not be anticipated for historic resource and cemetery locations.

The locations of the proposed valley fills (being located mainly in ephemeral and intermittent stream reaches) are not recreational fishing areas. The AOC+ Model ensured the proposed valley fills would be located as high in the watersheds as possible, therefore reducing the discharges of fill material into perennial streams (where fish would be anticipated to inhabit almost exclusively).

There are no public water intakes in the vicinity of the proposed discharges of fill material. As indicated above and in association with the proposed compensatory mitigation plan, the applicant would construct/install sewage treatment lines in the Hell Creek watershed to get residents onto the sewage treatment system and therefore reducing the potential exposure to fecal coliforms in Hell Creek and downstream.

Finally, and as indicated throughout the DEIS, an indirect benefit of the currently proposed project would be the construction of a portion of the King Coal Highway. This highway, originally approved in 2000, is anticipated to provide the infrastructure to increase the development of commercial and industrial activity in Mingo County, therefore increasing the growth and job opportunities for this traditionally poor county. Ten of the 12 proposed valley fills (all involving the discharge of fill material into waters of the U.S.) would support the new highway. In addition, by moving the original highway corridor (as approved in 2000) to the location on top of the proposed mine, the public would be saved approximately $119 million that otherwise would be required to construct the highway in the original corridor. This cost savings would further benefit not only Mingo County residents but the region and state of West Virginia, as the savings could be used for other important programs benefitting human uses.

8.8 Other Actions (40 CFR 230.77)

The applicant has an approved (under the SMCRA) drainage and sediment control plan that would include the routing of stormwater runoff on the site through structures that would reduce and/or eliminate downstream impacts from sedimentation, erosion, etc. These structures would include the proposed ponds involving the discharge of fill material into waters of the U.S. Other sediment/drainage control structures would include upland ponds and conveyances that would be routed to the proposed valley fill groin ditches and ultimately through the main in-stream sediment control ponds.

As indicated above, the applicant’s SWROA conducted as part of the SMCRA review and approval process indicated peak discharges during and post-mining would be less than or equal to the current conditions.

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Finally, the applicant's proposed compensatory mitigation plan would be anticipated to more than offset the losses of aquatic function associated with the proposed discharges of fill material, as discussed in the DEIS. The environmental benefits of the new system (the mitigation areas) would outweigh the ecosystem losses associated with the proposed discharges of fill material into waters of the U.S.

8.9 Conclusion on Avoidance and Minimization Measures

Based on the all the avoidance and minimization measures described above and in the DEIS, as well as the proposed compensatory mitigation plan, the proposal would adequately meet these requirements as described in 40 CFR 230.70 through 230.77.

9. **Determination of Compliance with the Guidelines (40 CFR 230.12)**:

The proposed discharges of fill material must meet the following criteria in order to comply with these Guidelines:

9.1 Alternatives (40 CFR 230.10 (a))

As indicated above in Section 5 of this document as well as Chapter 3 of the DEIS, the applicant has chosen the LEDPA as their preferred alternative. The analysis of environmental consequences of this alternative is contained in this document as well as Chapter 4 of the DEIS. Although the described LEDPA is also the only practicable alternative, the applicant has further avoided and minimized the proposed discharges of fill material associated with the LEDPA.

9.2 Violations of Other Sections of the CWA and ESA (40 CFR 230.10 (b))

The applicant has received the Section 401 water quality certification as well as the NPDES (Section 402) permit for the proposed project. Consultation and review has been conducted in accordance with the ESA and the project would not have an adverse effect on threatened or endangered species. The project would not be located in any marine sanctuary.

9.3 Cause or Contribution to Significant Degradation of Waters of the United States (40 CFR 230.10 (c))

As has been demonstrated in this document and in the referenced sections of the DEIS, the proposed project would not significantly adversely affect the discharge of pollutants on human health or welfare; life stages of aquatic life and other wildlife dependent on aquatic ecosystems; aquatic ecosystem diversity, productivity, and stability; or on recreational, aesthetic, and economic values.

9.4 Avoidance and Minimization (40 CFR 230.10 (d))

Section 8 of this document demonstrates the avoidance and minimization measures proposed by the applicant that are in compliance with the Guidelines.

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9.5 Conclusion

The proposed discharges of fill material into waters of the U.S. in association with the proposed project (as described under the LEDPA) comply with the Clean Water Act Section 404 (b) (1) Guidelines, including the incorporation of the applicant's proposed compensatory mitigation plan.

PREPARED BY: _____ Date:

James B. Spence
Regulatory Project Manager
Energy Resource Branch

APPROVED BY: _____ Date:

Ginger Mullins, Chief
Regulatory Division

DRAFT

APPENDIX E

Agency Correspondence

WEST VIRGINIA DIVISION OF
CULTURE AND HISTORY

RECEIVED
DEC 02 1999
ENGINEERING DIVISION
WV DOH

November 29, 1999

Mr. James Sothen
Division of Highways
Building 5, Room 110
Capitol Complex
Charleston, West Virginia 25305

RE: King Coal Highway
State Project X169-SHA/WN-0.
FR#: 95-204-MULT-9

Dear Mr. Sothen:

We have received your request for National Register eligibility determinations for seven properties in the above mentioned project area. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

In your November 1, 1999 letter you requested our National Register eligibility determination for seven properties associated with the King Coal Highway project. The resources in question were included in a *Determination of Eligibility Documentation and Preliminary Determination of Effects Assessment for the King Coal Highway Revised Preferred Alternative* report submitted to our office in May 1999. However, we neglected at that time to comment on the potential National Register status of these buildings.

The resources in question are KC002-001, KC002-002, KC002-003, KC002-004, KC002-005, KC002-006, and KC002-007. We determine that KC002-001, KC002-002, KC002-003, and KC002-006 are not eligible for listing in the National Register of Historic Place. None of these properties exhibit sufficient architectural merit nor are they associated with a significant historic event or individual. Additionally, we determine that KC002-007, a section of the Norfolk & Western Railroad, is eligible for listing in the National Register under Criterion A for its association with the region's economic development. Unfortunately, we are unable to evaluate resources KC002-004 and KC002-005 at this time. The photographs that appear on the West Virginia State Historic Property Inventory forms for these dwellings are of the same house. Please submit new HPI forms for KC002-004 and KC002-005 with the correct photographs illustrating these properties.

WEST VIRGINIA DIVISION OF
CULTURE AND HISTORY

December 16, 1999

Mr. James Sothen
Division of Highways
Building 5, Room 110
Capitol Complex
Charleston, West Virginia 25305

RE: King Coal Highway
State Project X169-SHA/WN-0.
FR#: 95-204-MULT-10

Dear Mr. Sothen:

We have received the additional information we requested for the above mentioned project. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

We concur that resources KC002-004 and KC002-005 are not eligible for listing in the National Register of Historic Places. Both dwellings have lost historic integrity due to the application of aluminum siding and other alterations. No further consultation with this office is necessary regarding these two buildings.

Two historic resources earlier determined eligible for the National Register are within the project's Preferred Alignment and will be impacted by the undertaking. These resources are the Belo Segment, Lenore Branch of the Norfolk & Western Railroad (KC002-007) and the Sandlick Creek Segment, Norfolk & Western Railroad (KC007-019). Both are eligible under Criterion A for their association with the development of the local coal industry. The Preferred Alignment requires that the project facility bridge the two historic railroad segments. This proposal introduces a new visual element into the resources' environments that is inconsistent with their historic settings. This intrusion, however, is largely mitigated by the linear nature of the rail lines. We, therefore, determine that there will be *No Adverse Effect* to the historic railroads.

We appreciate the opportunity to be of service. If you have questions regarding our comments or the Section 106 process, please call Marc Holma, Structural Historian, at (304) 558-0220, Ext. 723.

Sincerely,

Susan M. Pierce

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP: mh

THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-3562
EEO/AA EMPLOYER

WEST VIRGINIA DIVISION OF
CULTURE AND HISTORY

April 5, 2000

Mr. James Sothen
Division of Highways
Building 5, Room 110
Charleston, WV 25303

RE: King Coal Highway
FR#: 95-204-MULTI-11

Dear Mr. Sothen:

We have reviewed the Programmatic Agreement (PA) for the above mentioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

We find the language of this PA acceptable, and look forward to reviewing the results of archaeological investigation. We will provide comments and recommendations upon receipt of the completed Phase I report.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please call Joanna Wilson, Senior Archaeologist, at (304) 558-0220.*

Sincerely,

Susan M. Pierce

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP:jlw

THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-3562
EEO/AA EMPLOYER

PROGRAMMATIC AGREEMENT

AMONG

THE FEDERAL HIGHWAY ADMINISTRATION,

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS,

AND

THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICE

REGARDING IMPLEMENTATION OF THE KING COAL HIGHWAY PROJECT

MINGO, MCDOWELL, WYOMING, AND MERCER

COUNTIES, WEST VIRGINIA

WHEREAS, the Federal Highway Administration (FHWA), in conjunction with the West Virginia Department of Transportation, Division of Highways (WVDOH), proposes to construct the King Coal Highway as a four-lane, partially controlled access facility from the vicinity of Williamson, West Virginia to the vicinity of Bluefield, West Virginia; and

WHEREAS, the FHWA, in consultation with the WVSHPO, has identified areas of potential archaeological sensitivity and determined that the King Coal Highway project may have an effect upon archaeological properties eligible for inclusion in the NRHP;

WHEREAS, the FHWA has determined that the King Coal Highway project will have no adverse effects on architectural resources eligible for inclusion in the National Register of Historic Places (NRHP), and has consulted with the West Virginia State Historic Preservation Officer (WVSHPO) pursuant to Section 800.14(b) of the regulations (36CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C., 470f)

WHEREAS, WVDOH participated in the consultation and has been invited to concur in this Agreement; and

NOW, THEREFORE, FHWA and the WVSHPO agree that the project shall be administered in accordance with the following stipulations to satisfy the FHWA's Section 106 responsibility with regard to the project.

STIPULATIONS

The FHWA will ensure that the following measures are carried out:

1. ARCHAEOLOGICAL RESOURCES

   A. The WVDOH will ensure that a Phase I archaeological survey of the Preferred Alternative of the King Coal Highway project is conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the WVSHPO's "Guidelines for Phase I Surveys, Phase II Testing, Phase III Mitigation and Cultural Resource Reports", as amended (October 1991 Guidelines). Prior technical consultation with WVSHPO concerning the King Coal Highway project will be used as a guide in conducting field investigations and subsequent site analysis. The Phase I survey shall be conducted in consultation with the WVSHPO, and a report of the survey will be forwarded to the WVSHPO for review and comment. The Phase I report will contain locational information, descriptions of fieldwork, methods employed, results of fieldwork, pertinent maps, photographs, completed West Virginia Archaeological site forms, and recommendations and scope(s) of work for Phase II investigations, if necessary.

   B. The WVDOH will evaluate properties identified through the archaeological survey in accordance with 36CFR800.4(c). If WVDOH and the WVSHPO agree that a property is not eligible for the NRHP, then no further cultural resource investigation of that property will be conducted. If WVDOH and the WVSHPO agree that the resources are only eligible for the NRHP for the information they contain, the FHWA will ensure that they are treated in accordance with stipulation 1C. If Phase II testing results in the identification of an archaeological resource eligible for inclusion in the NRHP, the FHWA shall comply with 36CFR 800.5.

   C. If it is determined by WVDOH and the WVSHPO that avoidance of an eligible archaeological site is impracticable, the WVDOH will develop a data recovery plan. WVDOH will ensure that a data recovery plan, if required, will be developed in consultation with the WVSHPO. The plan will be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 FR 44734-37).

   D. WVDOH will ensure that any human remains and grave-associated artifacts encountered during the archaeological investigations are brought to the immediate attention of the WVSHPO. No activities which might disturb or damage the remains will be conducted until the WVSHPO has determined whether excavation is necessary and/or desirable. All procedures will comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800.

E. WVDOH will ensure that all final archaeological reports resulting from actions pursuant to this agreement will be provided to the WVSHPO for review and approval. The reports will meet professional standards set forth by the Department of the Interior's "Format Standards for Final Reports of Data Recovery Program" (42 FR 5377-79) and the WVSHPO's Guidelines.

F. All records and materials resulting from the archaeological investigations will be curated in accordance with 36 CFR 79 and the West Virginia Division of Culture and History Curatorial Guidelines - Collections Management Facility (n.d.).

G. WVDOH will ensure that research results from data recovery excavations at eligible archaeological sites will be disseminated to the public.

2. ARCHITECTURAL RESOURCES

A. Architectural resources are defined as non-archaeological resources consisting of historic buildings, structures, objects, and districts.

B. No architectural resources listed on or eligible for the NRHP in the Area of Potential Effect (APE) of the Preferred Alternative of the Undertaking will be adversely affected.

3. UNANTICIPATED DISCOVERY

A. In the event of any unanticipated discoveries during construction, all activities will be suspended in the area of the discovery. WVDOH will contact the WVSHPO within 48 hours of the discovery. WVDOH and WVSHPO will meet at the location of the discovery within 48 hours of the initial WVSHPO notification. WVDOH and the WVSHPO will agree upon appropriate treatment of the discovery prior to resumption of construction activities in the area of the discovery.

4. ADMINISTRATIVE CONDITIONS

A. All archaeological investigations carried out pursuant to this agreement will be by or under the direct supervision of a person or persons meeting at a minimum the Secretary of the Interior's Professional Qualifications Standard for archaeologists.

B. The WVSHPO may monitor activities carried out pursuant to this Programmatic Agreement (PA). The FHWA will cooperate with the WVSHPO in carrying out their monitoring and review responsibilities.

C. No construction activity will occur within the construction project limits of an archaeological site until all data recovery has been completed and a management summary has been approved by the WVSHPO.

D. Any party to the PA may request that it be amended, whereupon the parties will consult to consider such amendment.

E. In the event the FHWA does not carry out the terms of this PA, the FHWA will comply with 36 CFR 800.4 through 800.7 with regard to the undertaking covered by this PA.

5. DISPUTE RESOLUTION

A. Should the WVSHPO object within fifteen (15) days to any actions proposed pursuant to this agreement, the FHWA will consult with the WVSHPO to resolve the objection. The FHWA responsibility to carry out all actions under this agreement that are not the subjects of the dispute will remain unchanged.

B. Unless otherwise stated, the process for dispute resolution set forth in this stipulation shall generally follow the process used for consulting to resolve adverse effects as outlined in 36 CFR 800.7

Execution of this agreement by the FHWA and the WVSHPO, and the implementation of its terms, is evidence that the FHWA has taken into account the effects of the project on historic properties.

Signature Page

Federal Highway Administration — Date: 4/10/2000

West Virginia State Historic Preservation Officer — Date: 4/6/2000

CONCUR:

West Virginia Division of Highways — Date: 4/6/00

WEST VIRGINIA
DIVISION OF
CULTURE & HISTORY
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EEO/AA Employer

August 22, 2006

Mr. Anthony Gatens, PE
Director, Mine Services
Michael Baker Jr., Inc.
5088 West Washington St.
Charleston, WV 25313

RE: Consol of Kentucky-Miller Creek East Mine Permit
FR#: 06-283-MO-3

Dear Mr. Gatens:

We have reviewed the technical report, *A Phase I Archaeological Survey of the Proposed Consol of Kentucky Miller Creek East Mine Permit, Hardee District, Mingo County, West Virginia*, which was submitted for the above referenced project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:
The report satisfactorily addresses our concerns regarding the presence of intact archaeological resources within the area proposed for the Miller Creek East mine. It is our understanding that systematic survey of the project area resulted in the identification of nine new archaeological sites, which have been assigned trinomial numbers 46Mo111 - 46Mo119.

Sites 46Mo111 and 46Mo115 consist of a low density Late Prehistoric artifact scatter located within a rockshelter and a low density lithic scatter, respectively. The rockshelter site, which has been looted, produced mussel shell fragments, lithic debitage and a single shell-tempered rim sherd. The report describes the soils within the rockshelter as shallow and extremely rocky; integrity of the site soils has been compromised by looting activity. Site 46Mo115 was observed within the confines of an existing access road and appears to have been destroyed. As a result, the report states that the sites 46Mo111 and 46Mo115 do not retain sufficient physical integrity to contribute significant information toward our understanding of prehistoric settlement and subsistence in West Virginia. It is recommended that these sites be considered not eligible for inclusion in the National Register of Historic Places. We concur with that recommendation.

Sites 46Mo112, 46Mo113, 46Mo116, and 46Mo118 represent the remains of Historic Period occupation in the area dating to the late 19th through early 20th centuries. Although each site produced a variety of architectural and domestic artifacts, the sites do not possess sufficient physical integrity to contribute significantly to our understanding of Historic Period settlement in southern West Virginia. It is recommended that sites 46Mo112, 46Mo113, 46Mo116, and 46Mo118 be considered not eligible for inclusion in the National Register of Historic Places. We concur with that recommendation.

Site 46Mo119 consists of two coal mine portals, labeled Adit A and Adit B, and an associated light rail line. Adit A had a small brick structure attached to that is now in ruins, while Adit B has been sealed off. Field observations suggest the rail line extended more than 488 meters in length and supported rails that would have been 1.2 meters apart. Artifacts observed include machine-made bricks, a rail spike and a drain/ventilation pipe. Additional work at the site will not likely produce significant information about West Virginia's history. It is recommended that site 46Mo119 be considered not eligible for inclusion in the National Register of Historic Places. We concur with that recommendation.

Sites 46Mo114 and 46Mo117 are late 19th to early 20th century domestic sites. Both sites appear to be well preserved, possess moderate to high degrees of physical integrity, and are likely to contain associated features. The variety of artifacts recovered from these sites, which include a miner's tag and children's clothing and toys from 46Mo114, suggests that a variety of research issues might be addressed. The report recommends that sites 46Mo114 and 46Mo117 be considered potentially eligible for inclusion in the National Register of Historic Places. We concur with that recommendation.

The report recommends that sites 46Mo114 and 46Mo117 be avoided by the proposed mining activities. If this is possible, then it is our opinion that this project will have no effect to known archaeological resources that are eligible for or listed in the National Register of Historic Places. If these sites cannot be avoided, the report recommends that they undergo Phase II National Register evaluation. We concur with that recommendation. If these sites cannot be avoided, we request that a Phase II Scope of Work for each site be submitted for review.

Architectural Resources:
The West Virginia State Historic Preservation Office has reviewed the proposed Miller Creek East Mine Permit project. No historic buildings/structures are identified in the Area of Potential Effect. It is our opinion that this project will have no effect to architectural resources that are eligible for or listed in the National Register of Historic Places. No further consultation is required.

We appreciate the opportunity to be of service. *If you have any questions regarding our comments or the Section 106 process, please do not hesitate to contact Lora A. Lamarre, Senior Archaeologist, Ginger Williford, Structural Historian at (304) 558-0240.*

Sincerely,

Randall Reid-Smith
Commissioner

RRS/LAL/GW

Cc: Mr. Steven C. Pullins, CRAI

WEST VIRGINIA
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EEO/AA Employer

November 13, 2006

Mr. Michael Baker, Jr
Michael Baker Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

RE: Consol of Kentucky-Miller Creek East Mine Permit
FR#: 06-283-MO-5

Dear Mr. Baker:

We have reviewed the historic resource survey report dated October 11, 2006, of the Proposed Consol of Kentucky Miller Creek East Mine Permit, Hardee District, Mingo County, West Virginia, which was submitted for the above referenced project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

The West Virginia State Historic Preservation Office has reviewed the historic survey report for the proposed Miller Creek East Mine Permit project. We concur with the survey that because of the mountainous topography and dense tree line this project will have no effect to architectural resources that are eligible for or listed in the National Register of Historic Places. No further consultation is required.

Please refer to our letter dated August 22, 2006 for previous Archaeological comments.

We appreciate the opportunity to be of service. *If you have any questions regarding our comments or the Section 106 process, please do not hesitate to contact Lora A. Lamarre, Senior Archaeologist, Ginger Williford, Structural Historian at (304) 558-0240.*

Sincerely,

Randall Reid-Smith
Commissioner

RRS/LAL/GW

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • 304/558-3505

Joe Manchin III
Governor

December 16, 2008

MEMORANDUM

TO: Keith Chapman
District Two Manager

FROM: W. Kyle Stollings, P. E.
Director, Maintenance Division

SUBJECT: US Army Corps of Engineers
Public Notice No. 2008-491

Please review the attached Public Notice to determine if the proposed work will adversely affect any facility of the Division of Highways. Note that the proposed permit includes part of the King Coal Highway that Consol of Kentucky will build per agreement with the Division. Comments should be directed to Mr. David Cramer, Director, Commissioner's Office of Economic Development so that they may be considered with regard to that agreement. Mr. Cramer will then forward any necessary comments to the US Army Corps of Engineers. Please note the expiration date and have your comments to Mr. Cramer in time for him to respond to the Corps.

Thank you for your prompt attention to this request.

WKS:m

Attachment

cc: CD, HO, OM

TO: OM
Maintenance Division

FROM: Keith E. Chapman
District Manager

DATE: December 18, 2008

District Two does not expect the proposed work to adversely affect any facility.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
Office of the District Engineer
District Two
P. O. Box 880 · Huntington, West Virginia 25712-0880 · 304/528-5625

Joe Manchin III
Governor

December 18, 2008

U. S. Army Corps of Engineers, Huntington District
ATTN: CELRH- OR - F
502 Eight Street
Huntington, West Virginia 25701-2070

To Whom It May Concern:

PUBLIC NOTICE NO. 2008-491

SUBJECT: Ruth Trace Branch

Location : he proposed project would be constructed in the watersheds of/and unnamed tributaries of Ruth Trace Branch of Pigeon Creek, Conley Branch of Pigeion Creek, HellCreek of Pigeion Creek, Pigeonroost Creek of Pigeon Creek, Stonecoal Branch of Pigeon Creek, Pigeon Creek, and Miller Creek, Pigeon Creek and Miller Creek exhibit a surface water connection to the tug Fork River, a traditional navigable water.

This is to advise that the West Virginia Department of Transportation, Division of Highways, District Two, has reviewed the proposed work as shown on the attached maps and does not anticipate the proposed work will adversely affect any facility of the Division of Highways.

Keith E. Chapman
District Manager

By: _____
Edward F. Armbruster, P.E.
Assistant District Engineer
Maintenance

KEC:k

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

20 JAN 2009

Ginger Mullins, Chief
Regulatory Branch
Huntington District
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701-2070

Re: Public Notice No. 2008-491; Consol of Kentucky Buffalo Mountain Surface Mine

Dear Ms. Mullins:

The U.S. Environmental Protection Agency (EPA) has completed its review of Consol of Kentucky, Inc's proposal to discharge dredged and/or fill material into approximately 52,014 linear feet of waters of the United States in conjunction with the construction, operation and reclamation of Buffalo Mountain Surface Mine. The proposal includes the direct permanent impacts to 12,252 linear feet of perennial stream channels, 23,354 linear feet of intermittent stream channels, and 7,508 linear feet of ephemeral stream channels. Temporary structures, including drainage control structures, road crossings, and erosion protection zones, would result in 7,330 linear feet of perennial, 1530 linear feet of intermittent, and 40 linear feet of ephemeral stream channel impacts. Project components include 13 valley fills, 4 erosion protection zone structures, several mine-through areas, 17 temporary drainage control structure, and 6 temporary stream crossings. The project purpose is to discharge dredged/fill material to construct attendant and associated features to facilitate efficient extraction of 16,784,000 tons of coal reserves in the SMCRA permitted area and line and rough grade for a portion of the King Coal Highway. A compensatory mitigation statement was included in the Public Notice and includes an approach of headwater re-establishment, establishment, and preservation, restoration and enhancement of degraded channels downstream from the proposed mine, restoration of temporarily impacted channels, and treatment of water quality downstream from the proposed mine. EPA has significant concerns regarding the cumulative impacts of this project on the watershed, impairment of downstream water quality and the significant amount of impacts to perennial stream channels. EPA does not believe that the proposed mitigation will adequately offset the persistent and permanent impacts to the aquatic ecosystem communities and functions.

The Clean Water Act Section 404(b)(1) Guidelines state that the "fundamental precept of these Guidelines is that dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of

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other activities affecting the ecosystems of concern." Based on information gathered for our review of the Public Notice EPA believes that this project, as proposed, has not made such a demonstration.

This mine is proposed primarily in the headwaters of Pigeon Creek, an area that is relatively intact with forested areas typically undisturbed and the streams themselves likely attaining water quality standards. However, Pigeon Creek itself is listed as an impaired stream on the WVDEP's 303(d) list for mining-related pollutants. Pigeon Creek is a direct tributary to the Tug Fork which has an approved TMDL (2002), and the report indicates that the tributary delivers the highest load of Aluminum, Iron, and Manganese than any other tributary to the Tug Fork in West Virginia. The ability for Pigeon Creek to assimilate additional pollutants that will occur from this activity needs to carefully and strongly considered, especially in light of other extensive mining operations in the sub-watershed. In addition, considering the goal of the Clean Water Act to improve and maintain the biological, chemical and physical integrity of the nation's waters, consideration must be made on the ability to achieve the goal of the Tug Fork TMDL and of the CWA itself when these additional impacts are occurring in the watershed.

Cumulative impacts, as indicated above are required to be considered in the 404(b)(1) Guidelines analysis. The Guidelines require an analysis to determine if significant degradation of the aquatic ecosystem will occur, with special emphasis on the persistence and permanence of effects, both individually and cumulatively. The information at this time is insufficient to make such a determination. The question is whether this activity in combination with other activities, including past, present, and reasonably foreseeable mine operations, and possible development of the area as a result of the proposed King Coal Highway, rises to a level of significance that needs to be comprehensively evaluated through both the CWA provisions and under the Corps' NEPA responsibilities.

Evidence of the extent of persistent and permanent degradation to aquatic communities exists. EPA Region 3's Freshwater Biology Team has extensively investigated the downstream effects of mountaintop mining and the associated valley fills. The results indicate that these types of activities proposed by the applicant are strongly related to downstream biological impairment, as indicated by raw taxonomic data, individual metrics that represent important components of the macroinvertebrate assemblage, or when multi-metric indices are considered (Pond et al 2008). Their results also confirm earlier studies that mountaintop mining impacts to aquatic life are strongly correlated with ionic strength in the Central Appalachians. In U.S. EPA's dataset, all mined sites with the specific conductance greater than 500 μS/cm were rated as impaired with a genus-level multi-metric index (GLIMPSS). Undisturbed streams in the Central Appalachians are naturally very dilute, with background conductivities generally less than 75 μS/cm. Downstream of mine sites, specific conductance and component ions can be elevated twenty to thirty times over the background levels observed at un-mined sites (Bryant et al. 2002). This increase in conductivity impairs aquatic life use and is persistent over time. This impact can not be easily mitigated or removed from stream channels.

The results of our Freshwater Biology Team's study indicate that the severity of the biological impairment rises to the level of a violation of water quality standards (WQS) when States or USEPA use biological data to interpret narrative standards. For example, in West Virginia, the narrative WQS reads, "... no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed". WVDEP uses

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biological data to interpret their narrative WQS and then list mining-impaired streams on their 303(d) lists. The CWA Section 404(b)(1) Guidelines at 230.10(b) state that "no discharge of dredged or fill material shall be permitted if it (1) Causes or contributes, after consideration of disposal site dilution and dispersion, to violation of any applicable State water quality standard..." Evidence to date shows that valleyfills permitted for this mining-operation may result in downstream impacts that may lead to impairment of the aquatic life use and would therefore result in a violation of West Virginia water quality standards. It is the Corps' responsibility under WVDEP's 401 Certification (standard condition #10) that their 404 permit "...comply with water quality standards contained in the West Virginia Code of Regulations, Requirements Governing Water Quality Standards, Title 47, Series 2."

EPA is also concerned that the project as proposed does not represent the least environmentally damaging practicable alternative. The proposed project is non-water dependent, meaning that it does not require or need to be sited in or near water to meet its basic project purpose. The CWA Section 404(b)(1) Guidelines clearly state that alternatives are presumed to be available for non-water dependent activities that do not involve the use of the aquatic ecosystem, including jurisdictional wetlands [40 CFR 230.10(a)(3)]. Only the least environmentally damaging practicable alternative (LEDPA) can be permitted and in order to identify the LEDPA the applicant's alternatives analysis must examine a full range of alternatives which would avoid and minimize impacts to the maximum extent practicable. The proposed post mining land use for five miles of King Coal Highway requires that the applicant leave portions of the mine site to West Virginia Department of Highways (WVDOH) specifications for line and rough grade for the highway, and areas for utility right-of-way. This leads our agency to question if all methods of avoidance and minimization are being incorporated due to the inability to return the areas to approximate original contour (AOC), or ACO+, or to further back stack fill material onto the valley fills. In regards to the construction of the highway, if WVDOH were undertaking the venture themselves would the impacts be minimized through such methods as bridging the perennial channels, or the selection of an alignment with less aquatic impacts? Consideration of alternatives to minimize the impacts to downstream water quality should be evaluated including intercepting and treating drainage prior to its entering the tributary system and placing sediment ponds outside waters of the U.S. Under the Clean Water Act Section 402, National Pollutant Discharge Elimination System, surface waters are generally not to be used as treatment systems as it has an adverse effect on the water quality of those surface waters.

The mitigation statement focuses on physical parameters. The conceptual plan is likely inadequate to fully compensate for lost functions of the aquatic ecosystem and will not be able to return aquatic life uses downstream. To date it has not been demonstrated that the re-establishment or establishment of headwater streams at these sites are adequately constructed or develop over time to provide the functions of natural headwater streams. EPA believes these impacts are a loss of the aquatic ecosystem and can not be adequately restored or replaced.

Thank you for opportunity to provide comments for this proposed project. In summary, EPA believes that this proposal will contribute to a violation of the State's water quality standards downstream and that the direct and cumulative impacts from this and future mines and possible development associated with the King Coal Highway will be persistent and permanent and can not be sufficiently or effectively compensated through the proposed mitigation, therefore EPA must recommend denial of the permit as proposed. A thorough analysis of the impacts and their effects on the watershed are warranted. Past projects of this magnitude and uncertainty of

effects have given rise to the development of an Environmental Impact Statement as required by the National Environmental Policy Act and EPA believes that this project also requires such an investigation and evaluation.

Should you have any questions please feel free to contact Ms. Jessica Martinsen at 215-814-5144 or by email at martinsen.jessica@epa.gov.

Sincerely,

Jeffrey D. Lapp, Associate Director
Office of Environmental Programs

Cc: Region 3 Freshwater Biology Team, Wheeling, WV

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Literature Cited

BRYANT, G., S. MCPHILLIAMY, AND H. CHILDERS. 2002. A survey of the water quality of streams in the primary region of mountaintop/valley fill coal mining. Mountaintop mining/valley fill programmatic environmental impact statement. Region 3, US Environmental Protection Agency, Philadelphia, Pennsylvania.

Pond, G.J., M.E. Passmore, F.A. Borsuk, L. Reynolds, and C.J. Rose. Downstream effects of mountaintop coal mining: comparing biological conditions using genus- and family-level bioassessment tools. Journal of the North American Benthological Society 27:717-737.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
694 Beverly Pike
Elkins, West Virginia 26241

Concurrence Form for Indiana Bat Mist Net Study Plans

Contact Name: Vincent Hamel, BHE Environmental

Fax Number: 513-326-1550

Project: Consol Surface Mine, Mingo County

We have reviewed the plans you submitted on 7/17/06 and concur with the methods being proposed. You propose to conduct sampling at 20 net sites for the proposed operation of 2325 acres. Each net site should have two net sets and be sampled for two nights. Therefore, this project would have a total of 80 net nights of effort

Should female and/or juvenile Indiana bats (*Myotis sodalis*) be captured during this effort, we strongly recommend that you conduct additional survey efforts including radio tracking, roost tree identification, and emergence counts. This additional information will assist the Service and your client(s) in any consultations conducted under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U. S. C. 1531 *et seq.*). Additional survey efforts may be recommended if any Federally-listed endangered bats, including male Indiana bats, are located.

The Service requests that the following be provided in the final survey reports:

1) Name, permit number, and location (latitude, longitude) of the proposed project;
2) A map with the project boundary and net sites indicated;
3) A description of the survey effort, including number of nets used at each site, distance between net sets, and selection of net sites;
4) Color photos of the net sites;
5) Copies of the data sheets; and
6) Any additional information that may be relevant, such as weather conditions, habitat conditions, etc.

Reports may be submitted on CD. Please be aware these survey activities require a valid West Virginia Scientific Collectors Permit, which can be acquired from the West Virginia Division of Natural Resources (DNR). The DNR contact is Ms. Barbara Sargent, telephone (304) 637-0245 at the Elkins Operation Center, Ward Road, Elkins, West Virginia 26241. Please provide a copy of your valid scientific collectors permit with your final report. **All federally protected species captured must be reported to the Fish and Wildlife Service West Virginia Field Office within 24 hours.**

If you have any questions regarding these comments, please contact Christy Johnson-Hughes at (304) 536-6586 ext. 17 or at the letterhead address.

Biologist: [signature] Date: 7/18/06

WEST VIRGINIA DIVISION OF NATURAL RESOURCES
WILDLIFE RESOURCES LANDS INQUIRY RESPONSE

COMPANY: **CONSOL of Kentucky, Inc.** REFERRAL NO. **06-147**
CONSULTANT: **Michael Baker Jr., Inc.** DATE RECD: **10/18/06**
MAILING ADDRESS: **5088 West Washington Street; Charleston, WV 25313**
CONTACT PERSON: **Athony Gatens** TELEPHONE: **304/769-2153**
TYPE OF OPERATION: **Surface mine**
COUNTY: **Mingo** QUADRANGLE NAME: **Delbarton, Myrtle, Naugatuck, Williamson**
ACREAGE: **2312.8** LATITUDE: **37° 43' 38"** LONGITUDE: **81° 57' 42"**
SMA TWO-YEAR LIMITATION FROM THIS DATE: **October 19, 2006**
DISTRICT MCD: **Randy Kelley** LOCATION: **Logan** PHONE: **304/792-7250**

THE PROPOSED OPERATION IS IN THE PROXIMITY OF THE FOLLOWING:

____ Nothing known.

____ Rare, threatened or endangered species (plant or animal).

____ Sensitive habitat (e.g. wetland, shale barren, island, critical wildlife habitat, cave, etc.).

_X_ High quality stream (includes streams with desirable native and/or stocked fishes).

____ Special management area (e.g. state park, wild and scenic river, national forest, private nature preserve, wildlife release site, etc.).

____ Regulated species (plant or animal).

____ Other (specify)

HABITAT, FEATURE, SPECIES, ETC.	DISTANCE FROM MINE SITE	DATE OF INFORMATION	STATUS OR DESCRIPTION
Pigeon Creek	Adjacent	2002	High Quality Stream

COMMENTS: The area reviewed covers a 2mi radius. Additionally, a reach 6mi downstream of the project area was reviewed. Contact Wildlife Resources District Mining Coordination Biologist for preinspection.

COMMENTS:

DISCLAIMER STATEMENT

The information provided in this response represents what is available at the time of the review and should not be considered a total or comprehensive inventory of the area under review. The Wildlife Resources Section knows of no rare species surveys t have been conducted in the area of this proposed project site. Consequently it is not known if any rare species or rare species habitat exists.

ADDITIONAL INFORMATION

This response must be included in the foundation documents of the submitted surface mine permit application. The enclosed information on the proposed mining area is under a two-year permitting limitation. If two years expire before a surface mine permit application is filed with the Division of Reclamation, the area must be reevaluated by the Wildlife Resources Section.

10/30/08

Barbara Sargent
Environmental Resources Specialist
Wildlife Resources Section

west virginia department of environmental protection

Division of Mining and Reclamation (DMR)
601 57th Street SE
Charleston, West Virginia 25304

Joe Manchin III, Governor
Stephanie R. Timmermeyer, Cabinet Secretary
www.wvdep.org

October 31, 2007

Alliance Consulting, Inc.
124 Philpott Lane
Beaver, WV 25813

Attn: T. Sydney Burke

Re: Consol of Kentucky, Inc.; Buffalo Mountain Surface Mine; (SMA in preparation phase)
Near Delbarton in Mingo County, WV

Dear Sydney:

This is in response to your correspondence October 30, 2007 providing portal survey information in regard to the above referenced 2312-acre surface coal mining application. Portal surveys were conducted between October 3, 2007 and October 8, 2007 on 3 trap sites which captured a total of 22 bats of 5 different species. We have reviewed the mist net survey data provided February 8, 2007 and it appears to be in compliance with the *Guidelines*. Neither survey indicated the presence of federally listed endangered species. However, because a number of bats were caught at Portal No. 2 during the harp trapping, DEP recommends that Portal Closure Protocol be followed in closing this portal. Guidelines for portal closure can be found in Appendix F on Page 19 at the following address:

http://www.wvdep.org/Docs/13253_Ibat%20protocol%20final%2006-26-07.pdf

You should place this information in section H-5 of the State Surface Mining Application (SMA) indicating how avoidance and minimization of disturbance will not adversely impact fish and wildlife and related environmental factors during the surface mining and reclamation operations.

The comments provided below are pursuant to a national programmatic 1996 Biological Opinion and Conference Report ('96 BO) between the US Office of Surface Mining (OSM) and the US Fish and Wildlife Service (the Service) regarding endangered species procedures for approved state coal permitting programs; the West Virginia Surface Coal Mining and

Reclamation Act, Chapter 22-Article 3 Section 9; and the West Virginia Surface Mining Reclamation Rules at Title 38-Series 2, Sections 3.16, 3.18, 3.32 and 8.

We have examined the current available data for proximal endangered species presence in relation to the project area and none have been indicated. We have also examined the material you provided and found that regarding winter bat habitat surveys in the form of portals, caves or other such features has been completed and no federally listed endangered species were captured.

Based upon the information that has been provided to us, we have concluded that no federally listed endangered and threatened species are expected to be impacted by the project. Therefore, the project is not likely to adversely affect federally-listed endangered and threatened species. Should project plans change or amendments be proposed of if additional information on listed and proposed species becomes available, this determination may be reconsidered.

Any mist-netting data, portal survey report(s) or other relevant materials up to and ultimately including the closure of consultation letter from WVDEP should be added chronologically at the stated Section H-4 of the State Surface Mining Application (SMA) prior to its approval.

If you have any questions regarding this letter or the *Guidelines*, please contact Bob Fala or me at (304) 926-0499 or at the letterhead address.

Sincerely,

Ashley LeMasters
ERS 1

Cc: Ms. Christy Johnson-Hughes; USFWS
Mr. Anthony Gatens; Michael Baker Jr., Inc.

MEMORANDUM OF AGREEMENT
BY AND AMONG THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER

Regarding the Miller Creek East Mine Permit Project
Mingo County, West Virginia

WHEREAS, CONSOL of Kentucky, Inc. (CONSOL) proposes to pursue combined area/mountaintop/steep slope/contour and limited augering and/or highwall coal mining operations (undertaking) within the Miller Creek East Mine, Permit No. S-5018-07; and

WHEREAS, this project requires the approval the West Virginia Department of Environmental Protection (WVDEP) in accordance with WV Surface Coal Mining and Reclamation Act and West Virginia Code of Regulations 38-2; and

WHEREAS, the WVDEP received the application, provided the permit application to the West Virginia Division of Culture and History, State Historic Preservation Office (WVSHPO) and participated in discussions regarding the proposal; and

WHEREAS, CONSOL, as the permit applicant, has participated in consultation with the WVSHPO to evaluate the effects of the undertaking on archaeological site 46MO117, which is considered to be eligible for the National Register of Historic Places, and has been invited to concur in this Memorandum of Agreement (MOA); and

WHEREAS, the WVSHPO and CONSOL concur that the project will have an Adverse Effect upon 46MO117, if the site cannot be avoided by the mining activities; and have applied the Criteria of Effect and Adverse Effect; and

WHEREAS, the WVDEP has consulted with the Advisory Council on Historic Preservation (ACHP), who has declined to participate; and

WHEREAS, the WVDEP, WVSHPO, and CONSOL agree on how the Adverse Effect will be mitigated; and

NOW, THEREFORE, the WVDEP and the WVSHPO agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties:

STIPULATIONS

1. The WVDEP and CONSOL shall insure that 46MO117 is not disturbed by project-related activities prior to the completion of Phase III data recovery excavations.

a. WVDEP will allow no project-related disturbance within the limits of 46MO117 until the WVSHPO is assured that the draft Data Recovery Plan (DRP) for 46MO117 (Appendix A) is implemented.

b. No mining activity will occur within the limits of 46MO117 until all data recovery excavation has been completed and the management summary report has been approved by the WVSHPO.

c. Pending successful completion of the site mitigation, the management summary report submittal to the WVSHPO, and management summary approval, the landforms currently occupied by 46MO117 will be cleared for mining and mining related activities.

2. The DRP shall be consistent with the *Secretary of the Interior's Standards and Guidelines for Archaeological Documentation* (46 FR 44734-37); and take into account the ACHP's *Treatment of Archaeological Properties*; and will follow the WVSHPO *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (December 2001).

3. All historic preservation work carried out pursuant to this MOA will be by, or under, the direct supervision of a person or persons meeting at a minimum the Secretary of the Interior's Professional Qualification Standards (48 FR 44738-9).

4 As provided in the draft DRP, CONSOL shall insure that a draft archaeological report resulting from the data recovery will be provided to the WVSHPO and to the consulting parties, if any. An updated West Virginia Archaeological Site Form will also be prepared and submitted.

5. If human remains are discovered during the course of the data recovery investigation, they will be treated according to the plan outlined in the attached draft DRP (Appendix A).

6. All records and materials resulting from the data recovery excavations will be curated according to the plan outlined in the draft DRP (Appendix A).

7. All field investigations will concentrate only on that portion of the site previously determined to contain prehistoric cultural materials, since this is the only component determined to be eligible for inclusion in the NRHP.

8. If the draft DRP is to be implemented more than two (2) years from execution of this MOA, minor revisions may be warranted due to changing research priorities or improvements in excavation or analysis methods, etc. Consequently, the DRP will be reviewed again by the WVSHPO prior to the onset of Phase III fieldwork.

9. In the event that mine plans change from those previously review by the WVSHPO, the WVDEP will provide plans of proposed mining activities to the WVSHPO for

review and comment. Should the WVSHPO have specific objections relating to NRHP-listed or eligible properties, the WVDEP will consult with the WVSHPO to address any concerns. The WVSHPO will provide comments within thirty (30) days of receipt of the plans. The applicable parts of the permit application will be provided to the WVSHPO to confirm adherence to the National Historic Preservation Act of 1966, as amended (16 U.S.C. 4770f).

10. This MOA will be null and void if its stipulations are not carried out within seven (7) years from its execution. At such time, and prior to work continuing on the undertaking, the WVDEP and WVSHPO shall amend or renew the MOA for an additional period of time or terminate the agreement.

11. Any party to the MOA may request that it be amended, whereupon the parties will consult. Any party to the MOA may terminate by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to the termination to seek agreements or amendments or other actions that would avoid termination. In the event of termination, the WVDEP will comply with applicable law.

Execution of this MOA and implementation of its terms is evidence that CONSOL, in consultation with the WVDEP and WVSHPO, has afforded the ACHP an opportunity to comment on the proposed project and the WVDEP has taken into account the effects of the proposed undertaking on historic properties.

Susan M. Pierce — 7/6/09

West Virginia Deputy State Historic Preservation Officer — Date

Louis A. Holstead — 7/14/09

West Virginia Department of Environmental Protection — Date

Jonathan M. Pachter — 06/17/09

CONSOL of Kentucky, Inc. — Date

APPENDIX A

DRAFT PHASE III ARCHAEOLOGICAL DATA RECOVERY PLAN
SITE 46MO117
CONSOL OF KENTUCKY, INC.
PROPOSED MILLER CREEK EAST MINE PERMIT

INTRODUCTION

This research design addresses Phase III archaeological data recovery investigations at Site 46MO117, specifically the prehistoric archaeological components that date from the Late Archaic through the Middle Woodland periods (ca. 4000 B.C.-A.D. 400). The site is located within the impact zone of the proposed Miller Creek East surface mine permit area in Mingo County, West Virginia. The prehistoric portion of the site has been recommended as eligible for inclusion in the National Register of Historic Places (NRHP), and the West Virginia State Historic Preservation Officer (WVSHPO) concurs with that evaluation. The following data recovery excavation plan is offered as the means to mitigate the adverse effects from the mining operations if the site cannot be avoided during the mining operations.

The following approach been developed in consultation with the WVSHPO within the West Virginia Division of Culture and History (WVDCH). Although the West Virginia Department of Natural Resources (WVDEP) is considered the lead agency due to the mining permit application, they defer all review of cultural resource impacts to the WVSHPO. Therefore, the work plan described below is designed to meet all WVSHPO requirements.

PROJECT HISTORY/ SITE SIGNIFICANCE

Site 46MO117 was originally identified by Cultural Resources Analysts, Inc. (CRAI) during a Phase I survey in 2006 for the proposed Miller Creek East surface mine permit, and was further investigated by CRAI through Phase II testing. Information presented in this section concerning the site is based on the reports of that work (Martin 2006, 2007). The Phase I consisted of pedestrian survey and limited shovel test probing, and defined the site based on the recovery of historic period artifacts and features, as well as an isolated prehistoric period artifact. Based on artifacts recovered from three positive shovel tests and observed cultural features, Phase II testing of Site 46MO117 was performed to further investigate the research potential of the locale and assess the site's eligibility for inclusion in the NRHP.

The Phase II testing consisted of the excavation of ten isolated 1 x 1 m test units. This resulted in the recovery of 224 historic period artifacts, 144 prehistoric period artifacts, and 3,049 botanical remains, as well as the discovery of three historic cultural features and five prehistoric cultural features. More importantly, the Phase II testing identified distinct and well preserved prehistoric components buried deeper than was sampled during the Phase I survey. The prehistoric components appear to be centered around depths of 30 cm, 45 cm, and 60 cm below ground surface, and portions of each may be capped by shallow colluvium, forming a stratified site.

Analysis of the historic artifacts evidenced a relatively short occupation extending from the end of the nineteenth century into the mid-1920s. The historic component was evaluated as not potentially eligible for the NRHP, and the WVSHPO concurred.

The prehistoric artifact assemblage primarily consists of ceramics, flaked stone, and botanical remains. Analysis evidenced multiple prehistoric occupations from the Late Archaic through the Middle Woodland periods (ca. 4000 B.C.-A.D. 400). The ceramics are generally highly fragmented vessel sherds that exhibit smoothed surfaces and no decoration, and contain a variety of grit tempers (Martin 2007). Use residue was also noted on four of the specimens. The ceramics appear to be typical of the Middle Woodland period in southern West Virginia. The flaked stone artifacts are primarily flakes representative of late stage reduction for tool finishing or subsequent resharpening; however, three identifiable projectile points/knives were recovered. The projectile points/knives were ascribed to the Late Archaic Big Sandy cluster, the Early Woodland Stemmed Cluster, and an untyped specimen probably of the Late Archaic/Early Woodland transitional period. Almost all of the botanical remains were recovered through flotation of soil samples. These include a variety of fresh seeds, carbonized seeds, carbonized nutshell, carbonized squash rind, and wood charcoal. Given the stratified and temporally distinct nature of the prehistoric archaeological deposits and the quality of preservation of botanical specimens within cultural features, the prehistoric component of this site was evaluated as potentially eligible for the NRHP, and the WVSHPO concurred.

WORKPLAN

Data recovery excavations at Site 46MO117 will be directed towards identifying temporally and culturally diagnostic artifacts, floral and faunal materials, and stratigraphic data to illucidate settlement and subsistence patterns of upland Native American groups in southern West Virginia during the Archaic through Middle Woodland prehistoric periods. Research issues have been developed to guide the field excavations and ensuring material culture analysis.

PROPOSED RESEARCH ISSUES

Investigations at Site 46MO117 suggest that a portion of the site contains substantive research potential concerning Native American lifeways during the Late Archaic through Middle Woodland temporal periods. The data apparent at this site are important not only to our general understanding of the prehistory in Mingo County and the areas around southern West Virginia, but they also may add to the understanding of a time of critical change in prehistoric culture across the middle Appalachian region. The site is considered to be eligible for inclusion in the NRHP because of that research potential. Furthermore, the site is important for the information that it contains, but does not warrant preservation in place. If the site cannot be avoided by mining-related activities and/or adequately protected to ensure no impacts, Phase III data recovery excavations are recommended to mitigate impacts to the site by extracting important archaeological information from the site before mining impacts occur.

Prior to any Phase III archaeological data recovery investigation, it is imperative that a research design be developed that is relevant to the needs of what is lacking in our scientific understanding. Stratified, open-air sites such as 46MO117 are rare in the uplands of West Virginia. The quality of preservation this type of site affords provides the opportunity to address a number of research questions. Presented below are a number of those research questions, and related potential analyses methods to be utilized to answer those questions.

Lifeway Activities

- What economic activities were the Native Americans performing at the site?
    - Artifact and ecofact analysis, including distribution analysis, and potentially selected/limited microwear analysis of formal and expedient tools and selected/limited residue analysis (flaked stone tools and ceramic vessel fragments)
    - Flotation samples to recover floral remains
- What is the nature of each prehistoric habitation of the site and its reflection of group size?
    - Analysis of the distribution of formal and expedient tools and flake debitage
    - Nature and distribution of identified features
- Do the data suggest a seasonal occupation of the site?
    - Analysis of recovered floral remains
    - Possible protein residue analysis

Temporal Considerations of Site Occupation

- Was the prehistoric occupation of the site truly limited to the Late Archaic through Middle Woodland as suggested by the Phase I and II data?
    - Distribution of diagnostic artifacts
    - Radiocarbon dates
- Was prehistoric occupation of the site continuous or a series of isolated uses separated through time?
    - Distribution of diagnostic artifacts
    - Radiocarbon dates
- Do the prehistoric activities at this site differ or remain constant through time?
    - Artifact and ecofact analysis, potentially including selected/limited microwear analysis of formal and expedient tools and selected/limited residue analysis (flaked stone tools and ceramic vessel fragments)
    - Analysis of the distribution of formal and expedient tools and flake debitage
    - Nature and distribution of identified features
    - Radiocarbon dates

Inter/Intra-Regional Interactions

- How does this site fit or not fit the present models of Late Archaic, Early Woodland, and Middle Woodland settlement patterns for the region?
    - Examination of current settlement models within the Appalachian Plateaus
    - Comparison with sites of these three temporal periods of similar size and setting from the immediately surrounding central Appalachian region
- Is there evidence of trade patterns, diffusion of ideas, and even the migrations of groups from outside the Mingo County region?
    - Determining ceramic type, and (if present) identifying manufacturing style of related cordage tools evidenced in ceramic surface impressions
    - Non-local projectile point styles, or the presence of exotic, non-local lithic material and other exotic items

PROPOSED METHODS

The following Phase III mitigation plan for Site 46MO117 is based upon the results of the Phase I and II excavations. The field excavations and analytical methods are designed to address the range of research issues described above. All work will be conducted pursuant to the instructions and intents set forth in Section 101(b)(4) of the National Environmental Policy Act of 1969; Section 1(3) and 2(b) of Executive Order 11593; 36 CFR Part 800, *Protection of Historic Properties*, regulations implementing Section 106 of the National Historic Preservation Act, (16 U.S.C. 470f), as amended; 36 CFR Part 63; *Archaeology and Historic Preservation*, Secretary of the Interior's Standards and Guidelines (*Federal Register* 48(190) 44716-44742); and West Virginia Title 82, Series 3, *Standards and Procedures for Granting Permits to Excavate Archaeological Sites and Unmarked Graves*; and *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001), prepared by the WVDCH.

Field Investigations

All field investigations will concentrate only on that portion of the site previously determined to contain prehistoric cultural materials, since these are the only components determined to be eligible for the NRHP. Although the overall site was defined as covering approximately 2,615 m^2, the Phase II testing has demonstrated that the NRHP eligible prehistoric component is only approximately 750 m^2 in size.

Large portions of the prehistoric component currently remain untested. Therefore, an initial 40 excavation units, each measuring 1 x 1 m, be placed across the prehistoric component of the site in a stratified random fashion. This method entails dividing the site into multiple equal-sized areas and then using an unbiased random number generator to select the locations of an equal number of units within each area of the site. This distribution of excavation units will not only guarantee a sample from all areas of the site, but also allow a large enough artifact sample to be gathered in a manner able to characterize the percentages of artifact types within the entire artifact assemblage, including those areas which will not be excavated, in a statistically valid and scientifically meaningful way. Based on the Phase II artifact counts (not including flotation samples), the initial sample of 40 units should recover nearly 1,000 prehistoric artifacts, a sample that will achieve a statistical confidence level of 99% within an error range not exceeding ±5%.

During the excavation of the initial 40 units, a professional geomorphological study will be performed to help refine the soil stratigraphy and assess the site formation processes. Additionally, hand auger holes will be placed through the base of a limited number of units to confirm that the bottom of the prehistoric deposits has been reached. Once the stratigraphic column has been defined across the site, subsequent excavations can proceed more quickly and accurately.

After the initial 40 units are completed, up to 65 additional units, each measuring 1 x 1 m, are proposed to be excavated in selected areas based on the results of both the Phase II excavations and the initial 40 Phase III units. These subsequent units generally will be arranged to form larger block excavations of contiguous units in order to expose broad areas of the prehistoric occupation surfaces. This permits more complete and accurate feature recordation and artifact distributional studies. Special consideration will be given to areas of high artifact counts and areas that have been demonstrated to contain prehistoric cultural features.

The combination of the initial 40 unit sample and the subsequent approximately 65 units will result in the excavation of about 105 m^2, both from across a broad area of the site and within large concentrated blocks. Assuming the size of the prehistoric component to be approximately 700-750 m^2, the initial 40 unit sample alone will excavate approximately 5% of the prehistoric component. When combined, these 105 Phase III units will comprise approximately 14-15% of the prehistoric component, consistent with the level of effort anticipated by the WVSHPO.

All excavations will be performed by hand. As well, due to the remote setting of the site, it is anticipated that all backfilling of excavations will be performed by hand. The remote setting of the site currently precludes direct access by vehicle.

Test Unit Excavation

Based on the Phase II testing, it is assumed that the average maximum depth of excavation for each unit will not exceed 70-75 cm below ground surface. Therefore, a maximum volume of 73.5 m^3 will be excavated, regardless of the number of units proposed above.

All excavations will proceed by hand within horizontal units typically measuring 1 x 1 m. Stratum I, the uppermost stratum, has been demonstrated to be a mixed context of prehistoric and historic occupation, suggesting that the vertical provenience of the prehistoric artifacts within that stratum has been compromised. Thus, for efficiency of time and money, the previously defined Stratum I will be removed as a single level. The remaining soils will be excavated in 10 cm incremental levels within natural stratigraphy. Within the larger block excavations, generally each excavation level and stratum will be removed across the entire block before continuing deeper in any one unit of the block. This creates a more efficient excavation process as well as permitting full exposure of any encountered cultural features. Excavations will continue in depth until "sterile" subsoil is reached, which was defined as Stratum VI during the Phase II testing.

All soil removed will be dry-screened through 6.4 mm (0.25 in) hardware cloth to maximize artifact recovery. Soil descriptions, including texture, structure, consistency, Munsell color, and artifact content, will be recorded. Representative test unit plan views and profiles will be mapped and photo-documented. Recovered artifacts will be tabulated and bagged by stratum, level, and general artifact class. When possible, each diagnostic artifact (e.g., projectile point) will be point provenienced and bagged separately.

Feature Excavation

A maximum of 40 cultural features will be investigated. Cultural features will be excavated by halves or quarters, as deemed appropriate for the size of the feature. This allows a cross-sectional profile in large features to be recorded in perpendicular directions. Generally, the recording of cultural features will proceed by measuring the width of the longest planview axis, the width of a planview axis perpendicular to the longest, and the maximum vertical thickness. All sediments removed (excluding soil samples) will be dry-screened through 6.4 mm (0.25 in) hardware cloth to maximize artifact recovery. Feature descriptions, including texture, structure, consistency, Munsell color, and artifact content, will be recorded. Plan views and profiles will be mapped and photo-documented. Recovered artifacts will be tabulated and bagged by stratum, level, and general artifact class.

Soil samples of at least 2 liters (if available) will be obtained from each feature for flotation processing to recover additional botanical and faunal data, and a sample of smaller artifacts. If available, carbon will also be retained from various features for dating purposes. Carbon samples

will be submitted for radiocarbon assay via Accelerator Mass Spectrometer (AMS) analysis or, if there is enough carbon in a sample, via the less costly traditional radiocarbon analysis.

Recordation

Field designations will be assigned only to immobile phenomena, such as geological strata and cultural features. Mobile objects, such as artifacts, ecofacts, and soil flotation samples will be assigned Field Specimen numbers by provenience.

In order to provide preliminary results needed to make field decisions, a computerized artifact tracking system successfully employed on other Phase III data recovery projects will be implemented. This system consists of assigning a unique Field Specimen number (FS#) to each bag of artifacts or soil recovered from each unique excavation provenience. Each diagnostic artifact (e.g., projectile point) will be bagged separately and assigned its own FS#. The FS# is then entered into a relational database along with provenience information and field counts for each of the various artifact categories recovered from that provenience. The subsequent analysis data also is entered into the same relational database, which allows each bag of material to be tracked throughout the excavation and analysis process.

All locational data, both horizontal and vertical, will be recorded by a theodolite total station with an on-board data collector, utilizing a laser and a rod prism. All measurements taken during excavation and subsequent analyses will be taken in metric units. A variety of standardized forms will be used to record data of all aspects of the excavation. The field director and/or crew chief will be responsible for the basic note taking on the project. Additionally, the crew members will prepare field notes on specific tasks that are assigned to them, including individual unit and cultural feature excavations. Generally, mapping will be conducted by individual crew members with overall supervision by the crew chief. Field notes and maps will be reproduced, or scanned, and the duplicate copies of those notes and maps will be kept separate from the originals in order to reduce the chance of loss or destruction of non-recoverable field information. The Principal Investigator will monitor the project throughout the duration of the investigation.

Photographs of the project area, excavation units, soil/sediment profiles, cultural features, and work-in-progress will be taken. All photographs will be logged according to site, date, photographer, location, subject and points of interest, and orientation. All recovered artifacts will be placed, by provenience, in polyethylene, recloseable bags and labeled with paper tags placed in their own polyethylene recloseable bags that are inserted into the artifact bags. Soil samples will be double bagged, but otherwise similarly provenienced.

Laboratory Analyses and Curation

This work plan addresses the analysis of materials gathered during only the Phase III data recovery effort. Artifacts collected during the previous Phase I and Phase II will not be reanalyzed. Upon arrival from the field, all artifacts will be reviewed against the respective field paperwork to ensure the presence of all recovered artifacts and to verify provenience data. Non-perishable artifacts will be washed and gently brushed in water. Objects deemed to be excessively friable, or which may be suitable for residue analysis (e.g., projectile points, ceramic with visible use residue), will be gently dry-brushed.

The artifacts then will be transferred to appropriate analysts according to material type, artifact type, and temporal period. The results of each analysis will be entered into the same relational database, joining the inventory, provenience, and all analyses. These data can be easily queried

to provide a variety of analytical data and artifact tabulations utilized in site interpretation and discussion.

Following completion of the archaeological studies, the recovered archaeological materials will be temporarily stored with the consultant until they are either returned to the landowner, if so requested, or alternatively, prepared and sent with the field notes for curation to, presumably, the Archaeological Collections Facility of West Virginia in Moundsville.

Soil Flotation

Prior to being processed, the volume (in liters) of each soil flotation sample will be recorded to allow for comparable examinations between samples in the event that feature size limited the amount of soil available for a sample. The soil flotation samples will be processed following standard soil flotation techniques. After drying, the flotation fractions are examined for artifacts as well as botanical and faunal remains.

Flaked Stone

The analyses will address specific issues of typological and functional variability in the recovered assemblage, including cultural/temporal attribution, technological function, lithic reduction processes employed, intersite and intrasite variability, site entry poise, and identification of raw material types. Discriminate attribute analysis will be performed on all worked/formed implements. The presence of use-wear patterns will be assessed with low-powered light microscopy.

The proposed classification system divides the lithic assemblage into mutually exclusive artifact categories. Generally, the analyses will involve the recording of artifact type, portion present, raw material, thermal alteration, cortex, weight, and maximum intact dimensions (length, width, and thickness), as appropriate. Raw material type/source and the presence or absence of thermal alteration and cortex is recorded for each artifact to elucidate patterns of raw material acquisition and utilization. Additionally, each category will have special measurements or observations made on the artifacts in that category. The following is a brief discussion of a few of those types of data. Platform type and platform angles are recorded for all whole flakes and proximal fragments of flakes in order to determine the likely stage of reduction during which the specimens were created. Flaking pattern, and the shape and finish of the blade and stem portions of each projectile point/knife will be recorded and utilized to ascribe each specimen to a defined type and/or temporal period. Other bifaces will be categorized by reduction stage based on the amount of material removed, and their apparent reason for discard based on type of fracture or flaking pattern.

Groundstone/Roughstone

Groundstone/roughstone tools will first be assigned to an analytical category (hammerstone, adze, celt, etc.) based on techno-morphological attributes and implied function, where such function can be reasonably inferred from archaeological literature, ethnographic analogy, or macroscopic wear-pattern analysis. Specimens will be measured for length, width, and thickness. A standardized shape designation will be assigned to each artifact with reference to each axis (plan view, profile, and cross-section). All specimens will be weighed and the raw material and presence/absence of thermal alteration will be noted. Additionally, culturally produced modification or use-wear patterns such as fractures, flaking, battering, pecking, grinding, striations, gouges, pits, and polish will also be identified and examined.

Thermally-Altered Rock

These stones will be washed and examined rapidly to determine whether they were used other than as hearthstones. For example, evidence for use could include the presence of striations or pitting. Specimens exhibiting these types of use-wear will be retained and analyzed as part of the groundstone/roughstone assemblage. All other thermally-altered rock will only be recorded by proveniece, counted, weighed, and not retained for curation. This information can be utilized to interpret feature type and function, and in spatial analysis to help identify possible activity areas.

Prehistoric Ceramics

Prehistoric ceramic artifacts will be counted and weighed. Relative frequencies of ware types will be computed based on aplastic temper, surface finish, and decorative motif and application technique attributes. If possible, discrete vessels or vessel clusters will be isolated from the sherd sample based on peculiar constellations of temper aplastic, paste, vessel morphology, surface finish, perishable cordage and textile impression, and decorative motif and application technique attributes. These vessel clusters, if sufficiently inclusive, will be the basic units of analysis employed to make intrasite and intersite comparisons. Cultural/temporal attributions of the vessel clusters will be based on comparisons with existing regional ceramic typologies, where possible. Additionally, in the event that ceramic sherds are recovered with sufficient residue present on interior surfaces, samples might be submitted for residue analysis. This residue analysis will be for the purposes of identifying past activities and dietary information.

Botanical Remains

Soil samples will be water-separated in closed container flotation devices for a maximum recovery of small seeds. Macro and microfloral analysis of carbonized plant remains will be conducted on specimens recovered from flotation of soil samples and specimens recovered from screening during excavation. If feasible, patterns of plant utilization, seasonality of site occupation, and environmental conditions will be reconstructed. Specific analysis methods will be determined by the analyst once the magnitude and scope of the recovered assemblage is assessed.

Faunal Remains

It is anticipated that very few faunal remains will be recovered, with most of those dating from the historic occupation of the site. Any recovered faunal materials will be sorted into potentially identifiable fragments. Where possible, analysis will specify taxon represented, bone or bone portion, state of preservation, age (if appropriate), and modification. Metric data and assessment of pathologies will be provided, if appropriate.

Historic Period Artifacts

The focus of this Phase III data recovery is not on the historic period component of the site; however, any historic artifacts recovered necessarily will need to receive a cursory examination. Historic artifacts, in general, will be assessed for material type, function, and diagnostic attributes. Glass typologies will be based on function, closure type (on available rims), method of manufacture, color, and surface treatment/decoration. Historic period ceramic sherds will be categorized by paste, glaze, vessel form, and surface decoration.

REPORT PRODUCTION

Based upon the Phase III excavation results and field counts of artifacts, a brief management summary report will be prepared to quickly provide CONSOL and the WVSHPO with an overview of the investigations. This management summary will include enough detail and preliminary interpretation to allow the WVSHPO to make a valid assessment of the quality and extent of the investigation in order to provide CONSOL the needed clearances prior to submission of the final report in a timely manner to permit the project to move forward without unnecessary delays.

Based upon the completed Phase III analysis results, a Draft Final Phase III Report will be prepared that will provide CONSOL and appropriate review agencies with a professional evaluation of the nature and duration of the prehistoric period occupation of Site 46MO117. The report will be suitably illustrated with maps, illustrations, and photographs, and will satisfy all requirements as defined in the *Programmatic Agreement*, and in *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001) prepared by the WVDCH. Upon receipt of comments from CONSOL and the WVSHPO, requested revisions (if any) will be incorporated into a revised Final Report for submission to the WVSHPO.

The report will include a discussion of surficial geology, soils, hydrology, prehistoric climatic conditions, floral and faunal communities, etc., as they specifically relate to site formation processes. It will present site-specific prehistoric contextual data based on background research, summarize the results of previous investigations, and discuss the research expectations and field methods employed. The report will explain the results attained during the Phase III investigation, including site stratigraphy, cultural features, artifact and ecofact analysis, and additional studies (e.g., radiocarbon dating, soil flotation, use wear, etc.). Finally, the conclusions will assess the site in reference to pertinent research issues developed during the formation of the Data Recovery Plan.

In the unlikely event that human remains are identified, excavation within 5 m of the remains will be immediately suspended, and the WVSHPO and Mingo County sheriff will be notified within 48 hours. The soils removed from the immediate vicinity of the human remains prior to the discovery will be bagged in plastic bags and labeled appropriately. The area will be mapped and photodocumented and covered with plastic. No fieldwork within 5 m of the human remains will resume until the WVDEP has developed and implemented an appropriate treatment plan in consultation with the WVSHPO pursuant to 36 CFR § 800.13 (b).

REFERENCES

Martin, Kristie R.

2006 *A Phase I Archaeological Survey of the Proposed Consol of Kentucky Miller Creek East Mine Project, Hardee District, Mingo County, West Virginia.* Contract Publication Series WV06-32. Cultural Resource Analysts, Inc., Hurricane, West Virginia. Submitted to Michael Baker Jr., Inc. Charleston, West Virginia.

2007 *Phase II National Register Evaluations of the Hell Creek Homestead (46Mo114) and the Ruth Trace Branch Homestead #2 (46Mo117) for the Proposed Consol of Kentucky Miller Creek East Mine Project, Hardee District, Mingo County, West Virginia.* Contract Publication Series WV07-08. Cultural Resource Analysts, Inc., Hurricane, West Virginia. Submitted to Michael Baker Jr., Inc. Charleston, West Virginia.

Pearsal, Deborah M.

2000 *Paleoethnobotany: A Handbook of Procedures.* 2nd edition. Academic Press, San Diego, California.

Trader, Patrick

2001 *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports.* Edited by Joanna Wilson. West Virginia Division of Culture and History, State Historic Preservation Office, Charleston.

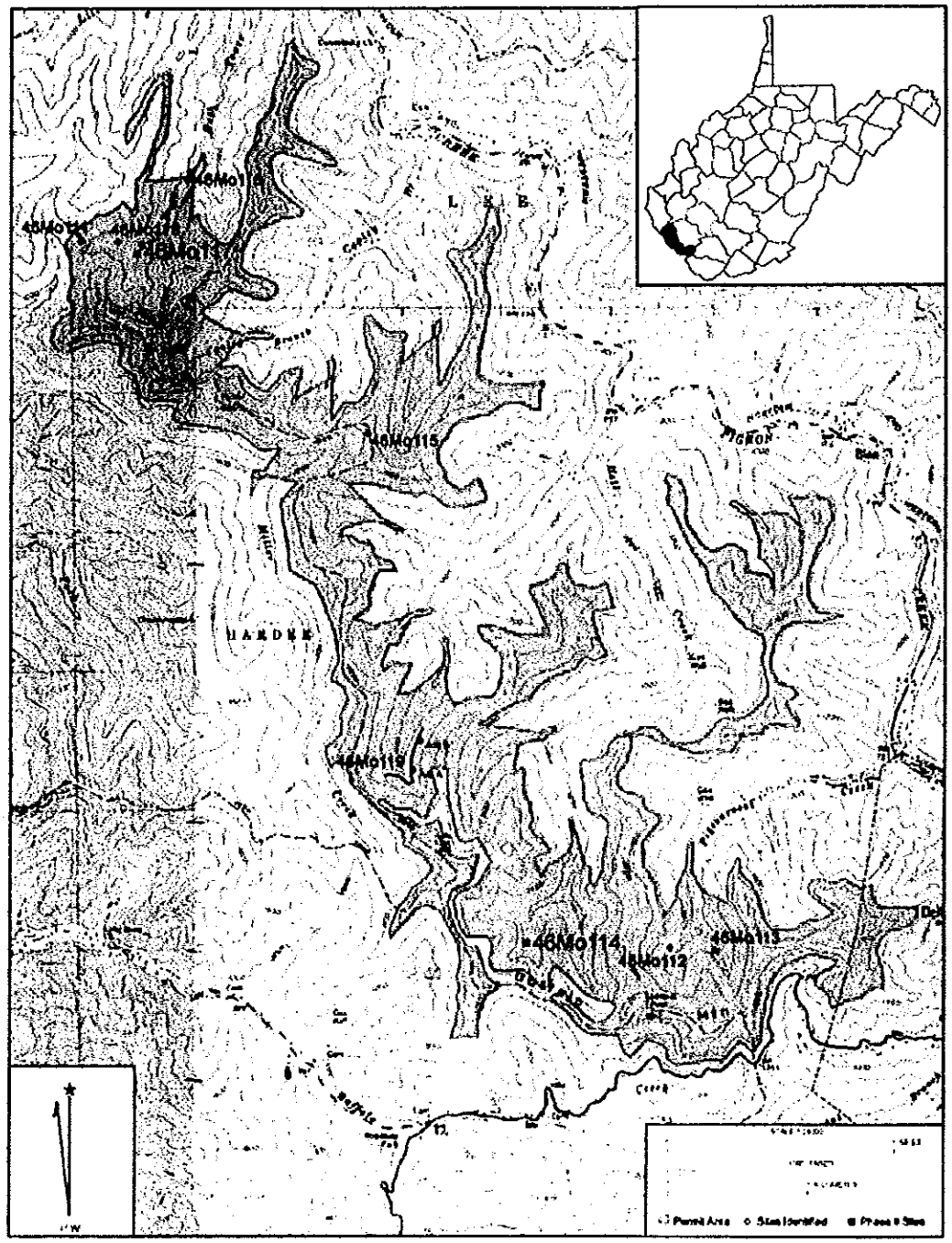

Figure 1 Portions of USGS 7.5' Holden, Delbarton, Naugatuck, and Williamson topographic quadrangles showing the Miller Creek East Mine Permit area and recorded sites.

WEST VIRGINIA
Division of Culture and History

The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300
Randall Reid-Smith, Commissioner
Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562
EEO/AA Employer

January 7, 2011

Mr. Gregory Bailey, PE
Division of Highways
1900 Kanawha Blvd East
Building 5, Room 110
Charleston, WV 25305

RE: King Coal Highway – Delbarton to Belo Project
State Project X169-SHA/WN-0
FR#: 95-204-MULTI-21

Dear Mr. Bailey:

We have reviewed the above mentioned project to determine its effects to cultural resources. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to submitted information, your agency is preparing a draft environmental assessment for an approximate seven mile section of the King Coal Highway Delbarton to Belo Project. Your letter states that the purpose of this project is to develop transportation improvements within Mingo County that are consistent with the overall King Coal Highway Corridor master transportation plan and joint development initiative.

Archaeological Resources:
In our opinion, your letter accurately summarizes the current status of the review process with respect to archaeological resources in the Delbarton to Belo segment of the King Coal Highway. Currently, one National Register eligible archaeological resource (46MO117) has been identified within an area that may fall within the preferred alignment. In addition, WV DOH will ensure that a Phase I archaeological survey and any other necessary field investigations will be conducted once the preferred alternative has been selected. We look forward to continuing the consultation process.

Architectural Resources:
It is our understanding that your agency is seeking our updated concurrence that the proposed Delbarton to Belo Section of the project will have no adverse effect on buildings, sites or structures eligible for or listed in the National Register of Historic Places. After review of the information submitted and after a search of our survey files, we still maintain that the only eligible resource within the area of potential effect is the Belo segment of the Lenore Branch of the Norfolk & Western Railroad. We still concur with this finding and still maintain that no architectural resources listed on or eligible for the National Register of Historic places will be adversely affected by the proposed project.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A Lamarre-DeMott, Senior Archaeologist, or Aubrey Von Lindern, Historian, at (304) 558-0240.*

Sincerely,

Susan M. Pierce

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/ACV/LAL

Greg B Orig.

RECEIVED
AUG 4 2011
ENGINEERING DIVISION
WV DOH

west virginia department of environmental protection

Division of Mining and Reclamation
601 57th Street, Charleston, WV 25303
Phone: (304) 926-0490 Fax (304) 926-0456

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
dep.wv.gov

July 28, 2011

RECEIVED
AUG 0 4 2011
ENGINEERING DIVISION
WV DOH

RECEIVED
AUG 0 5 2011
WVDOH
STATE HIGHWAY ENGINEER

West Virginia Division of Highways
Mr. Greg Bailey, Director
Engineering Division
Capitol Complex
Building 5, Room A-317
1900 Kanawha Boulevard, East
Charleston, WV 25305

Re: Environmental Assessment for the King Coal Highway

Dear Mr. Bailey:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the King Coal Highway Belo to Delbarton Project.

After review, it is apparent to my office that combining the proposed projects would result in a significant reduction in the potential for adverse environmental impacts when compared to potential impacts the two projects would have if developed separately. It is because of this that we would recommend adoption of the joint development initiative outlined in the Assessment.

We do have an area of concern in the language of page 1-7 of the draft. In the bulleted section of this page, specifically bullet #2 (Avoid significant stream impacts to Miller Creek watershed), the last sentence of the paragraph states "*Within impaired streams, effluent limitations or other controls are not sufficient to meet current water quality standards.*" We would ask that this language be reconsidered in that it could be interpreted to suggest that treatment methods are ineffective on impaired streams.

An impaired stream is protected from any further impairment by the effluent limitations assigned in the NPDES permit. New NPDES permits discharging into impaired streams are

assigned criteria end of pipe effluent limitations for the respective parameters (impairments) which will be protective of the water quality standards.

Once again thank you for providing my office the opportunity to comment on the draft. If you have any questions related to our comments, please direct them to Jeff Parsons at our Kanawha City office.

Jeff Parsons
Division of Mining and Reclamation
601 57th Street SE
Charleston, WV 25304
(304) 926-0499 Ext. 1564

Sincerely,

Harold D. Ward

Harold D. Ward
Deputy Director

April 14, 2011

Ben L. Hark
Environmental Section Head
WVDOT, Division of Highways
1900 Kanawha Blvd, East
Building 5, Room 110
Charleston, WV 25305-0430

RE: King Coal Highway Buffalo Mountain Section
State Project X169-SHA/WN-1.00(03)

Dear Mr. Hark:

In response to your letter dated January 3, 2011 with regards to sections of the Hatfield McCoy Trails that might be impacted due to the planned construction of the King Coal Highway, Buffalo Mountain Section, the Hatfield McCoy Regional Recreation Authority will work with your agency in every way possible to minimize the impact to our trails and trail riders.

We understand that this project will impact our Buffalo Mountain Trail Head and Trail Number 14 specifically. We believe that viable alternatives exist for minimizing this disturbance and will work closely with your agency to ensure that a viable solution can be reached prior to construction.

If you have any questions with regards to our Trails you can contact Mr. Jonathan Fekete, Deputy Director, Hatfield McCoy Regional Recreation Authority, P.O. Box 539, Lyburn, WV 25632. Mr. Fekete can also be reached at (304) 752-3255 or by cell at (304) 687-9875. He will coordinate our efforts to ensure our project continues and that we have moved all obstacles from the highway corridor with relation to our Trails.

We look forward to working with you on this project and look forward to the construction of the King Coal Highway for Southern West Virginia.

Very Truly Yours,

Jeffrey T. Lusk
Executive Director

Toll Free: 1-800-592-2217 • Phone: 304-752-3255 • Fax: 304-752-1134
www.trailsheaven.com • info@trailsheaven.com
P.O. Box 539 • Lyburn, West Virginia • 25632

U.S. Department
of Transportation

**Federal Highway
Administration**

West Virginia Division

Geary Plaza, Suite 200
700 Washington Street, East
Charleston, West Virginia 25301
Phone (304) 347-5928
Fax (304) 347-5103

January 19, 2012

IN REPLY REFER TO:
Notice of Intent

Raymond A. Mosley, Director
Office of the Federal Register (NF)
National Archives and Records Administration
700 Pennsylvania Avenue NW
Washington, D.C. 20408-0001

Dear Mr. Mosley:

Pursuant to Council on Environmental Quality Regulations and DOT Order 5610.1C, the enclosed Notice of Intent is being submitted for publication in the Federal Register. I hereby certify that the enclosed diskette contains a true and accurate copy of the three signed paper copies of the Notice, "Supplemental Environmental Impact Statement, Mingo County, West Virginia". Please ensure that the Notice is published in both the Federal Highways Administration and Department of the Army sections of the Federal Register. If there are any questions regarding the enclosed documentation, please contact Jason Workman at 304-347-5271.

Sincerely yours,

Thomas J. Smith

Thomas J. Smith, P.E.
Division Administrator

Enclosures

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Kate McManus
Regional Environmental Officer
Federal Emergency Management Agency
615 Chestnut Street
Philadelphia, PA 19106

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. McManus,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

An overview of the projects will be presented at each meeting, followed by an open-discussion of potentially important issues. You are invited to attend both meetings, but your presence is especially requested for the agency scoping meeting. The meetings will be held at the following locations and times:

Agency Scoping Meeting
Thursday, February 16, 2012
8:30 AM
West Virginia Division of Highways
Capitol Complex
Building 5, Room 122
1900 Kanawha Blvd East
Charleston, WV 25305

Public Scoping Meeting
Thursday, February 16, 2012
4:30 PM
Mingo Central Comprehensive High School
100 King Coal Highway
Red Jacket, WV 25692

If you have any questions, please feel free to contact Greg Akers of my staff at Gregory.W.Akers@wv.gov, Jason Workman of FHWA at Jason.Workman@dot.gov, or Alison Rogers of the USACE at alison.m.rogers@usace.army.mil.

Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Tom Smith, Division Administrator
Federal Highway Administration
West Virginia Division
700 Washington Street, E
Suite 200
Charleston, WV 25301

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Smith,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Ginger Mullis, Chief
Regulatory Branch
U.S. Army Corps of Engineers
Huntington District
502 Eighth Street
Huntington, WV 25701

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. Mullis,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Roger Calhoun, Field Office Director
U.S. Department of Interior
Office of Surface Mining, Charleston Field Office
1027 Virginia Street, E
Charleston, WV 25301

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Calhoun,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Agency Scoping Meeting
Thursday, February 16, 2012
8:30 AM
West Virginia Division of Highways
Capitol Complex
Building 5, Room 122
1900 Kanawha Blvd East
Charleston, WV 25305

Public Scoping Meeting
Thursday, February 16, 2012
4:30 PM
Mingo Central Comprehensive High School
100 King Coal Highway
Red Jacket, WV 25692

If you have any questions, please feel free to contact Greg Akers of my staff at Gregory.W.Akers@wv.gov, Jason Workman of FHWA at Jason.Workman@dot.gov, or Alison Rogers of the USACE at alison.m.rogers@usace.army.mil.

Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Bill O'Donnell
U.S. Department of Agriculture
Natural Resources Conservation Service
1550 Earl L. Core Road, Suite 200
Morgantown, WV 26505

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. O'Donnell,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Robert Herbert
U.S. Department of Housing and Urban Development
District of Columbia Office, Union Center Plaza
820 First Street, N.E.
Washington, DC 20002

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Herbert,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

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Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Dr. Willie Taylor, Ph.D.
U.S. Department of the Interior
Office of Environmental Policy and Compliance
1849 C Street, NW - MS2462-MIB
Washington, DC 20240

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Dr. Taylor, Ph.D.,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

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FHWA, Jason Workman
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Jeffrey Lapp, Assistant Director
Environmental Programs
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Lapp,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

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bcc: DDE(GA)
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Barbara Rudnick, NEPA Team Leader
U.S. Environmental Protection Agency
Office of Environmental Programs
1650 Arch Street
Philadelphia, PA 19103

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. Rudnick,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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bcc: DDE(GA)
FHWA, Jason Workman
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Deborah Carter
U.S. Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. Carter,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Laura Hill
U.S. Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. Hill,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Jim Zelenak
U.S. Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Zelenak,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. John Benedict, Director
West Virginia Department of Environmental Protection
Office of Air Quality
601 57th Street, S.E.
Charleston, WV 25304

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Benedict,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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FHWA, Jason Workman
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Lyle Bennett
West Virginia Department of Environmental Protection
Water Resource Section
601 57th Street, S.E.
Charleston, WV 25304

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Bennett,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Tom Clarke, Director
West Virginia Department of Environmental Protection
Division of Mining and Reclamation
601 57th Street, S.E.
Charleston, WV 25304

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Clarke,

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Lisa McClung, Director
West Virginia Department of Environmental Protection
Divison of Water and Waste Management
601 57th Street, S.E.
Charleston, WV 25304

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. McClung,

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Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

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Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Susan Pierce, Deputy State Historic Preservation Officer
West Virginia Divison of Culture and History
1900 Kanawha Blvd, E.
Charleston, WV 25305

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. Pierce,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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If you have any questions, please feel free to contact Greg Akers of my staff at Gregory.W.Akers@wv.gov, Jason Workman of FHWA at Jason.Workman@dot.gov, or Alison Rogers of the USACE at alison.m.rogers@usace.army.mil.

Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Frank Jezioro, Director
West Virginia Division of Natural Resources
324 N. Fourth Avenue
Room 342
South Charleston, WV 25303

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Jezioro,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

An overview of the projects will be presented at each meeting, followed by an open-discussion of potentially important issues. You are invited to attend both meetings, but your presence is especially requested for the agency scoping meeting. The meetings will be held at the following locations and times:

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8:30 AM
West Virginia Division of Highways
Capitol Complex
Building 5, Room 122
1900 Kanawha Blvd East
Charleston, WV 25305

Public Scoping Meeting
Thursday, February 16, 2012
4:30 PM
Mingo Central Comprehensive High School
100 King Coal Highway
Red Jacket, WV 25692

If you have any questions, please feel free to contact Greg Akers of my staff at Gregory.W.Akers@wv.gov, Jason Workman of FHWA at Jason.Workman@dot.gov, or Alison Rogers of the USACE at alison.m.rogers@usace.army.mil.

Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Roger Anderson
West Virginia Division of Natural Resources
Post Office Box 67
Elkins, WV 26241

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Anderson,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Mike Mitchem
King Coal Highway Authority
Box 1448
Gilbert, WV 25621

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Mitchem,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. John Mark Hubbard, President
Mingo County Commission
75 East Second Avenue
Williamson, WV 25661

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Hubbard,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

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FHWA, Jason Workman
USACE, Alison Rogers

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Mr. Steve Kominar, Executive Director
Mingo County Redevelopment Authority
Post Office Box 298
Williamson, West Virginia 25661

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Mr. Kominar,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Very truly yours,

Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways
1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

January 30, 2012

Ms. Michele Craig, Executive Director
Region II Planning and Development Council of West Virginia
720 Fourth Avenue
Huntington, WV 25701

RE: King Coal Highway Delbarton to Belo Project and
Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application
Invitation to Attend Upcoming Scoping Meetings

Dear Ms. Craig,

The Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE), in cooperation with the West Virginia Department of Transportation, Division of Highways, are holding agency and public scoping meetings for the King Coal Highway Delbarton to Belo Project and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application submitted by Consol of Kentucky, Inc. The purpose of the scoping meetings is to identify potential environmental issues and provide an opportunity for development of the project's purpose and need statement. The preparation of a Supplemental Environmental Impact Statement for the project is anticipated.

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Gregory L. Bailey, P.E.
Director
Engineering Division

By: Ben L. Hark

Ben L. Hark
Environmental Section Head

GLB:Hk
Attachments
bcc: DDE(GA)
FHWA, Jason Workman
USACE, Alison Rogers

U.S. Department
of Transportation

**Federal Highway
Administration**

West Virginia Division

Geary Plaza, Suite 200
700 Washington Street, East
Charleston, West Virginia 25301
Phone (304) 347-5928
Fax (304) 347-5103

February 7, 2012

IN REPLY REFER TO:

Mr. Jeffery Lapp
U.S. Environmental Protection Agency
Region III
1650 Arch Street (3EA30)
Philadelphia, PA 19103-2029

Dear Mr. Lapp:

The Federal Highway Administration (FHWA) and the United States Department of the Army Corps of Engineers (USACE), in cooperation with the West Virginia Division of Highways (WVDOH), is initiating the preparation of a Supplemental Environmental Impact Statement (SEIS) to evaluate the impacts of the proposed Delbarton to Belo portion of the King Coal Highway 2000 FEIS and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application, Mingo County, West Virginia. In accordance with CEQ regulations emphasizing agency cooperation early in the NEPA process (40 CFR 1501.6), the FHWA and the USACE, as joint lead federal agencies, are requesting your participation as a cooperating agency. Your agency was a cooperating agency on the 2000 FEIS that was completed for this project. Designation as a cooperating agency does not imply that your agency supports the proposed project

As a reminder, your agency's involvement, as a cooperating agency should entail those areas under its jurisdiction and no direct writing or analysis will be necessary for the document's preparation. The following are activities we will take to maximize interagency cooperation:

1. Invite you to coordination meetings;

2. Consult with you on any relevant technical studies that will be required for the project;

3. Organize field reviews with you;

4. Provide you with project information, including study results;

5. Encourage your agency to use the above documents to express your views on subjects within your jurisdiction or expertise; and

6. Include information in the project environmental documents that cooperating agencies need to discharge their National Environmental Policy Act (NEPA) responsibilities and any other requirements regarding jurisdictional approvals, permits, licenses, and/or clearances.

You have the right to expect that the SEIS will enable you to discharge your jurisdictional responsibilities. Likewise, you have the obligation to tell us if, at any point in the process, your needs are not being met. We expect that at the end of the process the SEIS will satisfy your NEPA requirements including those

related to project alternatives, environmental consequences and mitigation. Further, we intend to utilize the SEIS and our subsequent Record of Decision (ROD) as our decision-making documents and as the basis for our permit decision.

We look forward to your response to this request and your role as a cooperating agency on this transportation and surface mine coal mining project. If you have any questions or would like to discuss, in more detail, the project or our agencies' respective roles and responsibilities during the preparation of this SEIS, please contact either Ms. Allison Rogers, USACE, at 304-399-5722 or Mr. Jason Workman, FHWA, at (304)347-5271.

Sincerely yours,

Ginger Mullins

Ginger Mullins
Chief, Regulatory Division, USACE

Amy Fox
Director of Program Development, FHWA

Enclosure

U.S. Department
of Transportation

**Federal Highway
Administration**

West Virginia Division

Geary Plaza, Suite 200
700 Washington Street, East
Charleston, West Virginia 25301
Phone (304) 347-5928
Fax (304) 347-5103

February 7, 2012

IN REPLY REFER TO:

Ms. Deborah Carter
U.S. Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

Dear Ms. Carter:

The Federal Highway Administration (FHWA) and the United States Department of the Army Corps of Engineers (USACE), in cooperation with the West Virginia Division of Highways (WVDOH), is initiating the preparation of a Supplemental Environmental Impact Statement (SEIS) to evaluate the impacts of the proposed Delbarton to Belo portion of the King Coal Highway 2000 FEIS and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application, Mingo County, West Virginia. In accordance with CEQ regulations emphasizing agency cooperation early in the NEPA process (40 CFR 1501.6), the FHWA and the USACE, as joint lead federal agencies, are requesting your participation as a cooperating agency. Your agency was a cooperating agency on the 2000 FEIS that was completed for this project. Designation as a cooperating agency does not imply that your agency supports the proposed project

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the SEIS and our subsequent Record of Decision (ROD) as our decision-making documents and as the basis for our permit decision.

We look forward to your response to this request and your role as a cooperating agency on this transportation and surface mine coal mining project. If you have any questions or would like to discuss, in more detail, the project or our agencies' respective roles and responsibilities during the preparation of this SEIS, please contact either Ms. Allison Rogers, USACE, at 304-399-5722 or Mr. Jason Workman, FHWA, at (304)347-5271.

Sincerely yours,

Ginger Mullins
Chief, Regulatory Division, USACE

Amy Fox
Director of Program Development, FHWA

Enclosure

U.S. Department
of Transportation

**Federal Highway
Administration**

West Virginia Division

Geary Plaza, Suite 200
700 Washington Street, East
Charleston, West Virginia 25301
Phone (304) 347-5928
Fax (304) 347-5103

February 7, 2012

IN REPLY REFER TO:

Ms. Susan Pierce
Deputy State Historic Preservation Officer
West Virginia Division of Culture and History
1900 Kanawha Boulevard, East
Charleston, WV 25305

Dear Ms. Pierce:

The Federal Highway Administration (FHWA) and the United States Department of the Army Corps of Engineers (USACE), in cooperation with the West Virginia Division of Highways (WVDOH), is initiating the preparation of a Supplemental Environmental Impact Statement (SEIS) to evaluate the impacts of the proposed Delbarton to Belo portion of the King Coal Highway 2000 FEIS and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application, Mingo County, West Virginia. In accordance with CEQ regulations emphasizing agency cooperation early in the NEPA process (40 CFR 1501.6), the FHWA and the USACE, as joint lead federal agencies, are requesting your participation as a cooperating agency. Your agency was a cooperating agency on the 2000 FEIS that was completed for this project. Designation as a cooperating agency does not imply that your agency supports the proposed project

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You have the right to expect that the SEIS will enable you to discharge your jurisdictional responsibilities. Likewise, you have the obligation to tell us if, at any point in the process, your needs are not being met. We expect that at the end of the process the SEIS will satisfy your NEPA requirements including those

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We look forward to your response to this request and your role as a cooperating agency on this transportation and surface mine coal mining project. If you have any questions or would like to discuss, in more detail, the project or our agencies' respective roles and responsibilities during the preparation of this SEIS, please contact either Ms. Allison Rogers, USACE, at 304-399-5722 or Mr. Jason Workman, FHWA, at (304)347-5271.

Sincerely yours,

Ginger Mullins
Chief, Regulatory Division, USACE

Amy Fox
Director of Program Development, FHWA

Enclosure

WEST VIRGINIA
Division of Culture and History

The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300
Randall Reid-Smith, Commissioner
Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562
EEO/AA Employer

March 15, 2012

Ms. Amy Fox
Director of Program Development
Federal Highway Administration
Geary Plaza, Suite 200
700 Washington Street
Charleston, WV 25301

Ms Ginger Mullins
Chief, Regulatory Division
United States Department of the Army, Corps of Engineers
Huntington District
502 Eighth Street
Huntington, WV 25701

RE: King Coal Highway – Delbarton to Belo Section
FR# 95-204-Multi-23

Dear Ms. Fox and Ms. Mullins:

We have reviewed the above mentioned project to determine its effects to cultural resources. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to the information submitted, the Federal Highway Administration (FHWA) and the United States Department of the Army, Corps of Engineers (USACE), in cooperation with the West Virginia Division of Highways (WVDOH), is initiating the preparation of a Supplemental Environmental Impact Statement (SEIS) to evaluate impacts of the proposed Delbarton to Belo portion of the King Coal Highway 2000 Final Environmental Impact Statement (FEIS) and the Buffalo Mountain Surface Mine Clean Water Act Section 404 Permit Application, Mingo County, WV. Thank you for notifying us of your plans to create a new NEPA document.

As you know, compliance with NEPA does not automatically constitute compliance with Section 106 of the National Historic Preservation Act. To this end, a Programmatic Agreement was signed in April 2000 that outlines the steps that will be taken to complete the Section 106 process. In a letter to Mr. Gregory Bailey, WVDOH dated August 2, 2011 we provided comments on a draft Environmental Assessment (DEA) for the Delbarton to Belo section of the King Coal Highway. In our opinion, the DEA accurately summarized the current status of the review process with respect to cultural resources in the Delbarton to Belo segment of the King Coal Highway. Currently, one National Register eligible archaeological resource (46MO117) has been identified within an area

that may fall within the preferred alignment. WVDOH will ensure that a Phase I archaeological survey and any other necessary field investigations will be conducted once the preferred alternative has been selected. In addition, we still maintain that the only eligible resource within the area of potential effect is the Belo segment of the Lenore Branch of the Norfolk & Western Railroad. We remain in concurrence with this finding and are of the opinion that no architectural resources listed on or eligible for the National Register of Historic places will be adversely affected by the proposed project.

If this information is no longer accurate, we request that you submit the proposed project changes for our review. Otherwise, we will provide further comment upon receipt of the Phase I archaeological survey for the preferred alignment.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the permit conditions, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, or Aubrey Von Lindern, Historian, at (304) 558-0240.*

Sincerely,

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/LAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

MAR 16 2012

Ms. Ginger Mullins
Chief, Regulatory Branch
Huntington District
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701

Ms. Amy Fox
Director of Program Development
Federal Highway Administration - West Virginia Division
Geary Plaza, Suite 200
700 Washington Street, East
Charleston, West Virginia 25301

Subject: EPA Role for the Development of a Supplemental Environmental Impact Statement under the National Environmental Policy Act (NEPA) for the King Coal Highway, Delbarton to Belo portion, and Buffalo Mountain Surface Mine Clean Water Act (CWA) Section 404 Permit Application, West Virginia

Dear Ms. Mullins and Ms. Fox:

The U.S. Environmental Protection Agency (EPA) has received your letter of February 7, 2012 extending an invitation to EPA to become a cooperating agency with Federal Highway Administration (FHWA), the West Virginia Division of Highways (WVDOH), and the U.S. Army Corps of Engineers (USACE) in the development of the Supplemental Environmental Impact Statement (SEIS) for the King Coal Highway, Delbarton to Belo, West Virginia and Buffalo Mountain Surface Mine Clean Water Act (CWA) Section 404 Permit Application. The request for cooperating agency status is made pursuant to Council on Environmental Quality (CEQ) regulations emphasizing agency cooperation early in the NEPA process. The study is being conducted in accordance with the CEQ regulations for implementing NEPA (40 CFR 1500-1508).

The CEQ has determined that a cooperating agency has the responsibility to assist the lead agency by involvement in the NEPA process at the earliest possible time (40 CFR 1501.6). The benefits of cooperating agency engagement in the preparation of NEPA analyses include disclosing relevant information early in the analytical process and establishing a mechanism for addressing intergovernmental issues. Other benefits include fostering intra- and intergovernmental trust and a common understanding and appreciation for various governmental roles in the NEPA process, as well as enhancing agencies' ability to adopt environmental

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documents. EPA accepts cooperating agency involvement on this project as described herin, but recognizes that considerable work on the study has preceded announcement of the SEIS process and the proposed time schedule is notably expedited. Despite the time constraints, EPA will work to contribute effectively to the integrity and scope of this study for identification of impacts and analysis of alternatives for the proposed projects.

CEQ has identified the types of participation undertaken by a cooperating agency as including, but not limited to, engaging in the scoping process and making available staff support at the lead agency's request to enhance the lead agency's interdisciplinary capabilities. Our role as a cooperating agency in support of the subject SEIS will consist of providing comments on general NEPA compliance and CWA Section 404 issues as well as providing technical support in the development of the SEIS. EPA would like the opportunity to contribute in the SEIS process in the following manner:

· Identification of significant issues
· Provide technical assistance in the development of the analysis of alternatives and their environmental impact
· Provide data and rationale underlying the alternatives analysis
· Technical assistance on Environmental Justice, cumulative impacts, etc.

CEQ guidance recognizes that, while the lead agency has overall responsibility for the content of the SEIS, status as a cooperating agency should not be construed as expressing agreement with the lead agency regarding the conclusions to be drawn from the SEIS or selection of the preferred alternative. In addition, EPA has a number of independent responsibilities related to the proposed project, including our responsibilities pursuant to Section 309(a) of the Clean Air Act (CAA), Sections 402(d), and 404(b), (c) and (q) of the CWA. Consistent with CEQ guidance, while serving as a cooperating agency, we retain our independent obligations to review and comment on every draft EIS pursuant to Section 309(a) of the CAA.

EPA appreciates the opportunity to engage as a cooperating agency in the development of the documentation to satisfy the requirements of NEPA and the CWA for King Coal Highway and Buffalo Mountain Surface Mine. If you have any questions, please do not hesitate to contact me, or have your staff contact Ms. Barbara Rudnick, NEPA Team Leader, at 215-814-3322.

Sincerely,

Jeffrey D. Lapp, Associate Director
Office of Environmental Programs

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Customer Service Hotline: 1-800-438-2474

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

MAR 19 2012

Mr. Thomas Smith
Division Administrator
Federal Highway Administration
700 Washington Street East
Charleston, West Virginia 25301

Ms. Ginger Mullins
Chief, Regulatory Branch
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701–2070

Re: Supplemental Environmental Impact Statement, King Coal Highway 2000 Final Environmental Impact Statement (FEIS) and the Buffalo Mountain Surface Mine, Mingo County, West Virginia

Dear Mr. Smith and Ms. Mullins:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) of 1969, Section 309 of the Clean Air Act (CAA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1509), the U.S. Environmental Protection Agency (EPA) is responding to the request for comments of the January 25, 2012 Federal Register Notice of Intent (NOI) to prepare a Supplemental Environmental Impact Statement (SEIS). The Federal Highway Administration (FHWA) and the U. S. Department of the Army Corps of Engineers (USACE) in cooperation with the West Virginia Division of Highways (DOH) will prepare a SEIS to evaluate the impacts of the proposed Delbarton to Belo portion of the King Coal Highway 2000 FEIS and the Buffalo Mountain Surface Mine Clean Water Act (CWA) Section 404 Permit Application. FHWA is evaluating a location shift of a portion of the alignment between the West Virginia towns of Delbarton and Belo described in the 2000 FEIS and approved in the 2000 Record of Decision (ROD). The USACE is evaluating a CWA Section 404 Individual Permit (IP) application submitted by Consol of Kentucky, Inc. (Consol or applicant), for discharge of fill material into waters of the U.S. in conjunction with the construction of the Buffalo Mountain Surface Mine.

The proposed project involves many stakeholders and is highly complex because there are, in fact, three projects being incorporated into one. The three projects that will be assessed by the SEIS include the Buffalo Mountain Surface Mine, the Belo to Delbarton section of the King Coal Highway, and economic and secondary development. To ensure that a full range of issues related to the proposed actions are addressed and all significant issues are identified, the

NOI requests comments and suggestions concerning the project actions and the SEIS. EPA believes several issues merit special attention in the study, including the purpose and need of the multiple projects being evaluated, development of alternatives for the projects, assessment of resources in the natural and human environment, avoidance and minimization of adverse impacts, and mitigation for unavoidable impacts.

Purpose and Need

Documentation of need is essential: as the range of alternatives evaluated is defined by the purpose and need (P&N) for the project, it is imperative that the P&N be clearly explained in the SEIS. The P&N of the three projects needs to be clearly stated with sufficient detail and justification. Since the SEIS is a supplement to the 2000 FEIS, it is our understanding that FHWA assumes that the P&N for the highway remains substantially unchanged. The P&N for the 2000 FEIS were related to current and future capacity, regional and local system linkage, safety and roadway deficiencies, and social and economic demand. The SEIS should explain any changes in the P&N that result from modifications to the scope of the study, recognizing that this segment is described as having independent utility and further recognizing that, as originally envisioned in the EIS published in 2000, the KCH could be developed without the mine.

As the other two projects (the surface mine and economic development) were not analyzed in the 2000 FEIS, the need and objectives for each distinct project should be provided in the SEIS. For instance, a discussion of the need for coal from the Buffalo Mountain Surface Mine in light of current and projected future demands in the coal market regionally, nationally, and internationally should be considered.

EPA recognizes the interests of nearby communities in promoting economic development through construction of the King Coal Highway. However, the SEIS should clearly explain how such new development would occur. The SEIS should evaluate the needs and requirements for developable land, while defining and substantiating the needs of the local area. Consideration should be given to the presence of existing land along portions of the KCH corridor and recognizing that access to the Belo to Delbarton section is not anticipated for approximately two decades. Additionally, only portions of the proposed KCH are anticipated to be operational in the course of several decades. The document should explain why this development cannot occur within existing developed areas. Though it is understood that developable lands are desired by the local government, it is unclear how the amount or location of land needed was established. Information to support the concept that investors or industries would re-locate to the project area should be presented. The assumptions regarding potential future economic development and economic benefit anticipated to be derived from construction of the highway should be tested against evidence as to whether similar assumptions have been realized in connection with other highway developments in the region.

A discussion of the entire KCH should be provided. This discussion should include a description of how the Belo to Delbarton section relates to the entire length of the KCH as well as the status of the individual segments of the highway. For example, the position of this segment in relation to the complete alignment, status of the other segments, if the shift of this

segment from the one studied in the 2000 FEIS will change any other segment of the highway and a schedule for completion of this and other sections of the highway should be included.

Alternatives

According to the NOI, the alternatives available to FHWA for the proposed project are the no-build alternative, highway construction on a new alignment within the original KCH corridor (selected alternative from the 2000 ROD), or a joint development initiative. The alternatives available to the USACE for the proposed project, stated in the NOI, are issue the permit, issue the permit with special conditions, or deny the permit application. Alternatives analysis is essential to a NEPA document. Therefore alternatives need to be considered for the highway, the mine and the proposed land development. We note that the language used in the NOI seems very narrow and not in the spirit of NEPA and Section 404 to evaluate a reasonable/appropriate range of alternatives.

Given that both the mine and the highway are asserted to have independent utility, there should be separate alternatives analyses for each. It should be determined whether there are highway and development alternatives that do not depend upon the mine other than the original KCH alignment (as well as within the original KCH corridor using a right of way compatible to the current need), and if so, those should be presented. Mine configurations should be presented that are not reliant on the proposed highway as the intended use of land post-mining. The analysis of independent projects could provide designs to improve the projects independently or combined so as to provide economic benefits while minimizing environmental impacts. The analyses could compare impacts from the proposed combined project to inform whether impacts have truly been avoided and minimized.

Highway alternatives can include changes in roadway width as well as location, while still meeting the P&N of the project. As operation of the highway is not anticipated for several years, we recommend that FHWA consider alternatives for interim improvements to address safety and other issues identified in the 2000 FEIS P&N before a decision is made on this highway segment. For example, it may be possible to improve Route 65 (fixing sight distances, shoulders, turn lanes, signals, stop signs, etc.) to address safety concerns.

As articulated in a January 20, 2012 letter regarding the mine's proposed National Pollutant Discharge Elimination System (NPDES) permit, and expressed in discussion and written communication on the project since the 2008 Public Notice, EPA has significant concerns regarding the scale and magnitude of the impacts associated with the proposed Buffalo Mountain Surface Mine. For this reason, EPA strongly believes that the analysis of the highway and economic development aspects of the SEIS should not assume that the only configuration of the mine and post mining land use (PMLU) is the one proposed by the applicant and presented in the Public Notice. For instance, if less road or developable land is incorporated in PMLU, a viable alternative may result that reduces environmental impacts while saving cost and meeting project needs. Alternatives evaluating smaller amounts of developable land should be included and effort made to avoid and minimize impacts. The agencies and public should be able to see a comparison of the costs and benefits of the projects weighed against the loss and preservation of

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natural resources.

It is critical that the alternatives for mine design address coal recovery, least damaging placement of excess spoil and avoidance and minimization of impacts to environmental resources. The SEIS should include an evaluation of mining methods, including underground mining of the lower seams in the project area. The mine design should consider several issues these include: alternatives for placement of fill, analysis of a reduced number of fills to include fewer or larger fills (for instance a single valley fill in Miller Creek, and justification of need for valley fill Nos. 6 and 12), assessment of whether special considerations for the highway are needed with respect to the design of the valley fills, investigation of smaller lifts (50-feet instead of 100-feet) to increase opportunities for compaction and other ways of minimizing infiltration of surface and ground water through the fills to minimize impacts to water quality and aquatic communities, i.e. placement of fills on the up-dip side of the operation. The SEIS should discuss how ground water will be conveyed away from highwalls and not impounded in the re-grade. Presentation of a materials handling plan should be included, which should discuss how isolation cells will be constructed, assess if there is sufficient area for storing potentially toxic materials, and provide data to identify volume of potentially toxic strata and calculations for the acid-base accounting. The SEIS should assess if adits have potential for fracture flow, and if underdrains should be planned to address seepage from adits and interactions with ground water. Attention should be paid to seepage in valley fills.

Analysis in the SEIS should account for the potential formation of total dissolved solids (TDS) including recent scientific literature documenting significant downstream water quality impacts associated with the construction of mountaintop mines and valley fills.[1] EPA believes the SEIS should provide a mechanism to account for the uncertainty in the success of best management practices (BMPs) identified in the design of the mine; for example, consider use of sequencing of the valley fills, monitoring program design, and an adaptive remedial action plan which includes appropriate conductivity triggers for implementation.

Environmental Data and Information

Environmental data for aquatic and terrestrial resources, air quality (including greenhouse gas emissions, fugitive dust, etc), noise and the human environment should be analyzed for the project area. The SEIS should fully evaluate these resources and potential impacts that would result from the projects. As analysis of a new alignment within the original KCH corridor is

[1] *See e.g.* U.S. EPA. 2011. *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams* (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/023F; U.S. EPA. 2011. *The Effects of Mountaintop Mines and Valley Fills on Aquatic Ecosystems of the Central Appalachian Coalfields* (2011 Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-09/138F; M. A. Palmer, E. S. Bernhardt, W. H. Schlesinger, K. N. Eshleman, E. Foufoula-Georgiou, M. S. Hendryx, A. D. Lemly, G. E. Likens, O. L. Loucks, M. E. Power, P. S. White, P. R. Wilcock. 2010. *Mountaintop Mining Consequences*. Science. Vol. 327. 1/8/10. P148-9; Pond, G.J., M.E. Passmore, F.A. Borsuk, L. Reynolds, and C.J. Rose. 2008. *Downstream Effects of Mountaintop Coal Mining: Comparing Biological Conditions Using Family- and Genus-Level Macroinvertebrate Bioassessment Tools*. J. N. Am. Benthol. Soc. 27(3):717-737; Merricks, T.C., et al. 2007. *Coal-mine hollow fill and settling pond influences on headwater streams in Southern West Virginia, USA.* Environmental Monitoring and Assessment 129(1-3):359-378.

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being considered, along with other alternatives, sufficient baseline environmental data needs to be assessed for informed decision-making. It is assumed that information provided by Consol in the Environmental Information Document (EID) and Compensatory Mitigation Plan (CMP), data collected for the NPDES permit application, and for the Surface Mining Control and Reclamation Act permit will be used to assess impacts of the projects, including the highway sections not associated with the mine.

The SEIS should include all data and provide description and assumptions of models used to develop the environmental analysis for the mine, highway and land development. Raw data should be included, as well as data sources used, the dates collected and the methodologies used in assessment of the data. To the extent that the data are used to draw conclusions in the analysis, quality assurance needs to be certain.

In accordance with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (EO 12898), the SEIS should examine the demographic profile of the population which could be affected by the proposed project. Included with this examination should be a determination as to whether the proposed project has the potential to adversely affect human health and the environment in the areas surrounding the project area, specifically with regard to disadvantaged populations. Coordination with populations of concern should be conducted and documented. Specifically, a characterization of the economic status of residents near the site and the conditions they face, including any effects relating to the proximity of any blasting zones, locations of discharges of fill material and refuse disposal, truck traffic, noise, fugitive dust, and habitat loss, should be conducted. Specific consideration should be given to the mining activities' potential impacts on subsistence fishing, hunting, foraging and gardening in the area. Additional information is needed concerning sources of drinking water for the affected populations (including municipal water supplies and private sources of drinking water including streams and/or wells). Steps should be taken to insure the meaningful participation and involvement of minority and low-income populations in decision making, access to information, availability of data, and other processes associated with the development, planning, and assessment of this proposed project.

Cumulative Impacts

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. The CEQ in 40 CFR 1508.7 defines cumulative impacts as "impacts on the environment which result 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 other actions". Therefore, a cumulative impacts assessment should be an integral part of the evaluation. The analysis should include all past, present and reasonably foreseeable future projects, including intermodal facilities, mines, future development, roads such as the Coalfields Expressway, etc. The analysis should include aquatic and terrestrial habitat impacts, water quality, as well as other issues.

We suggest an approach that would manage and link proposed projects to overall water quality and habitat improvement on a sub-watershed and sub-basin basis and should include but

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not be limited to:

- A description of the current state of the ecosystem: the affected environment including impacts to the subwatershed from filling and impounding of streams and potential impacts to private drinking water wells and other drinking water supplies.
- An assessment of resource function and habitat value, and the effects of hydrologic modifications.
- An assessment of the impacts of deforestation on water quality, water quantity, and other ecological conditions.
- An evaluation of past and current surface disturbance for the three subwatersheds affected by the project: Headwaters Pigeon Creek, Miller Creek- Tug Fork, Outlet Pigeon Creek; the addition of the project and projection of foreseeable future disturbances should be evaluated with respect to potential cumulative effects to impacted resources.
- A comparison of these impacts to the attributes of healthy watersheds in the ecoregion with a goal towards assuring that the sub-basin and sub-watershed within which the project is proposed will not be adversely impacted.
- A cumulative impact analysis could help identify areas within the watershed that may need improvement. This analysis could then guide possible mitigation opportunities that would lead to improvement in the watershed condition.

Mitigation

The fundamental objective of compensatory mitigation is to offset unavoidable impacts to waters of the United States authorized by a CWA Section 404 permit (See 40 C.F.R 230.93(a). As the application for 404 permitting is for the mine, proposed mitigation regarding mining activities is presented in the CMP. Conceptual mitigation for the proposed road will need to be included in the SEIS. Though compensatory mitigation for the impacts to aquatic resources by mining activities is proposed, concerns exist that the mitigation as proposed may not provide meaningful ecological functional replacement of the streams expected to be impacted The CMP describes the concept of the proposed mitigation as a comprehensive plan in the Hell Creek sub-watershed. There is concern that though methods were used to calculate needed mitigation, the data used, as well as the methods to assess loss, may not lead to adequate compensation of the lost functions and values. The CMP proposes off-site restoration and enhancement of Hell Creek, the preservation of six tributaries within the Hell Creek watershed, and the establishment of stream channels on and off the project site. In addition, the mitigation plan proposes water quality improvements through the construction of wastewater collection lines and tap-ins for the residents of Hell Creek's watershed and a three-mile long force main to the Delbarton, WV wastewater treatment plant.

The streams to be impacted in the Buffalo Mountain Surface Mine project area are primarily high gradient streams with mostly cobble and gravel beds and bedrock grade control. While creation of stream channels may serve to minimize impacts, particularly with respect to changes in hydrology, the proposed use of sediment ditches will convert the diverse, naturally-occurring dendritic stream pattern to uniform channels parallel to the receiving streams instead

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of locating the created streams in a natural stream valley. Both the Corps and EPA recognized when they promulgated the 2008 Mitigation Rule that streams are difficult resources to replace. There is no evidence to date which demonstrates that created stream channels adequately replace existing stream functions lost by the burial of high quality, high-gradient stream channels. Reaches proposed for preservation may not be as high quality as the streams being impacted by the project. In addition, the SEIS should address whether the preserved channels will be protected from impacts from any future coal mining activities under them, including undermining and subsidence. The SEIS should discuss the installation of the proposed sewer lines including the expected benefits and any associated impacts including impacts of secondary growth which may result.

EPA has been working with the USACE on the Buffalo Mountain project since the 2008 Public Notice, when comments were submitted with concerns about water quality, particularly impacts to Pigeon and Miler Creek watersheds. EPA provided concerns in the specific objection made in response to the CWA Section 402 NPDES permit application. Federal collaboration has been underway on the KCH project and EPA has participated in agency meetings and discussion. We believe it would be effective in development of the SEIS, to encourage agency review of chapters of the document as they are prepared, to allow for incorporation of comments and a more expedited process. We appreciate the opportunity to engage in the NEPA and CWA permitting process, and hope for continued dialogue with agencies as we all work to assess and minimize environmental impact in the watersheds.

Thank you for the opportunity to support the development of the environmental analysis and documentation to satisfy the requirements of NEPA and the CWA for King Coal Highway and Buffalo Mountain Surface Mine. If you have any questions, please do not hesitate to contact me, or have your staff contact Ms. Barbara Rudnick, NEPA Team Leader, at 215-814-3322.

Sincerely,

Jeffrey D. Lapp, Associate Director
Office of Environmental Programs

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May 14, 2012

Mr. James Spence
Project Manager
US Army Corps of Engineers
502 Eighth Street
Huntington, WV 25701

RE: Consol of Kentucky – Buffalo Mountain/Miller Creek East Surface Mine (S-5018-07)
FR#: 06-1237-MO-10

Dear Mr. Spence:

We have reviewed the above mentioned project to determine its effects to cultural resources. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to the information provided, Consol of Kentucky is seeking a permit from the US COE for the discharge of fill material into waters of the United States in conjunction with the construction and operation of the proposed Buffalo Surface Mine.

Archaeological Resources:
A review of our records indicates that the Buffalo Mountain Surface Mine has been previously reviewed by our office under the name Miller Creek East. Phase I survey identified two sites that were potentially eligible for listing on the National Register of Historic Places. Subsequent Phase II testing identified one of these sites, 46MO117, as eligible for listing on the NRHP. It was determined that mine construction would have an adverse effect on the site and a Memorandum of Agreement was created in order to document how the adverse effect would be mitigated and the Phase III data recovery research questions and methodologies.

As per stipulation 8 of the MOA which states that the Data Recovery Plan (DRP) will be re-reviewed if the plan is not implemented within two years of the execution of the MOA, SHPO staff has reviewed the plan and found it to be satisfactory.

We remain in agreement with our previous statements regarding the project area. If site 46MO117 cannot be avoided, Phase III mitigation should be conducted following the methodology outlined in the DRP.

SHPO staff has reviewed the additional offsite mitigation areas added with the revised Compensatory Mitigation Plan (CMP) and found that the land is either previously disturbed or on steep slopes. It is unlikely that any sites eligible for listing on the National Register of Historic Places are located in the offsite mitigation areas. No additional consultation regarding this portion of the project is necessary.

We will provide further comment upon receipt of the Phase III technical report for site 46MO117.

Architectural Resources:
Based on the information provided, it is our opinion that there are no buildings, sites or structures, eligible for or listed on the National Register of Historic Places, located in the projects Area of Potential Effect (APE). Therefore, the proposed discharge of fill material will have no effect on historic resources. No further consultation regarding architecture is necessary; however, we do ask that you contact our office if your project should change.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Emily K. Dale, Archaeologist or Aubrey Von Lindern, Historian, at (304) 558-0220.*

Sincerely,

Susan M. Pierce

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/EKD/ACV

RAM 145 Alternative

Submitted by U.S. Environmental Protection Agency

January 10, 2013

1/10/13

Buffalo Mountain Mine/King Coal Highway: Summary of the Preliminary Technical Review of Project Alternatives

As part of the EPA contractor's technical support review, they reviewed publicly available information from the Applicant's complete state mining permit (Surface Mining Control and Reclamation Act - SMCRA) application and its complete Clean Water Act (CWA) Section 404 permit application. Other environmental and technical documents were also reviewed. Documents that were extensively utilized are as follows:

- Publicly available information from Buffalo Mountain state mine permit application
  - Mapping
  - Geological information for Modeling
  - Landowner/Property line information
  - Road Alignment
- Jurisdictional Determination of streams
- Original Environmental Impact Statement for the King Coal Highway and the Draft Environmental Assessment of the King Coal Highway Delbarton to Belo Project

Among other things, the contractor utilized geologic and engineering information from the publicly available SMCRA application (S5018-07) for the Buffalo Mountain Surface Mine located in Mingo County, West Virginia in connection with the following activities:

- Developed Geologic Model to inform identification of practicable alternatives
- Identified Toxic Materials
- Developed Excess Spoil Disposal Alternatives

Geologic Model

Because no geologic model was publicly available or otherwise provided, the contractor used available data received to prepare an independent, original geologic model to conduct an analysis of the excess spoil volumes, the backfill volumes, and the amount of spoil material associated with each mining area as outlined in the mine plan/phase mapping. The data and method the contractor used to re-create the geologic model is described below.

- Drillhole coordinates, lithology, and coal seam identification were taken from the permit application section "Geologic Borehole Logs." Information from twenty-eight drillholes was utilized to create a data file that was imported into the Carlson Software® (see Drillhole Location map below). See Appendix B for a Summary Table of the information connected with the drillholes used to construct the Geologic Model.
- Using Carlson Software®, the contractor used an inverse distance (squared) algorithm to construct three-dimensional grids of the base elevation and thicknesses of the coal seams and seam partings. Base elevation grids estimate the vertical location of the coal seams across the property, while the thickness grids estimate seam thicknesses. Base and thickness grids were combined, using the Grid File Utilities in Carlson Software® to model coal seam pinchouts. The Upper Kittanning coal seam and overburden were not modeled, as they only occurred in two adjacent holes (DDH-20, 1.5'; WD-10, 0.75').

- After completion of the geologic model, fence diagrams were constructed to inspect the model for anomalies and completeness. Coal seam inconsistencies were identified centering around four drillholes: C43, C46, C47, and C81. Drillers' logs were retrieved and compared to the SMCRA Geologic Borehole Logs; the two logs appear to have discrepancies with each other. The drillhole data for the incorrect holes were re-entered into the spreadsheet from the drillers' logs. The data was imported into Carlson Software® and the geologic model was rebuilt. Newly generated fence diagrams validated the model with no significant offsets and beds dipping gently to the northwest.

Toxic Materials

Chemistry analyses, or quality data, were available for 6 drill holes: DDH-13, 14, 17, 20, 24, and 25. These data were taken from the Acid-Base Accounts and Selenium Data Summary Tables of the SMCRA permit application and included the results from chemical testing for concentrations of selenium and net neutralization deficiency and excess. The data and method used to create the block model of the potentially toxic overburden material is described below:

- Carlson Software® was used to build a block model of stacked quality grids with set interval spacing for both selenium and net neutralization (using an inverse distance algorithm) for each overburden strata. For these block models an interval spacing of three feet was chosen to comply with selenium minimum sampling interval guidelines (Selenium Implementation Guidance, WVDEP Permit Handbook, Section 32, November 13, 2007.) A selenium value greater than or equal to 1 mg/kg was used to flag "toxic" intervals of overburden.
- This stack of quality grids creates a block model configuration of overburden units that carry values for selenium and neutralization potential. By isolating the strata with "toxic" qualities, a physical location and volume of material were determined.
- After completion of the block models, fence diagrams were used to check the models for anomalies and completeness. Data gaps were observed above and below the coal seams in the fence diagrams. The coal seam intervals of the quality data were compared to the coal seam intervals from the drillhole data. Though seam thicknesses matched for all but one seam in one drillhole (DDH-14), the down-hole location of seam intervals did not match for numerous seams. The displacements were on a scale of tenths of inches so the quality intervals were adjusted to match the drillhole intervals. Coal seam thickness for the Five Block seam was off by 2.1 feet in drillhole DDH-14 due to incorrect lithology description in the drillers' log. This was corrected in the contractor's model.
- The Five Block seam was re-gridded within the geologic model and the block models were regenerated based on the corrected data. Fence diagrams were regenerated for inspection. No anomalies were identified.

In sum, approximately 4.8 million cubic yards of toxic material were identified in the permit area out of approximately 286 million cubic yards of total material.

POTENTIALLY TOXIC MATERIAL	
AREA	VOLUME CU. YDS.
A	972,000
B	290,000
C	115,000
D	255,000
E	825,000
F	91,000
G	167,000
DEEP MINE POINT	1,074,000
MK1	24,000
MK2	1,000
VF 11	975,000
TOTAL	4,789,000

Toxic Material Volumes

Excess Spoil Disposal Alternatives

To have an objective method for determining whether approximate original contour (AOC) has been achieved, West Virginia adopted a policy called "AOC+"[1] that guides the applicant through various steps to calculate the amount of material that should be backfilled in the mined area. In addition, AOC+ requires the permit applicant to review the most efficient excess spoil disposal areas and to ensure that the elevation of the valley fill is above the lowest coal seam so that stream length impacts are minimized and valleys are used more efficiently to house excess spoil. More recently, Kentucky adopted a fill minimization policy, RAM 145,[2] which builds upon AOC+ model. Like AOC+, RAM 145 provides a replicable process for determining the amount of spoil that can be placed in valley fills, while forcing more efficiency in spoil disposal by requiring the restoration of the pre-mining elevation. In addition, Kentucky's policy adds several new requirements that go beyond the AOC+ model such as applying the protocol to contour mines, increasing the fill deck height for contour mining operations, and defining the maximum stream length impact and ensuring the final design configuration does not impact more stream length. RAM 145 also characterizes the water quality of each potential valley fill so that functional impacts between various valley fill choices can be compared. Like the AOC+ model it is a tool for analyzing potential practicable alternatives in planning the mine and the disposal locations of generated excess spoil and meets approximate original contour requirements.

Using the RAM 145 analysis allows for flexibility in identifying alternatives, which could be different from the RAM145 model results. Alternatives can take the form of any configuration and take into account other factors so long as the stream length impacted is not more than the Maximum Stream Impact previously identified in the RAM 145 analysis. Therefore, the RAM 145 analysis is a starting point in this assessment rather than the end result.

[1] West Virginia Division of Mining and Reclamation (February 19, 2004). *Final AOC Guidance Policy Document*, available at: http://www.dep.wv.gov/dmr/handbooks/Documents/Permitting%20Handbook/sect29.pdf.
[2] Kentucky Division of Mine Permits (December 16, 2009). *Reclamation Advisory Memorandum 145: Fill Placement Optimization Process*, available at: http://minepermits.ky.gov/RAMS/RAM145.pdf.

To analyze the Excess Spoil Disposal Alternatives for the project, it is necessary to calculate the volumes of overburden and coal that will be mined on the permit and delineate the excess spoil that will be placed in the valley fills. Excess spoil, which is also known as "swell," is defined as 25% of the total overburden volume.

Utilizing the Geologic Module of Carlson Software®, volumetrics for overburden and coal were calculated for all of the Mine Areas (shown in Figure 3, above) described in Section N-1 of the Applicant's SMCRA Permit. Shown below is a summary table comparing the overall volumes shown in the SMCRA permit and those calculated by the contractor.

VOLUMETRICS	SMCRA PERMIT	MW MODEL	% DIFF.
OVERBURDEN VOLUME	271,000,000	286,000,000	6
SWELLED OVERBURDEN VOLUME	338,000,000	358,000,000	6
COAL TONNAGE	16,000,000	17,000,000	6
STRIP RATIO	16.9	16.8	2

Comparison of Model Volumetrics

Differences between the SMCRA Permit and the contractor's model volumes are likely due to variations in topographic mapping, geologic modeling assumptions, and mining areas unavailable to the contractor. Because the differences between the two models are within 6 percent and because the contractor's model is more conservative since it predicts that there is more overburden to dispose of (above table) it is considered reasonable.

Upon completion of the geologic modeling and the overall spoil balance calculations, the Initial Backfill (IBKF) analysis was undertaken. This surface defines the volume of swelled spoil material that can be placed on the mined bench after taking into account roads, stability, ponds, and other design features. The initial backfill also defines the ridgelines and drainage boundaries post-mining. The process for defining the initial backfill is as follows:

- A grid surface is constructed from the mined out benches of each coal seam along with the adjacent topography.
- Starting at the cropline of each mined coal seam, a 60-foot wide bench is left for construction of a safety berm, access road, and sediment structures. The toe of the backfill (IBKF) will begin at the 60-foot offset.
- The backfill is then designed with a 2.2H to 1V maximum outslope from the 60-foot offset to approximate the original contour configuration while reclaiming all excavated highwalls.
- Note that while the spoil balance in the chart defining the excess spoil volume is 160,000,000, the various fill configurations that follow may have spoil volumes slightly more than 160,000,000 due to slight variations in spoil volume that may occur with different designs.

The table below represents the contractor's Spoil Balance for the Buffalo Mountain Surface Mine:

MINING AREA	COAL TONNAGE	OVERBURDEN VOLUME	STRIP RATIO	SWELLED OVERBURDEN VOLUME	IBKF VOLUME	EXCESS SPOIL VOLUME
	tons	cu yds	cy yds/ton	cu yds	cu yds	cu yds
A	1,700,000	32,000,000	18.8	40,000,000	23,900,000	16,100,000
B	1,200,000	20,100,000	16.8	25,200,000	12,700,000	12,500,000
C	1,100,000	12,100,000	11.0	15,100,000	7,500,000	7,600,000
D	200,000	1,300,000	6.5	1,600,000	1,300,000	300,000
E	500,000	9,300,000	18.6	11,600,000	6,700,000	4,900,000
F	2,700,000	40,300,000	14.9	50,300,000	27,400,000	22,900,000
G	4,000,000	72,800,000	18.2	91,000,000	48,800,000	42,200,000
DEEP MINE	600,000	16,600,000	27.7	20,700,000	11,200,000	9,500,000
MK1	400,000	4,100,000	10.3	5,100,000	2,500,000	2,600,000
MK2	100,000	1,400,000	14.0	1,700,000	600,000	1,100,000
VF11	4,500,000	76,200,000	16.9	95,300,000	55,000,000	40,300,000
TOTALS	17,000,000	286,200,000	16.8	357,600,000	197,600,000	160,000,000

Mine Only Alternative

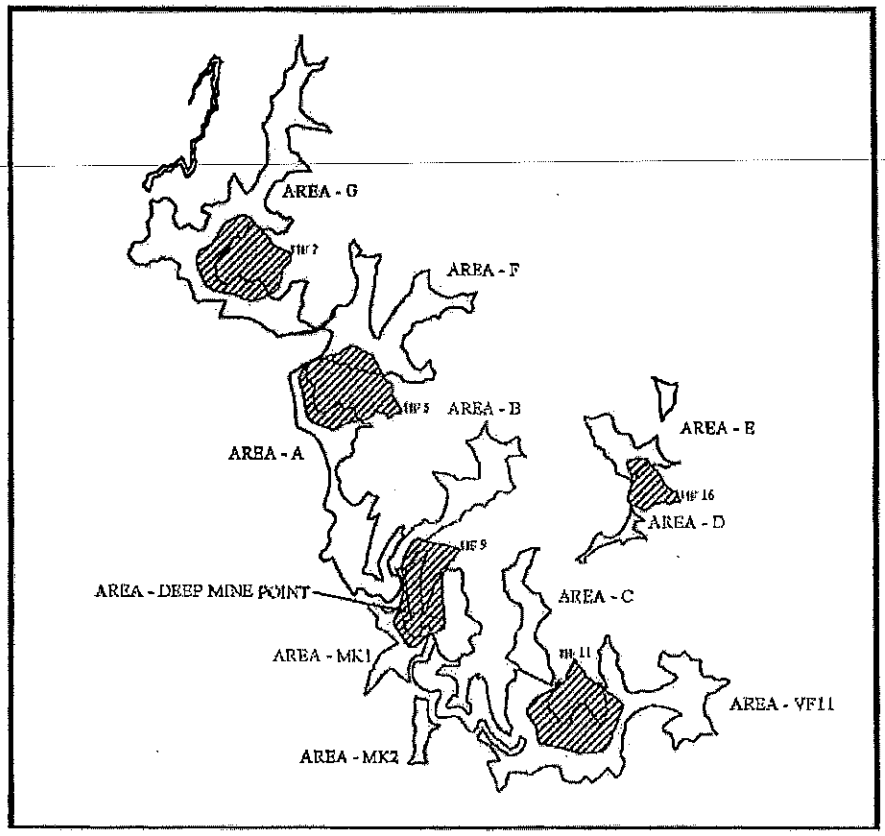
The Mine Only Alternative assumes a return to AOC with no variances. Shown below are the factors used in the Mine Only analysis in order to ensure the economic viability of the operation:

- Using the contractor's geologic model, calculate the overburden and coal volumes for each mining area
- Design an IBKF backfill configuration for the mining areas using RAM145
- Calculate excess spoil for each mining area by subtracting the IBKF volume from the swelled overburden for each respective mining area
- Incorporate additional backstacking of the fill deck in the valley fill design
- The excess spoil disposal structures (valley fills) should be located within a maximum haul length of 1 mile (one way) of each respective Mining Area

The targeted fills listed below are the results of these criteria.

MINING AREA	COAL TONNAGE	OVERBURDEN VOLUME	STRIP RATIO	SWELLED OVERBURDEN VOLUME	IBKF VOLUME	EXCESS SPOIL VOLUME	TARGET FILL
	tons	cu yds	cy yds/ton	cu yds	cu yds	cu yds	
A	1,700,000	32,000,000	18.8	40,000,000	23,900,000	16,100,000	5,9
B	1,200,000	20,100,000	16.8	25,200,000	12,700,000	12,500,000	9
C	1,100,000	12,100,000	11.0	15,100,000	7,500,000	7,600,000	11
D	200,000	1,300,000	6.5	1,600,000	1,300,000	300,000	16
E	500,000	9,300,000	18.6	11,600,000	6,700,000	4,900,000	16
F	2,700,000	40,300,000	14.9	50,300,000	27,400,000	22,900,000	2,5
G	4,000,000	72,800,000	18.2	91,000,000	48,800,000	42,200,000	2
DEEP MINE	600,000	16,600,000	27.7	20,700,000	11,200,000	9,500,000	9
MK1	400,000	4,100,000	10.3	5,100,000	2,500,000	2,600,000	9
MK2	100,000	1,400,000	14.0	1,700,000	600,000	1,100,000	9
VF11	4,500,000	76,200,000	16.9	95,300,000	55,000,000	40,300,000	11
TOTALS	17,000,000	286,200,000	16.8	357,600,000	197,600,000	160,000,000	

Mine Only – Spoil Balance with Targeted Fills



Mine Only – Valley Fill Alignment

FILL NO.	VOLUME cu. yds	STREAM IMPACTS ft.	STREAM EFFICIENCY cu. yds. / foot
2	29,000,000	4,771	6,078
5	47,000,000	4,488	10,472
9	39,000,000	3,288	11,860
11	48,000,000	4,115	11,664
16	6,000,000	1,804	3,326
TOTAL	169,000,000	18,467	9,151

Mine Only – Spoil Balance with Targeted Fills

The Key Metrics table shown below is a comparison of the Applicant's current proposal and the contractor's Mine Only Alternatives.

Alternative	# of Fills	Excess Spoil Volume (cu.yds)	Coal (tons)	Stream Impacts (P/I) (feet)	Stream Impacts (E) (feet)	Total (feet)	Excess Spoil/Foot (cu.yds/ft)	WVSWVM Debits	% Drainage thru Fills	Basal Drainage thru fills (acres)	Fill Volume below lowest coal seam (cu.yds)	Slope < 10%
Mine Only	5	160,000,000	17,000,000	15,984	2,483	18,467	8,664	26,000	28	188	46,000,000	16
Proposed Road (Consol)	13	166,000,000	16,070,000	34,143	7,508	41,651	3,985	44,000	52	564	Unknown	Unknown

Alternative for mine plus Road PMLU

West Virginia Department of Transportation (WVDOT) parameters were incorporated consistent with the Applicant's proposal. To maintain consistency with the Applicant's proposal and to ensure the practicability of the operation from the Applicant's perspective, the road alignment analysis used the same parameters as the Applicant's road alignment. Shown below are the main assumptions used by the contractor, based upon the Applicant's design.

- Starting and ending points of the contractor's Road Alignment alternative were based on the Applicant's Proposed Road from the permit application.
- The contractor's Road Alignment alternative adhered to the maximum horizontal curvature exhibited in the applicant's Proposed Road .
- Speed tables from WV DOT were utilized for maximum horizontal and vertical grade changes in the contractor's road alignment alternative.
- An overall 300-foot wide road footprint was used in the contractor's Road Alignment alternative.
- The overall Spoil Balance will be honored, with redistribution of the excess spoil to areas needed for road foundation.
- Mine spoil material adjacent to the road alignment was sloped at a minimum of 2.4H : 1V.

Potential Road Alignment Alternative

The initial phase of the contractor's Road Alignment alternative used the combination of the Mine Only alternative fill configuration and the IBKF as the base surface. The iterative steps taken to minimize the stream impacts and number of excess spoil structures is outlined below:

- Utilizing the assumptions from the WVDOT as described above, a rough road alignment was located on the permit area. This alignment was adjusted several times to determine the sizes and locations of any additional valley fills that would be required due to the redistribution of the excess spoil volume.
- Upon identification of the required fills needed to construct the road, spoil was placed on the mining bench first before extending the toe of fills, thereby maximizing their efficiency, and minimizing stream impacts.
- All design parameters outlined in the RAM145 analysis were honored:
    - Maximum slopes of 2.4H to 1V on all reclaimed slopes.
    - Bench widths for sediment structures remain at 60 feet.
- 50-foot safety benching was used at the top of each fill before sloping back to the perimeter of the road at 2.4:1

- Since Mining Areas D and E were not essential to the road alignment and the coal tonnage contained in this area was minimal compared to the entire operation, but Mining Areas D and E were still included in the analysis to give an alternative that includes mining these areas.

ALTERNATIVE	VOLUME cu. yds	STREAM IMPACTS ft.	STREAM EFFICIENCY cu. yds. / foot
MWC Road Alignment	160,000,000	26,235	6,099

The Key Metrics table shown below is a comparison of the Applicant's Proposed Road and the contractor's Road Design alternative.

Alternative	# of Fills	Excess Spoil volume	Coal	Perennial and Intermittent	Ephemeral	Total	Excess Spoil per foot	SWVM Debits	Basal Drainage	Drainage thru Fills	Fill Volume Below Lowest Seam	Slope <10%
		cu.yds.	tons	ft	ft	ft	cu.yds./ft	Units	acres	%	cu.yds.	%
Proposed Road (CONSOL)	13	166,000,000	16,070,000	34,143	7,508	41,651 [3]	3,985	44,000 [2]	564	52	- [1]	- [1]
MWC ROAD ALIGNMENT	7	160,000,000	17,000,000	22,067	4,168	26,235	6,099	36,000	296	41	86,000,000	27

[1] No information available
[2] Used SWVM 1.0 - No temporal losses were calculated for unmitigated streams. Permanent debits approximated from SWVM sheets.
[3] Stream impacts for Proposed Road (CONSOL) came from June 2010 CMP
[4] Partial JD information available

Below is an explanation of some of the metrics that were considered and why they were considered.

- ***Excess Spoil per foot of Stream Impact:*** This metric measures the efficiency of the valley fill for accommodating excess spoil in relation to the stream impacts

  Objective: The objective is to maximize the spoil storage per foot of stream impact.

- ***Percentage Drainage thru Fills:*** This metric measures the percentage of the total drainage area that drains through the toe of each valley fill. The total drainage area is defined by the area of mining plus the area of all valley fills. Studies have indicated that the flows from the toe of conventional valley fills have higher conductivity levels.[3] Therefore reducing the portion of the mine area that drains through the valley fills is a means to address this issue.

  Objective: The objective is to minimize the areas draining through valley fills in order to minimize impacts to water chemistry.

- ***Basal Drainage thru Fills:*** This metric measures the drainage area of the pit floor, whose drainage will report to the perimeter of a valley fill due to the overall dip of the coal bed.

  Objective: The objective is to minimize the areas draining through valley fills in order minimize impacts to water chemistry

[3] *See, e.g.*, Pond, G.J., Passmore, M.E., et. al, 2008, Downstream effects on mountaintop coal mining: comparing biological conditions using family- and genus-level macroinvertebrate bioassessment tools, *J.N. Am. Benthol. Soc.*, v. 27, p.717-737.

- ***Fill Volume below Coal Removal Boundary:*** This metric measures the volume of excess spoil placed in the valley fill which is below the pavement of the lowest seam mined.

  Objective: It is important to minimize this fill material so that the amount of fill material exposed to groundwater flow is reduced.

- ***Slope Zone Analysis:*** . Steep slopes facilitate movement of water downslope to the stream channel and transport of beneficial detrital material downstream to perennial streams. Changes in the watershed slope can alter movement of water and nutrients downstream at a reduced rate. The scoring of average percent slope places 30-45% or unaltered areas in an ideal condition category and excessively high (>65%) and very low (<10%) slopes in an adverse condition category. This metric measures the percentage of the total watershed that has a slope less than 10%.

  Objective: The objective is to minimize the areas with a slope less than 10% because such slopes are associated with increased infiltration of surface water through fill and backfill areas, thereby increasing the potential for release of pollutants.

In summary, the contractor reviewed the information in the applicant's original proposal which includes 13 valley fills and over 41,000 feet of stream impacts. The contractor's analysis considered whether there were potential alternatives that would reduce environmental impacts while retaining the original mine plan, permit area, and mined coal tonnage. The analysis first assessed the options for developing the mine by itself (Mine Only) and assumed the highway would remain in its previous alignment location instead of being combined with the mining activity. The contractor's preliminary technical analysis shows that there is a potential alternative that could mine the same amount of coal in an economical and feasible way, but by only utilizing 5 valley fills and impacting 18,467 feet of stream.

After developing alternatives for a Mine Only alternative that reduced the number of valley fills and stream impacts, the preferred (as identified by the applicant) King Coal Highway road alignment was added to the Mine Only alternative (Road and Mine). Using the same road design parameters and mining the same amount of coal as outlined in the Applicant's proposal, the contractor's analysis identified a potential Road and Mine alternative that could reduce the number of valley fills from 13 to 7 and reduce stream impacts from over 41,000 feet to just over 26,000 feet compared to the Applicant's original proposed design. This preliminary technical analysis was based on the project's draft stated Purpose and Need of a mine and a highway, with no additional discharges associated with PMLU features other than the roadway.

Alternative	# of Fills	Excess Spoil volume	Coal	Perennial and Intermittent	Ephemeral	Total	Excess Spoil per foot	SWVM Debits	Basal Drainage	Drainage thru Fills	Fill Volume Below Lowest Seam	Slope <10%
		cu. yds.	tons	ft	ft	ft	cu. yds./ft	Units	acres	%	cu. yds.	%
Proposed Road (CONSOL)	13	166,000,000	16,070,000	34,143	7,508	41,651 [3]	3,985	44,000 [2]	564	52	- [1]	- [1]
HF - 2	1	28,000,000	Cannot analyze individual fills	3,809	1,338	5,147	5,440	6,876	49	6	16,187,633	Cannot analyze individual fills
HF - 5	1	23,000,000		3,799	895	4,694	4,900	7,838	22	7	23,637,660	
HF - 8	1	31,000,000		2,820	1,195	4,015	7,721	4,903	42	7	13,899,016	
HF - 9	1	26,000,000		2,849	197	3,046	8,536	3,720	57	5	7,428,904	
HF -10A	1	23,000,000		2,797	398	3,195	7,199	4,200	37	7	11,654,779	
HF - 10B	1	8,000,000		2,448	10	2,458	3,255	3,231	35	4	4,635,478	
HF - 11	1	21,000,000		3,545	135	3,680	5,707	5,186	55	6	8,892,327	
MWC ROAD ALIGNMENT	7	160,000,000	17,000,000	22,067	4,168	26,235	6,099	36,000	296	41	86,000,000	27

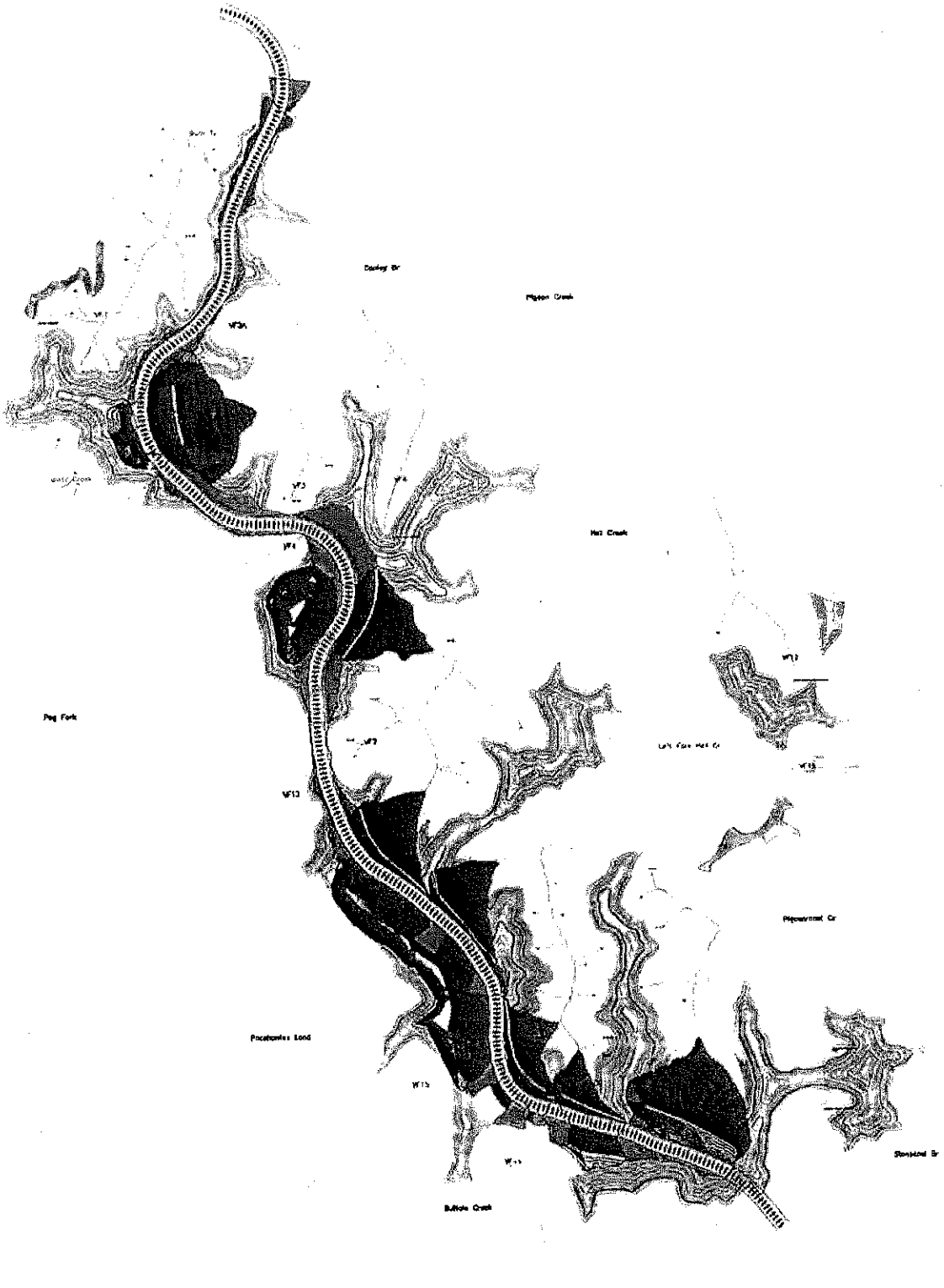
[1] No information available

[2] Used SWVM 1.0 - No temporal losses were calculated for unmitigated streams. Permanent debits approximated from SWVM sheets.

[3] Stream Impacts for Proposed Road (CONSOL) came from June 2010 CMP

[4] Partial JD information available

Note: The excess spoil volumes on the Individual Fills are approximate due to the integration of the road into the IBKF surface.



Legend

Morgan Worldwide Consultants
P O Box 888
Lexington, Ky 40508

Buffalo Mountain

DRAFT
MWC Road Alignment

Contract No EP-DPA-13-C-0019

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APPENDIX F

Response to Formal Comments

Executive Summary for Responses to Comments

This Appendix contains two documents regarding comments received by the United States Army Corps of Engineers (Corps) and the Federal Highway Administration (FHWA) during the preparation of this Draft Supplemental Environmental Impact Statement (DSEIS).

The Corps issued a Public Notice (PN) for the proposed Buffalo Mountain Surface Mine on December 3, 2008 (PN 2008-491-TUG) in accordance with Corps' regulations at 33 CFR 325.3. This PN was required to advertise the proposed discharges of fill material into waters of the U.S. (regulated under Section 404 of the Clean Water Act) that would occur in association with the mining activity and associated construction of a portion of the King Coal Highway between Delbarton and Belo, Mingo County, West Virginia. The comment period for PN 2008-491-TUG closed on January 17, 2009. Additional comments regarding this PN were received after the close of the comment period; it is generally Corps' policy to accept substantive comments on proposed Section 404 individual permits while still reviewing potential authorization of the proposed activities. One comment/response table has been prepared to show the commenters, the date of receipt of the comment letters, the comments and the responses provided by the Corps.

The FHWA and the Corps jointly issued a Notice on February 1, 2012 advertising a public scoping meeting on February 16, 2012 at Mingo Central High School. The comment period for scoping of the DSEIS closed on March 19, 2012. Comments were received by the FHWA and the Corps both during the public meeting as well as in written letters before and after the public meeting. A second comment/response table has been prepared to show the commenters, the date of receipt of the comment letters or the date of the comment, the comments and the responses provided jointly by the FHWA and the Corps. A third document in this Appendix is a Memorandum for Record dated February 16, 2012 which contains comments noted by the Corps during the public meeting. The fourth and final document in this Appendix is the meeting minutes as recorded by the FHWA during the public scoping meeting of February 16, 2012.

Responses to Comments Received by Corps during Public Notice 2008-491-TUG

Public Notice 2008-491-TUG was issued by the Corps on December 3, 2008, with the comment period closing on January 17, 2009.

	Comment	Response
United States Environmental Protection Agency (EPA)-1 (January 20, 2009)	"EPA has significant concerns regarding the cumulative impacts of this project on the watershed, impairment of downstream water quality and the significant amount of impacts to perennial stream channels. EPA does not believe that the proposed mitigation will adequately offset the persistent and permanent impacts to the aquatic ecosystem communities and functions. "The Clean Water Act Section 404(b)(1) Guidelines state that the 'fundamental precept of these Guidelines is that dredged and fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystem of concern.' Based on information gathered for our review of the Public Notice EPA believes that this project, as proposed, has not made such a demonstration."	Cumulative impacts of the Delbarton to Belo Project and the No-Build Alternative are discussed in the Draft Supplemental Environmental Impact Statement (DSEIS) Chapter 4 Section 4.7. The proposed mitigation associated with the Buffalo Mountain Surface Mine is discussed in the DSEIS Chapter 4 Section 4.3.6. This section of the DSEIS provides an explanation of how the proposed compensatory mitigation plan meets the requirements of 33 CFR 332 (the "Mitigation Rule"). The Corps discusses the Buffalo Mountain Surface Mine's compliance with the CWA Section 404 (b) (1) Guidelines in Appendix D of the DSEIS.
EPA-2 (January 20, 2009)	"This mine is proposed primarily in the headwaters of Pigeon Creek, an area that is relatively intact with forested areas typically	Section 402 of the CWA (also referred to as the National Pollution Discharge Elimination System (NPDES)) and its implementing regulations in the state of West Virginia (WV)

	Comment	Response
	undisturbed and the streams themselves likely attaining water quality standards. However, Pigeon Creek itself is listed as an impaired stream on the WVDEP's 303(d) list for mining-related pollutants. Pigeon Creek is a direct tributary to the Tug Fork River which has an approved TMDL (2002), and the report indicates that the tributary delivers the highest load of Aluminum, Iron, and Manganese than any other tributary to the Tug Fork in West Virginia. The ability for Pigeon Creek to assimilate additional pollutants that will occur from this activity needs to be carefully and strongly considered, especially in light of other extensive mining operations in the sub- watershed. In addition, considering the goal of the Clean Water Act to improve and maintain the biological, chemical, and physical integrity of the nation's waters, consideration must be made on the ability to achieve the goal of the Tug Fork TMDL and of the CWA itself when these additional impacts are occurring in the watershed."	provide a mechanism to ensure discharges of pollutants are in compliance with the CWA. The NPDES permit for the proposed Buffalo Mountain Surface Mine was issued by the WV Department of Environmental Protection (WVDEP) on October 29, 2012 (after elevated review by the USEPA). In addition, Section 401 of the CWA and its implementation regulations in the state of WV provide a mechanism to ensure a proposed project does not violated antidegradation standards for water quality in waters of the state. The WVDEP issued a water quality certification (WQC) for the proposed Buffalo Mountain Surface Mine on November 23, 2011. Compliance with these permits would ensure no adverse effects to water quality, including the TMDL for the Tug Fork River, occur as a result of the discharges of fill material proposed for these mining activities.
EPA-3 (January 20, 2009)	"Cumulative impacts, as indicated above are required to be considered in the 404(b)(1) Guidelines analysis. The Guidelines require an analysis to determine if significant degradation of the aquatic ecosystem will occur, with special emphasis on the persistence and permanence of effects, both individually and cumulatively. The	The DSEIS Chapter 4 Section 4.7.3 contains the cumulative effects analysis (CEA) associated with the Delbarton to Belo Project (which includes the proposed Buffalo Mountain Surface Mine). The Corps also evaluated cumulative effects in association with the 404 (b) (1) Guidelines, the documentation for which is contained in the DSEIS Appendix D.

	Comment	Response
	information at this time is insufficient to make such a determination. The question is whether this activity in combination with other activities, including past, present, and reasonably foreseeable mine operations, and possible development of the area as a result of the proposed King Coal Highway, rises to a level of significance that needs to be comprehensively evaluated through both the CWA provisions and under the Corps' NEPA responsibilities."	
EPA-4 (January 20, 2009)	"Evidence of the extent of persistent and permanent degradation to aquatic communities exists. EPA Region 3's Freshwater Biology Team has extensively investigated the downstream effects of mountaintop mining and the associated valley fills. The results indicate that these types of activities proposed by the applicant are strongly related to downstream biological impairment, as indicated by raw taxonomic data, individual metrics that represent important components of the macroinvertebrate assemblage, or when multi- metric indices are considered (Pond et al 2008). Their results also confirm earlier studies that mountaintop mining impacts to aquatic life are strongly correlated with ionic strength in the Central Appalachians. In U.S. EPA's dataset, all mined sites with the specific conductance greater than 500 µS/cm were rated as impaired with a genus-level	CONSOL has provided an Aquatic Ecosystem Protection Plan (AEPP) that was approved by the WVDEP as part of the NPDES permit for the Buffalo Mountain Surface Mine. The AEPP contains remedial actions that would be implemented by CONSOL should WV Stream Condition Index (WVSCI) scores indicate potential adverse effects associated with conductivity. The WVSCI is the approved benthic macroinvertebrate monitoring protocol in the state of WV.

	Comment	Response
	multi- metric index (GLIMPSS). Undisturbed streams in the Central Appalachians are naturally very dilute, with background conductivities generally less that 75 µS/cm. Downstream of mine sites, specific conductance and component ions can be elevated twenty to thirty times over the background levels observed at un-mined sites (Bryant et al. 2002). This increase in conductivity impairs aquatic life use and is persistent over time. This impact cannot be easily mitigated or removed from stream channels."	
EPA-5 (January 20, 2009)	"The results of our Freshwater Biology Team's study indicate that the severity of the biological impairment rises to the level of a violation of water quality standards (WQS) when States or USEPA use biological data to interpret narrative standards. For example, in West Virginia, the narrative WQS reads,'…no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.' WVDEP uses biological data to interpret their narrative WQS and then list mining-impaired streams on their 303(d) lists. The CWA Section 404(b)(1) Guidelines at 230.10(b) state that 'no discharge of dredged or fill material shall be permitted if it (1) Causes or contributes, after consideration of disposal site dilution and dispersion, to violation of any applicable State water quality	The WVDEP issued the WQC for the proposed discharges of fill material associated with the Buffalo Mountain Surface Mine on November 23, 2011. CONSOL's compliance with the WQC would ensure the proposed mining project would not violate state WQS. In addition, CONSOL has an approved AEPP which contains a monitoring plan and remedial actions to help prevent downstream impacts associated with discharges of pollutants regulated under the NPDES program. The monitoring plan includes WVSCI benthic macroinvertebrate sampling. WVSCI is the biological monitoring protocol used by the WVDEP to set WQS for waters of the state.

	Comment	Response
	standard…' Evidence to date shows that valley fills permitted for this mining-operation may result in downstream impacts that may lead to impairment of the aquatic life use and would therefore result in a violation of West Virginia water quality standards. It is the Corps' responsibility under WVDEP's 401 Certification (standard condition #10) that their 404 permit '…comply with water quality standards contained in the West Virginia Code of Regulations, Requirements Governing Water Quality Standards, Title 47, Series 2.'"	

	Comment	Response
EPA-6 (January 20, 2009)	"EPA is also concerned that the project as proposed does not represent the least environmentally damaging practicable alternative. The proposed project is non-water dependent, meaning that it does not require or need to be sited in or near water to meet its basic project purpose. The CWA Section 404(b)(1) Guidelines clearly state that alternatives are presumed to be available for non-water dependent activities that do not involve the use of the aquatic ecosystem, including jurisdictional wetlands [40 CFR 230.10(a)(3)]. Only the least environmentally damaging practicable alternative (LEDPA) can be permitted and in order to identify the LEDPA the applicant's alternatives analysis must examine a full range of alternatives which would avoid and minimize impacts to the maximum extent practicable. The proposed post mining land use for five miles of King Coal Highway requires that the applicant leave portions of the mine site to West Virginia Department of Highways (WVDOH) specifications for line and rough grade for the highway, and areas for utility right-of-way. This leads our agency to question if all methods of avoidance and minimization are being incorporated due to the inability to return the areas to approximate original contour (AOC), or AOC+, or to further back stack fill material onto the valley fills. In regards to the construction of the highway, if WVDOH were undertaking the venture themselves would the impacts be minimized through such methods as bridging the perennial channels, or the selection of an alignment with less aquatic impacts? Consideration of alternatives	The discussion of alternatives is contained in the DSEIS Chapter 3, including the Corps' selection of the LEDPA (the Delbarton to Belo Project). Avoidance, minimization and compensation measures proposed by CONSOL are discussed in the DSEIS Chapter 4 Section 4.3.6. In addition, avoidance and minimization measures by CONSOL are discussed in the Corps' Section 404 (b) (1) Guidelines analysis contained in the DSEIS Appendix D. The WVDEP issued the NPDES permit for the proposed Buffalo Mountain Surface Mine on October 29, 2012.

	Comment	Response
EPA-7 (January 20, 2009)	"The mitigation statement focuses on physical parameters. The conceptual plan is likely inadequate to fully compensate for lost functions of the aquatic ecosystem and will not be able to return aquatic life uses downstream. To date it has not been demonstrated that the re-establishment or establishment of headwater streams at these sites are adequately constructed or develop over time to provide the functions of natural headwater streams. EPA believes these impacts are a loss of the aquatic ecosystem and cannot be adequately restored or replaced."	The DSEIS Chapter 4 Section 4.3.6 contains a description of CONSOL's CMP and its compliance with the Mitigation Rule. The Mitigation Rule requires that functions lost due to the discharges of fill material must be adequately replaced. Special conditions associated with the Section 404 permit for the proposed Buffalo Mountain Surface Mine (should it be approved) would include performance standards for the proposed mitigation streams, including the proposed establishment areas as discussed in the above section of the DSEIS.
EPA-8 (January 20, 2009)	"Thank you for opportunity to provide comments for this proposed project. In summary, EPA believes that this proposal will contribute to a violation of the State's water quality standards downstream and that the direct and cumulative impacts from this and future mines and possible development associated with the King Coal Highway will be persistent and permanent and cannot be sufficiently or effectively compensated through the proposed mitigation, therefore EPA must recommend denial of the permit as proposed. A thorough analysis of the impacts and their effects on the watershed are warranted. Past projects of this magnitude and uncertainty of effects have given rise to the development of an Environmental Impact Statement as required by the National	The WVDEP issued the WQC for the proposed Buffalo Mountain Surface Mine on November 23, 2011. CONSOL's compliance with the WQC would prevent the violation of state WQS. Direct, indirect and cumulative effects associated with the proposed mine and associated Delbarton to Belo Project are discussed in the DSEIS Chapter 4 Section 4.7. The DSEIS Chapter 4 contains a discussion and analysis of the environmental consequences of the Delbarton to Belo Project (which includes the Buffalo Mountain Surface Mine). The Federal Highway Administration (FHWA) and the Corps have completed a DSEIS in association with the Delbarton to Belo Project to assess the potential effects of that project and the No-Build Alternative, which would result from the denial of the Section 404 permit for the Buffalo Mountain Surface Mine.

	Comment	Response
	Environmental Policy Act and EPA believes that this project also requires such an investigation and evaluation."	
West Virginia Department of Highways (December 18, 2008)	"This is to advise that the West Virginia Department of Transportation, Division of Highways, District Two, has reviewed the proposed work as shown on the attached maps and does not anticipate the proposed work will adversely affect any facility of the Division of Highways."	Comment noted.
Appalachian Center for the Economy and the Environment (ACEE)-1 (December 16, 2008)	"...[USACE] must proceed in preparing a full Environmental Impact Statement in order to comply with the mandates of the National Environmental Policy Act....Ultimately however,...the permit must be denied."	See response to comment EPA-8. Based on the analysis contained in the DSEIS, the Corps has determined the Buffalo Mountain Surface Mine as described in the DSEIS could be approved under Section 404.
ACEE-2 (December 16, 2008)	*The Commenter makes several points supporting the general comment that the Public Notice is inadequate:* "[T]he Public Notice Bulletin is so skeletal as to prevent in-depth meaningful public comment. In addition, neither the mining nor the NPDES permit applications been approved by the WVDEP. Thus, the Corps should re-notice the application after it has added this information to the Bulletin. "The Council on Environmental Quality ('CEQ') regulations require give and take between an agency and members of the public."	Public Notice (PN) 2008-491-TUG was issued by the Corps on December 3, 2008. This PN was prepared in accordance with the requirements of 33 CFR 325.3. The Surface Mining Control and Reclamation Act (SMCRA) mining permit was issued by the WVDEP on November 15, 2012. The NPDES permit was approved by the WVDEP on October 29, 2012. Comments were accepted from the public and agencies on PN 2008-491-TUG through January 17, 2009. The SMCRA review process and WQC review process both involved public notice and comment. CONSOL provided both an environmental information document (EID) and a proposed CMP in association with the Section 404 permit application after the closure of the

	Comment	Response
	"The application could not reasonably have been considered complete without the EID and the CMP. Those documents are necessary for a clear understanding of the nature, magnitude, and likely impacts of the proposed activity." "[T]he Corps fails to notify the public about its EA and FONSI decisions. This violates the NEPA regulations, which provide a federal agency 'shall make the finding of no significant impact available to the affected public as specified in § 1506.6.' 40 C.F.R. 1501.4(e)(1)."	PN period. No decision was made by the Corps on the proposed Buffalo Mountain Surface Mine in association with an Environmental Assessment or Finding of No Significant Impact. The proposed Mine is being evaluated through an EIS in association with the Delbarton to Belo Project.
ACEE-3 (December 16, 2008)	"The purpose of the applicant's project to extract the amount of coal listed in the application. However, because the purpose is narrow, the company has unreasonably limited the identification and consideration of alternatives that could minimize impacts to the environment. The Corps has the responsibility to define the project purpose more broadly to balance the extraction of coal with vigorous protection of the environment. The project purpose should instead be defined as 'the placement of excess overburden material generated by approved mining operations.'"	The Corps has defined the Buffalo Mountain Surface Mine's basic purpose and overall purpose in the DSEIS Chapter 2 Section 2.3.1. The Corps defined these purposes in accordance with 40 CFR 230.10.
ACEE-4 (December 16, 2008)	*The Commenter makes several points supporting the general comment that all practicable alternatives were not explored:* "[B]ecause the purpose is narrow, the company has unreasonably limited the	The alternatives to the proposed mining project are discussed in the DSEIS Chapter 3. Avoidance and minimization measures are discussed in the DSEIS Chapter 4 Section 4.3.6 as well as the Section 404 (b) (1) Guidelines contained in the DSEIS Appendix D. Review of the mining engineering plan

	Comment	Response
	identification and consideration of alternatives that could minimize impacts to the environment." *USACE must* "review the engineering plan and assure the *legitimate* consideration of alternative mining plans that are less destructive." "The company has illegally limited the scope of alternatives by excluding any alternative that did not meet its 'maximized recovery' test." " 'industry and private developers should first seek project sites that will have the least damaging effects on wetlands and their ecosystems.' Sierra Club v. Flowers, 423 F. Supp.2d 1273, 1351 (S.D. Fla. 2006)." "In the past mining companies have demonstrated that when given the appropriate incentive they can create financially feasible mining plans that use only ephemeral streams or non-jurisdictional areas for "fill disposal. "The project is not a 'water dependent' activity and the Corps and the project would fill 'special aquatic sites,' including wetlands and riffle and pool complexes. Thus, the Corps' regulations create a rebuttable presumption that there are	is outside of the scope of review by the Corps as that review is completed by the WVDEP in association with the SMCRA permit. As discussed in the DSEIS Chapter 3, CONSOL explored alternative mining and overburden disposal methods that met the criteria indicated in the Chapter. The Corps reviewed these alternatives and has determined CONSOL's preferred alternative is the LEDPA as discussed in the DSEIS Chapter 3. The LEDPA was developed by CONSOL to avoid and minimize impacts to waters of the U.S. while meeting the overall project purpose. Even after the avoidance and minimization measures, proposed discharges of fill material would include intermittent and perennial streams (as well as ephemeral streams). Although the proposed mining project would include discharges of fill material into 0.2 acre of wetland, there are no riffle and pool complexes being impacted by the proposed discharges of fill material.

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	practicable and environmentally preferable alternatives, and such alternatives are presumed to have less adverse impact unless 'clearly demonstrated' otherwise. Flowers, 423 F. Supp.2d at 1352; 40 C.F.R. § 230.10(a)(3)."	
ACEE-5 (December 16, 2008)	*The Commenter makes several points supporting the general comment that the mitigation plan is flawed, including:* "[T]he Corps' stated policy on mitigation requires an analysis of stream functions and values and a net increase in those aquatic functions and values. However, the Corps has no valid guidelines for stream assessment on a functional basis at all." "[T]here are no follow-up studies that show that stream functions have been replaced or improved by mitigation." "A plan to make conditions better in a different location cannot mitigate impacts into insignificance on the affected area."	The Corps has analyzed CONSOL's proposed CMP in accordance with the Mitigation Rule and this analysis is included in the DSEIS Chapter 4 Section 4.3.6. The Corps determined the proposed CMP meets the requirements of the Mitigation Rule and the CMP would adequately compensate for the adverse effects associated with the proposed discharges of fill material into waters of the U.S. The proposed CMP includes mitigation that would occur either on the proposed mine site or immediately adjacent to it in the same watersheds affected by the proposed discharges of fill material into waters of the U.S.
ACEE-6 (December 16, 2008)	"The mining proposal does not comply with West Virginia water quality standards"	The WVDEP issued the Section 401 WQC on November 23, 2011, indicating the proposed discharges of fill material into waters of the state and the associated mitigation meet state WQS.
ACEE-7 (December 16, 2008)	"Environmental risks must be considered and quantified related to toxic selenium discharges."	Selenium is regulated under the NPDES program by the WVDEP. The WVDEP issued the NPDES permit for the proposed Buffalo Mountain Surface Mine on October 29, 2012.
ACEE-8	"The in-stream treatment ponds violate the	The WVDEP approved the use of in-stream sediment ponds

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(December 16, 2008)	Clean Water Act."	in association with the Buffalo Mountain Surface Mine under the SMCRA permit issued for the mine. The treatment of sediment and NPDES-regulated chemical constituents was approved by the WVDEP with the issuance of the NPDES permit (Section 402 of the CWA). The Corps is reviewing the proposed discharges of fill material into waters of the U.S. in association with the proposed ponds. Based on a review of these proposed discharges of fill material into waters of the U.S., the Corps has determined they would be in compliance with Section 404 of the CWA. CONSOL would re-establish the streams impacted by the proposed ponds upon completion of mining and reclamation of the mining area.
ACEE-9 (December 16, 2008)	*Commenter says that impacts other than those to the natural environment must be addressed. For example, the commenter states that,* "Property values will decline." [I]increased flows have real and devastating impacts on local communities." "Mines cause large amounts of noise, blasting impacts and community disruption." "Land use and aesthetic impacts, by themselves, are sufficiently significant to require an EIS."	See discussion in the DSEIS Chapter 4 Section 4.2.1.2 regarding property values. Based on the analysis of potential impacts to property values, the Corps has determined adjacent property owners may experience a temporary decline in property values due to the discharges of fill material associated with the proposed mine. However, upon reclamation, these adverse effects would be ameliorated. CONSOL conducted a Surface Water Runoff Analysis (SWROA) in association with the proposed mine. The WVDEP reviewed and approved this analysis in association with the SMCRA permit. The results of the SWROA indicate the proposed mine would not result in increased flows off of the proposed mine area. Potential noise and blasting impacts are discussed in the DSEIS Chapter 4 Section 4.2.1.4.

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		The FHWA and the Corps have prepared a DSEIS in association with the proposed Buffalo Mountain Surface Mine and associated Delbarton to Belo Project.
ACEE-10 (December 16, 2008)	*Commenter is concerned the long-term success of the mitigation is not assured. For example, the commenter states that,* "A permanent easement must be required at all mitigation sites for the ACOE [Corps] and the applicant to assure the temporal aspects of mitigation match the temporal aspects of the project damage." "[USACE] must assure permanent success of every aspect of the mitigation plan" by requiring long term (far longer than five years) monitoring so that the temporal and functional aspects of mitigation match the temporal and functional aspects of the project activities."	The proposed CMP is discussed in the DSEIS Chapter 4 Section 4.3.6. CONSOL has proposed restrictive easements on the mitigation streams to ensure the long-term success of the mitigation sites. The proposed CMP includes at least ten years of monitoring, and should the proposed CMP not meet performance standards, additional mitigation would be proposed.
ACEE-a (November 8, 2011)	"We are submitting supplemental comments on the Consol of Kentucky, Inc., ("Consol") Buffalo Mountain Surface Mine because of our extreme concern over the environmental, community and health impacts that will be caused if the mine is permitted. We are submitting these comments on behalf of Sierra Club, Ohio Valley Environmental Coalition, Coal River Mountain Watch, and West Virginia Highlands Conservancy, and ask that they be made part of the administrative record. Since we last	Although received after the end of the PN (2008-491-TUG) comment period, this letter has been added to the project's administrative record as requested. Responses to new comments are addressed individually below.

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	commented during the formal comment period in December 2008, state and federal governments have issued new guidance, published studies, and updated policies on environmental harm caused by mountaintop removal coal mining. In addition, the academic community has published new peer reviewed studies directly related to the decision now before the United States Army Corps of Engineers ("Corps"). The tremendous volume of new information necessitates supplementing our original comments."	
ACEE-b (November 8, 2011)	"A 2009 federal court decision involving a citizen challenge to the Huntington Corps District's public notice procedures states: 'The Court agrees with Plaintiffs that mitigation is the centerpiece of a determination of no significant degradation and/or a FONSI issued with respect to a § 404 permit for a mountaintop mine. For, it is site-specific mitigation measures that allow the Corps to: (1) issue such determinations, and (2) issue a permit without further environmental review. Id. The Court therefore agrees with Plaintiffs that a public notice that contains no substantive information on mitigation is deficient under NEPA.' Ex. TT, p. 43.5 "And further, 'Consequently, a public notice containing no substantive information on mitigation violates the CEQ Guidelines related to agency requirements for public involvement and deprives the public of its procedural right to an	PN 2008-491-TUG, issued on December 3, 2008) contained a complete description of the conceptual proposed CMP for the Buffalo Mountain Surface Mine. The PN was prepared in accordance with 33 CFR 325.3 and contained all the information required in the regulation.

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	adequate opportunity to participate in the permit evaluation process.' See, e.g., Block, 690 F.2d at 770,771; Hodges, 300 F.3d at 438; Nat'l Audubon, 442 F.3d at 184. Id., p. 44."	
ACEE-c (November 8, 2011)	"Permit actions in nearly all mining watersheds have already resulted in significant cumulative environmental impacts."	The Corps and the FHWA have determined the proposed Delbarton to Belo Project (which includes the proposed Buffalo Mountain Surface Mine) would result in a significant impact on the human environment. Therefore the agencies are preparing an EIS to evaluate the Delbarton to Belo Project and alternatives.
ACEE-d (November 8, 2011)	*The Commenter makes several statements to support the general comment that* "the Corps should deny this permit due to the impending and permanent impairment it will cause to streams and larger watersheds": "...An October 2009 study confirms surface coal mining is a significant source of sediment downstream from the mines." "...the Buffalo Mountain Mine is primarily located in the Pigeon Creek watershed. WVDEP trend station data in Pigeon Creek at a site along Pigeon Creek in the town of Delbarton in the proximity of the mine already shows high conductivity in the 400 to 1200 µS/cm range and sulfates from 50 to 250 mg/l in the past few years. See http://tagis.dep.wv.gov/mining/ for site TS034. The Buffalo Mountain Mine discharges will cause or contribute to further water quality degradation downstream from TS034. "..."[A]ssuming that the NPDES permit for the mine has water quality based effluent limits that comply with the TMDL [for Pigeon Creek], clean dilution provided by the	The Corps is evaluating the proposed Buffalo Mountain Surface Mine with an EIS being prepared jointly with the FHWA. CONSOL received an NPDES permit for the proposed mine on October 29, 2012. CONSOL's compliance with this permit would prevent downstream adverse effects to water quality as regulated under NPDES requirements. CONSOL has also prepared an AEPP, approved in association with the NPDES permit that contains monitoring plans for WVSCI scores. The AEPP also contains an adaptive management plan should existing baseline scores downstream of the mining activity be adversely affected by the mining activity and associated NPDES discharges. The adaptive management plan includes responses to potential elevated conductivity values.

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	undisturbed tributaries will be eliminated and instead a harmful additional load of pollutants that are parameters of concern will be delivered to the watershed."	
ACEE-e (November 8, 2011)	*The Commenter makes several statements to support the general comment that "Mining Significantly Impacts Biodiversity"*: "Surface mining and valley fills significantly impact the biodiversity of streams....Valley fills reduce biodiversity by favoring pollutant-tolerant macroinvertebrate species over pollutant-intolerant species." "EPA has also recently published an article that distinguishes harm from dissolved solids laden mining discharges (as opposed to high conductivities associated with residential land uses) as especially toxic to certain benthic organisms....A decrease in the mayfly population equates to a decrease in the food supply for many organisms in the stream's ecosystem. In other recent EPA peer reviewed articles stonefly and caddis fly populations dropped by about 70% when conductivity and pH were stressors." "Looking to the future, '[n]ew research by Petty et al. suggests that mining severity (proximity to stream and extent of mining) is tightly linked to degradation of stream biological communities providing strong evidence of cumulative impacts. Ex. k, p. 49. Another recent study by EPA concluded that '[g]iven the severe alteration to the underlying geology in VFs, it is unclear if aquatic communities adapted to water with low	CONSOL has committed to a monitoring program as detailed in the AEPP, approved by the WVDEP in association with the NPDES permit issued on October 29, 2012. CONSOL would annually report future results associated with the AEPP to the WVDEP for both narrative WQS monitoring and whole effluent toxicity ("WET") testing. CONSOL's reports would include information about differences between the baseline and updated results for the monitoring locations, and CONSOL would implement adaptive management if determined necessary. CONSOL has indicated (2012) monitoring results from their existing mining operation in the Miller Creek watershed suggest that biological scores would not be adversely affected by the proposed mining operations with control measures in place.

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	dissolved ion concentrations and the functions they contribute can fully recover from MTR/VF mining, even after recovery of the upland forests. Ex. N, p. 686."	
ACEE-f (November 8, 2011)	The Commenter is concerned about cumulative effects. "[I]ndividual valley fills not only profoundly impact stream water quality, community structure and ecosystem functions immediately downstream of the fill, but multiple valley fills within larger watersheds have cumulative effects on larger downstream rivers through increasing loads of dissolved substances derived from mine drainage."	See response to Comment EPA-3.
ACEE-g (November 8, 2011)	"EPA Guidance Sets Limits on Environmental Harm and Finalized a 404(c) Veto on the Spruce Mine" "…EPA's July 21, 2011, memorandum outlines significant water quality impacts from surface mining operations."	See response to Comment ACEE-d.
ACEE-h (November 8, 2011)	"[I]n the face of recent EPA findings that most mining discharges tested caused WET to exceed 1 TUc, the Corps must not approve this permit until a reasonable potential analysis of the discharges has been done for WET and, as appropriate, the applicant has demonstrated that it has the ability and commitment to construct and operate a treatment facility that assures compliance with WET limits."	As part of the NPDES permit process, CONSOL conducted and would continue to conduct "WET" testing in accordance with the approved NPDES and associated AEPP.
ACEE-i (November 8, 2011)	"During September 2009, Dunkard Creek in Monongalia County, West Virginia, experienced a biological disaster. Over 130 species of aquatic organisms, including fish, mussels and amphibians, died in massive numbers in a 38	Evaluating the project under procedures required under the NPDES, and with regard to potential for causing algal blooms, is outside the purview of the Corps. The WVDEP has set TMDL limits for the subject watershed, NPDES discharge limits for the project, and has issued the USEPA-approved

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	mile stretch of stream. The WVDEP identified the cause of the kill as a toxic golden algal bloom of the species *Prymnesium parvum*. The algae is known to grow only in waters with high salinity i.e. high total dissolved solids ('TDS')..." "Because conditions are conducive to additional toxic events downstream from many mining sites, state and federal agencies must address the increasing possibility of toxic algal blooms as they evaluate the impacts of additional sources of alkaline mine drainage from mountaintop mining operations."	§402 and §401 authorizations, which otherwise indicates the proposed fill discharge would not violate numeric or narrative water quality standards. The Corps has fully evaluated the potential effects of the proposed fill discharge on aquatic species (presented in the DSEIS Chapter 4 Section 4.3.6.12). Issues raised by USEPA concerning mitigation for effects on aquatic organisms have been addressed through both the proposed CMP (which includes mitigation based on conductivity and WVSCI scores) and CONSOL's AEPP adaptive management plan, which sets thresholds for post-project WVSCI scores and outlines procedures to implement if WVSCI levels exceed thresholds. CONSOL's AEPP (approved along with the NPDES permit by the WVDEP) was written to assure that the potential effects of the proposed fill discharge on aquatic organisms would be minimized to the greatest extent practicable, and to fully address USEPA comments.
ACEE-j (November 8, 2011)	"Perhaps the most fundamental step in assuring appropriate mitigation for stream loss is the accurate assessment of the length of stream impacted by a project. According to EPA in its Regional Recommended Determination on the Spruce No. 1 Mine, the Corps has made gross errors in classifying impacts to perennial and intermittent streams. Through onsite visits and biological data collection, EPA conservatively estimated there were over 27,000 feet of perennial streams in the Spruce No. 1 project area but the Corps permit determined that a mere 165 feet of perennial stream existed. The miscalculation had a critical impact on the type and amount of mitigation required to offset harm	CONSOL delineated and characterized surface water resources associated with the proposed Buffalo Mountain Surface Mine. CONSOL used Corps' guidance (e.g. Regulatory Guidance Letter 05-05) to delineate aquatic resources within the proposed mine area. The Corps approved a jurisdictional determination for the proposed mining project on September 18, 2008.

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	from fill activities. The Corps failed and continues to fail to use all available tools to make stream length assessments and thus is very likely to make similar mistakes while assessing this project. Without an accurate stream length assessment, it is also impossible to accurately determine stream function."	
ACEE-k (November 8, 2011)	"[A] recent study by EPA and Kentucky researchers concluded, 'understanding of relationships between stream functions and structure is needed to inform appropriate assessment methods fully. The current dependence upon the RBP score to quantify stream function in forested headwater streams is inadequate.' Ex. N, p. 686."	CONSOL used more than one method for assessing the existing stream habitats, as discussed in the DSEIS Chapter 4 Section 4.3.6.13. To quantify mitigation debits and credits, CONSOL employed several methodologies in developing a holistic mitigation plan, as detailed in the CMP (included as an appendix on compact disc in the DSEIS). CONSOL used the most current methods in their assessments, including the HGM approach for assessing functions of high-gradient ephemeral and intermittent headwater streams and the SWVM for calculating functional credits and debits.
ACEE-l (November 8, 2011)	"A recent study by EPA and Kentucky researches concluded, '[g]roin drains are required under SMCRA to prevent destabilization of VFs. However, our findings suggest that these channels should not be considered as onsite mitigation for the natural channels buried under VFs. Ex. N, p. 686."	This comment is not applicable to the Buffalo Mountain Surface Mine project. Groin ditches are not proposed to be used for mitigation credits.
ACEE-m (November 8, 2011)	"EPA in its 404(c) veto of the Spruce No. 1 permit in West Virginia further condemns the use of stream creation as mitigation. There is 'no evidence in the peer-reviewed literature' that stream creation works. See Veto http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/spruce.cfm, p. 85. It is 'extremely unlikely' that drainage ditches will be effective mitigation	The Corps recognizes the strong correlation of form (structure, geomorphic and habitat-related) and function. Assessing stream impacts and compensatory mitigation requires an assessment protocol that meets time frames dictated by regulations pursuant to the CWA. It is generally recognized that assessing specific functions of a stream system within these timeframes is not possible. The CMP was developed using the SWVM (Ver. 2.0), which incorporates direct

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	for the loss of high-value streams. Id., p. 86, 88. If these connectivity channels are created, they are expected to have minimal function...they will likely receive suspended sediments, metals, and high ion concentrations from the mined area, resulting in further degradation...Id. App. 3, p. 3. Onbench sediment ditches (sometimes called erosion control structures) are SMCRA-required best management practices (BMPs) to control water and erosion runoff and should not be considered adequate compensation for loss of high quality stream resources. Id. at 8. Water quality in sediment ditches in mined areas is typically highly degraded, primarily because ditch water has percolated through mine spoil. Because of the degraded water quality, these channels should be considered potential sources of pollution rather than a compensatory mitigation feature. Id. There is no evidence that created flowing channels will support the chemical and biological functions performed by the destroyed streams. Id., App. 6, p. 176. In fact, stream creation is a convenient myth and may contribute to addition water quality problems. Thus, any project proposing to use stream creation as part of mitigation must be denied."	physical, chemical, biological and functional assessments. Components of the SWVM include USEPA's "Rapid Bioassessment Protocols For Use in Streams and Wadeable Rivers" (RBP), WVSCI and the Corps' HGM. Water chemistry data also indicates functional levels. The SWVM thus evaluates stream functions within the required timeframes through established methods generally accepted by experts in the field of stream biology and mitigation. Evaluating baseline and predicted conditions using these parameters provides the ability to determine the adequacy of the proposed CMP for offsetting stream functions lost as a result of the proposed fill discharge. The streams to be established off-site (but adjacent to the proposed mining permit area) have been designed and would be constructed using well accepted natural stream concepts to assure development of natural stream and vegetated riparian functions, which ACEE mentions. On-site re-establishment of streams would restore the watershed's stream system and functions. Evaluation of the proposed CMP is found in the DSEIS Chapter 4 Section 4. 3.6.13. The Corps has fully analyzed anticipated functional losses and gains as a result of the proposed discharges of fill material into waters of the U.S. and CMP efforts, including the adequacy and achievability of the CMP, success standards and monitoring plan, and contingency plan. The Corps has concluded the CMP is sufficient compensation for the proposed discharges of fill material into waters of the U.S. and is in accordance with 33 CFR 332. The Corps will not disapprove a CMP solely because it is unproven, provided that any anticipated risks are reasonable to take and not expected to fail.
ACEE-n	The Commenter is concerned that 'Enhancement	Through meta-analysis of two dozen studies on stream

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(November 8, 2011)	and restoration [mitigation techniques] are not effective." "'Using structural stream enhancements (e.g., stream bank protection, adding structural complexity in the form of boulder clusters, j-hooks, vortex rock weirs, etc.) to replace the functions and structure lost from burial of high quality streams on a foot per foot basis is scientifically unfounded.'" "EPA is unaware of any documented cases where in-stream structural restoration in the form of 'natural channel design' has been shown to restore water quality and biological communities such as those impacted by mine spoil leachate. Instead, these 'restored' segments are likely to export degraded water."	restoration, increasing habitat heterogeneity has been shown to have significant, positive effects on macroinvertebrate richness.[1] The restoration proposed in association with the Buffalo Mountain Surface Mine includes a large amount of large woody debris, which specifically was shown to have the largest and most consistent response for the macroinvertebrate communities. The proposed CMP includes contingency and adaptive management planning. The CMP is reviewed in the DSEIS Chapter 4 Section 4.3.6.13. See the attached compact disc for the plan in its entirety. See also responses to Comment s ACEE-m and -y. [1]Miller, Scott W., Phaedra Budy, and John C. Schmidt. January 2010. "Quantifying Macroinvertebrate Responses to In-Stream Habitat Restoration: Applications of Meta-Analysis to River Restoration." Restoration Ecology. Vol. 18, No. 1, pp. 8–19.
ACEE-o (November 8, 2011)	The Commenter is concerned that "mitigation projects may themselves cause environmental harm." "'The most extensive and expensive types of restoration projects (natural channel design, floodplain reconnection) require, at a minimum, significant earth moving and temporary piping or rerouting of streamflow....Acknowledging that this could be a temporary impact (Tullos et al. projects were 1 – 4 yrs old), the results of Sudduth et al. (projects 1-6 yrs old), Jähnig et al. (some projects 12 yrs old), and Palmer et al. 2010 (some projects 16 yrs old) suggest that the unintended consequences of restoration may persist for some time.' Id. p. 6-7."	See responses to Comments ACEE-m, -n, and –y.

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	"'...[e]vidence to date suggests that extensive channel engineering, which is typical of the Natural Channel Design ('NCD') approach, may in fact cause damage to streams in need of restoration; for example, species diversity may actually decrease following restoration and may decrease over time.' Ex. k, p. 51."	
ACEE-p (November 8, 2011)	"The Corps's continued reliance on its June 2007 Interim Functional Assessment Analysis (IFAA) to measure structure and function of the impacted and mitigated streams in this application is irrational and has no scientific credibility."	The Corps used CONSOL's application of the HydroGeomorphic Method (HGM) for High-Gradient Intermittent and Ephemeral Streams to evaluate both the streams proposed for the discharges of fill material as well as the proposed mitigation streams. In addition, CONSOL incorporated the HGM scores in the West Virginia Stream and Wetland Valuation Metric (SWVM) to determine the functions lost due to the discharges of fill material into waters of the U.S. and the functions to be gained at the proposed mitigation sites. The HGM was the successor methodology to the IFAA and the IFAA is no longer used by the Corps for evaluation. However, data gathered by CONSOL using the IFAA was useful for characterizing the streams proposed for the discharges of fill material. However, the data was not used by the Corps to determine functional loss in these streams.
ACEE-q (November 8, 2011)	The Commenter is concerned that "The Hydrogeomorphic Approach ("HGM") and the West Virginia Stream and Wetland Valuation Metric version 2.0 ('SWVM') are flawed." "The HGM does not measure function because it has never been validated through on-the ground functional measures." "The SWVM, the other tool used by the Corps, has not been peer reviewed, and during the November 2010 training session, the Corps stated it is not	CONSOL used HGM and SWVM protocols as approved by the Corps. However, while the HGM and SWVM analyses have contributed to the mitigation planning effort, CONSOL has not relied on any one methodology to ensure offset of the discharges of fill material into waters of the U.S. See the DSEIS Chapter 4 Section 4.3.6.13 or the attached compact disc for the plan in its entirety. The HGM for High-Gradient Intermittent and Ephemeral Streams is currently being validated to determine the

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	intended to be a functional assessment tool at all. The SWVM merely includes an HGM score together with a number of rapid bioassessment scores that comes up with a final determination. The Corps has not provided any reasons as to why this score relates to overall ecological losses and gains. It is similar to earlier methodologies with arbitrary number scoring systems and sole reliance on structural measures. Even the structural measures are deficient as measures, such as a detailed hydrograph, are missing. "In addition, during the November training session, the Corps's representatives stated that one individual assessment could represent other ephemeral or intermittent streams within different subcatchments in a watershed and that the applicant could probably "get away" with just one assessment in each class for the project if the reaches "looked identical." The fact that a stream 'looks' like another stream does not equate to meaning that the streams function at the same level or in the same way. The Corps expects each assessment to take from 45 minutes to as long as two hours to perform. The reliance on a brief visual assessment, however, can hardly assure an accurate estimate of stream functions and structures lost, and further demonstrates the inadequacy of the HGM/SWVM protocol."	correlation between the variables used in the HGH protocol and other stream (physical, chemical and biological) functions. Preliminary results indicate the HGM protocol adequately characterizes the functions of these headwater stream types.
ACEE-r (November 8, 2011)	The Commenter is concerned that "The HGM Does Not Claim to Measure All Stream Functions and Has Other Deficiencies." "The	See response to ACEE-q.

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	HGM approach recognizes only three stream functions: hydrology, biogeochemistry, and habitat. However, it fails to address the complete suite of functions that streams perform. Even the definitions of functions are limited..." "In addition, the HGM does not adequately justify scoring measures for model variables, erroneously assumes that the relationships are linear, and does not adequately justify how one sub-index score is weighted versus another. The Corps also wrongly assumes that what they find in a stream reach was created through natural processes so that if certain features are present the Corps assumes functions are normal. "Further, watershed land use is included as a sub-index, but previously mined lands do not appear to be included even though mining has significant impacts on runoff, stream flow, and ground water flow. "Thus, the new tools do not measure stream function at all, are deficient in measuring structure, and do not comply with 404(b)1 requirements."	
ACEE-s (November 8, 2011)	The Commenter is concerned that "Constructed Channels Do Not Have the Energetic Base, Thermal or Flow Regimes to Support the Native Aquatic Community."	CONSOL, in the proposed CMP, indicates the flow regime of the channels being replaced is ephemeral and would be entering reaches that are forested swales, providing similar functions as those that would be impacted by the discharges of fill material. Large woody debris is an important component in the CMP, which specifically has been shown to have the largest and most consistent response for the macroinvertebrate communities. See the complete CMP, included in the DSEIS on an attached compact disc, and see also response to Comment ACEE-n.

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ACEE-t (November 8, 2011)	"The application and the Corps have failed to consider, or mitigate for, the major adverse effects of valley fills on downstream water chemistry." "Existing mitigation approaches fail to include any mechanisms that will reduce the export of SO_4^{2-}, HCO_3-, Ca^{2+}, Mg^{2+}, Fe, and trace metals from mined sites, or that will remediate these impacts for the water columns of constructed channels." "The failure to mitigate for these adverse downstream chemistry impacts clearly undermines the structural habitat improvements proposed by the application as these activities will most likely occur in water quality impaired streams…" "Recently, ten prominent scientists in an article in Science magazine concluded, "[o]ur analyses of current peer-reviewed studies and of new water-quality data from WV streams revealed serious environmental impacts that mitigation practices cannot successfully address."	See response to Comment ACEE-e regarding CONSOL'S approved AEPP, in place to avoid, reduce and monitor for impacts.
ACEE-u (November 8, 2011)	"Further, attempts to avoid placement of high selenium laden materials in valley fills are inadequate. Material handling plans are intended to isolate high selenium material from water courses before the leaching of selenium can cause or contribute to a WQS violation. See http://www.wvdep.org/Docs/14134_sect32.pdf. The WVDEP's and the Corps's reliance on material handling plans has a number of fatal flaws. First, the material handling plans do not apply to the coal itself. Thus, during active coal extraction, there is no mechanism to prevent	Measures in place to avoid, reduce and monitor for impacts are addressed in CONSOL's approved AEPP. See response to Comment ACEE-e. The AEPP includes an Adaptive Management Plan to manage potential violations of WQS. See response to Comment ACEE-v regarding selenium testing results in adjacent operation.

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	selenium from entering the discharge or the receiving stream. Second, the material handling plans are based on too few core samples (used to identify high selenium strata) from new mines. Third, the material handing plans are based on past experience with preventing acid mine drainage and, thus, require alkaline encapsulation of high selenium materials. This is nonsensical because alkaline environments increase the mobility of selenium and cause it to be more likely to leach and reach surface and ground water. Fourth, finally, and perhaps most importantly, the material handing plans simply do not work. For example, Hobet Mining operates two mines in the Mud River Watershed, both of which are supposed to be implementing the most recent selenium handling plans. Discharges from both those facilities consistently contain selenium in concentrations that exceed selenium effluent limits. Indeed, a Hobet manager admitted in a sworn deposition that the selenium handling plan is not working to bring the company into compliance with its selenium limits. The toxic material handling plan proposed for the Buffalo Mountain site is nearly identical to the one at Hobet. See Ex. qq and rr for a comparison of the handling plans."	
ACEE-v (November 8, 2011)	"In addition, the mine will also discharge to and disturb area in the Miller Creek watershed and is immediately adjacent to the Consol, Peg Fork Mine, located there. The Peg Fork mine recently submitted data to the	CONSOL provided additional selenium monitoring data from their adjacent Peg Fork Surface Mine in their response to this comment. Based on these data, it appears the selenium levels fell below acceptable levels (less than 5.00 μ/l) in the fall of 2011 but rose again in the winter of 2011. CONSOL is

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	Huntington Corps showing the mine was the source of significant selenium pollution. 21 The Peg Fork Mine is in many of the same seams as the Buffalo Mountain Mine including Freeport, Upper Kittanning, Buffalo Creek, Middle Kittanning, Coalburg, Middle Freeport, Stockton, Winifrede and 5-Block. The data below shows that the selenium in these seams at the Peg Fork Mine is leaching from surrounding strata and is also likely to do the same at the Buffalo Mountain Mine. **"WV1023004 -- SELENIUM MONITORING RESULTS** **AT POND 2 AND DOWNSTREAM OF POND 2** **Location-Date-Selenium Concentration** PF8 15-Apr-11-8.40 µ/l PF8 26-Apr-11-8.50 µ/l PF8 17-May-11-6.00 µ/l PF8 23-May-11-11.10 µ/l PF8 6-Jun-11-8.30 µ/l PF8 17-Jun-11-6.50 µ/l PF8 15-Jun-11-5.30 µ/l PF8 22-Jun-11-5.50 µ/l PF9 15-Apr-11-11.20 µ/l PF9 26-Apr-11-10.70 µ/l PF9 17-May-11-7.90 µ/l PF9 23-May-11-13.00 µ/l PF9 6-Jun-11-8.80 µ/l PF9 17-Jun-11-7.50 µ/l PF9 15-Jun-11-7.10 µ/l	investigating the cause of the elevated selenium levels and has indicated the source may be a seep from past mining activity in the area of Valley Fill No. 2 (on Peg Fork Surface Mine). CONSOL has also indicated other areas of the Peg Fork Surface Mine are not experiencing high selenium levels and they assert this is due to the successful implementation of the SMCRA-approved materials handling plan for that mine. CONSOL also has an adaptive management plan as part of the approved AEPP (part of the approved NPDES permit for the Buffalo Mountain Surface Mine). The AEPP includes actions to be implemented should monitoring results indicate elevated selenium levels during mining activities at the proposed Buffalo Mountain Surface Mine. Compliance with the NPDES permit is outside of the purview of the Corps and is part of the regulation of the mine by the WVDEP.

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	PF9 22-Jun-11-6.00 µ/l PF9 2-Aug-11-6.80 µ/l PF9 24-Aug-11-5.20 µ/l "Further, EPA in its veto of the Spruce No. 1 Mine states, "[m]aterials handling plans will not prevent elevated selenium levels downstream." See veto http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/spruce.cfm App. 6, p. 9-11. "Available evidence makes clear that bottom-up fill construction and materials handling have not reduced levels of selenium or total dissolved solids below levels known to be harmful to wildlife." Id. App. 6, p. 5. 'Given the nature of Se distribution in these overburden materials, it is extremely difficult to demonstrate how an effective on-site separation of high Se-bearing overburden materials will be performed without testing all materials within two to four feet above and below the coal beds.' Id. App. 4, p. 14."	
ACEE-w (November 8, 2011)	"In an October 2009 report, researchers showed that benthic organisms are also harmed by exposure to selenium. 'These results suggest that at environmentally feasible dietary Se concentrations insects are potentially affected by Se exposure, and that the current presumption that insects are simply conduits of Se to higher trophic levels is inaccurate.' Ex. SS, p. 7952. '[T]he current study and others have shown that growth,	As promulgated in 47CSR2, there is an existing standard for selenium (<0.005 mg/L). The NPDES permit (approved by the WVDEP on October 29, 2012) has selenium limits that are protective of water quality. See also response to Comment ACEE-v.

	Comment	Response
	fecundity, or both may be affected by Se in aquatic invertebrates Id., p. 7956."	
ACEE-x (November 8, 2011)	The Commenter is concerned that "Mining is Related to Serious Impacts on Human Health." "Various studies have shown that coal mining has significant, negative impacts on the health of those living in the coal fields: ' Even after mine-site reclamation (attempts to return a site to premined conditions), groundwater samples from domestic supply wells have higher levels of mine-derived chemical constituents than well water from unmined areas (22). Human health impacts may come from contact with streams or exposure to airborne toxins and dust. State advisories are in effect for excessive human consumption of Se in fish from MTM/VF affected waters. Elevated levels of airborne, hazardous dust have been documented around surface mining operations (23). Adult hospitalizations for chronic pulmonary disorders and hypertension are elevated as a function of county-level coal production, as are rates of mortality; lung cancer; and chronic heart, lung, and kidney disease (24). Health problems are for women and men, so effects are not simply a result of direct occupational exposure of predominantly male coal miners (24). Ex. WW, p. 148. "Another recent study states: 'We characterized ecological integrity using an index of benthic	References concerning water quality and public health have been reviewed. These issues are not within the purview of the Corps' regulatory authority, but are considered by WVDEP during the SMCRA permitting process to assure the project would not violate EPA-approved WQS, pursuant to CWA Sections 401 and 402. The Corps defers to the WVDEP as the agency with primary responsibility and expertise for assuring the proposed effluent discharges meet state WQS. Both the FHWA and the Corps recognize the emerging scientific data related to human health impacts associated with coal mining in Appalachia. However, as indicated above, Sections 401 and 402 of the CWA (regulated in WV by the WVDEP) are more appropriate to address human health impacts related to the discharges of pollutants. As noted in Chapter 4 of the DSEIS, FHWA programs, initiatives, and research address health-related issues at many different points throughout the development of Federal-aid projects including Air Quality/MSAT, Noise, and Safety. FHWA regulations and policies promote practices and procedures that address both negative and positive health outcomes. Key issues like addressing environmental justice (EJ) and providing access to a safe and efficient transportation system are central to FHWA's mission.

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	macroinvertebrate community structure (West Virginia Stream Condition Index, SCI) and quantified human cancer mortality rates using county-level data from the Centers for Disease Control and Prevention. Regression and spatial analyses revealed significant associations between ecological integrity and public health. SCI was negatively related to age-adjusted total cancer mortality per 100,000 people. Respiratory, digestive, urinary, and breast cancer rates increased with ecological disintegrity, but genital and oral cancer rates did not. Smoking, poverty, and urbanization were significantly related to total cancer mortality, but did not explain the observed relationships between ecological integrity and cancer. Coal mining was significantly associated with ecological disintegrity and higher cancer mortality. Spatial analyses also revealed cancer clusters that corresponded to areas of high coal mining intensity. Our results demonstrated significant relationships between ecological integrity and human cancer mortality in West Virginia, and suggested important effects of coal mining on ecological communities and public health. Ex. c, p. 1.' "A 2011 study also highlights the impacts of MTM on human health: 'Results indicate that previously documented HRQOL disparities in Appalachia's coal mining areas	

	Comment	Response
	are concentrated in MTM zones in the central part of the region. These disparities partly reflect the chronic socioeconomic weaknesses inherent in coaldependent economies and highlight the need for efforts at economic diversification in these areas. However, significant disparities persist after control for these risks and suggest that the environmental impacts of MTM may also play a role in the health problems of the area's population. Ex. j. p. 852.' "Further, EPA in its final memo on water quality and MTR shares these same concerns and states, '[p]ossible human health impacts from coal mining activities have also been documented, including peer-reviewed public health literature that has preliminarily identified associations between increases in surface coal mining activities and increasing rates of cancer, birth defects, and other health problems in Appalachian communities.' Ex. UU p. 4. "Perhaps most alarming is another recent peer reviewed study by Ahern et al describing increased incidence of birth defects in MTR areas. The study concludes: 'The prevalence rate ratio (PRR) for any birth defect was significantly higher in mountaintop mining areas compared to non-mining areas (PRR¼1.26,95%CI¼1.21, 1.32), after controlling for covariates. Rates were significantly higher in mountaintop mining areas for six of seven types of defects: circulatory, respiratory, central nervous	

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	system, musculoskeletal, gastrointestinal, urogenital, and 'other'. There was evidence that mountaintop mining effects became more pronounced in the latter years (2000–2003) versus earlier years (1996–1999.)' "Ex. oo, Abstr. These impacts must be considered by the Corps during the permitting process particularly in light of environmental justice concerns. In fact, the impacts are so serious they should trigger a denial of the permit."	
ACEE-y (November 8, 2011)	"The Corps generally requires monitoring of mitigation sites for ten years after completion of the project. At the end of ten years, if the Corps determines the mitigation successful, the permittee is released from further permit requirements. There is no scientific basis for assuming that the ten-year monitoring will ensure permanent and complete success of a mitigation plan, and assigned full credit. "An expert witness for the coal industry testified that stream enhancements used for mitigation could be expected to last for twenty or twenty-five years - a sharp contrast to the permanent impacts of valley fills. Ex. W, Vol. V, p. 90. Thus by definition, many mitigation efforts will not compensate for the permanent loss of streams as they will be released from Corps scrutiny prior to the end of the predicted life span of restoration projects."	CONSOL's CMP (included in the DSEIS a compact disc) includes a plan for release from the monitoring period. After CONSOL would monitor the mitigation for a minimum of ten years and has determined annual success criteria would be met, CONSOL may request release from monitoring. However, release from further monitoring would not occur until the Corps would conduct a site visit and concurs that release would be appropriate. The CMP also includes a Contingency Plan and Adaptive Management Plan. The latter acknowledges the dynamic nature of natural systems and the changing state of knowledge and developing management strategies. See also responses to Comments ACEE-m and ACEE–n regarding success of mitigation.

Responses to Comments Received by Corps FHWA/Corps during Scoping for the DSEIS

The Notice advertising for a Public Meeting on February 16, 2012 regarding Scoping of the Delbarton to Belo Project was issued jointly by the Corps and the FHWA on February 1, 2012

	Comment	Response
Public Comment (received during Public Scoping Meeting and Workshop February 16, 2012)	"Please consider the cumulative impact of all surface mining this region when you analyze flooding impacts. The adjoining Red Jacket section of KCH flooded many people below it from a fairly common rainfall in 2009 (2.5 inches – a 3 yr rainfall event)"	Cumulative effects analysis has been completed in association with the proposed Delbarton to Belo Project. This analysis is contained in the Draft Supplemental Environmental Impact Statement (DSEIS) Chapter 4 Section 4.7. The FHWA and the Corps analyzed potential impacts to the floodplain and potential flood hazards in the DSEIS Chapter 4 Sections 4.3.3 and 4.3.4. This analysis included an evaluation of the WVDEP's Cumulative Hydrologic Impact Assessment (CHIA) and the Surface Water Run-off Analysis (SWROA) for the Buffalo Mountain Surface Mine SMCRA permit application.
Appalachian Mountain Advocates (AMA)-1 (February 24, 2012)	"A thorough and thoughtful study of the impacts of the Consol Mine, however, will show that the mine will cause and contribute to significant environmental degradation in the Tug Fork watershed and in the region and should not be approved either as a standalone project or in conjunction with the King Coal Highway."	The purpose of the DSEIS is to evaluate the potential impacts to the human environment due to the Delbarton to Belo Project (which would include the Buffalo Mountain Surface Mine) and its alternatives and potential cumulative effects. The DSEIS also contains the Corps' review of the Buffalo Mountain Surface Mine, including a review of practicable alternatives for the Mine, under Section 404 of the CWA.
AMA-2 (February 24, 2012)	"At a minimum, the SEIS must evaluate impacts from the Buffalo Mountain Mine in the project area and cumulative impacts throughout the region including but not limited to: • impacts on stream structure and function • failure of mitigation and replacement of stream structure and function	As indicated in the response to Comment AMA-1, the purpose of the DSEIS is to evaluate the potential impacts to the human environment due to the Delbarton to Belo Project and alternatives. The DSEIS Chapter 4 includes a discussion of cumulative impacts. Refer to the DSEIS Chapter 4 Table 4-1 for the list of features/resources being evaluated by the FHWA and the Corps in the DSEIS. The FHWA and the Corps are evaluating resources/features within the scopes of each respective

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	• failure of the Corps to verify functional assessment tools with on the ground functional measures • temporal mismatch between the relatively short expected useful lifetime of mitigation and the permanency of valley fills • continued use of denovo stream creation for mitigation despite the fact that denovo creation of headwater streams has never been shown to replace structure and function lost • impacts on downstream water quality including selenium • effectiveness of selenium material handling plans and current WVDEP geological testing protocols to prevent selenium pollution • failure of Consol to provide for selenium treatment of its wastewater discharges • failure of mining operations to control toxicity of discharges and WVDEP to comply with EPA guidelines establishing whole effluent toxicity limits in Consol's NPDES permit • impacts to stream sediment load • increased risk of golden algae downstream from mine sites • failure to mitigate for downstream water quality impacts • failure of the WVDEP to draft a NPDES permit that protects water quality and	agency, defined for both agencies in the DSEIS Chapter 1 Section 1.3. However, the DSEIS does not include a re-evaluation of decisions made by other agencies (state or federal) for aspects of the Delbarton to Belo Project and/or Buffalo Mountain Surface Mine. This includes the review of the NPDES permit, SMCRA permit or Section 401 of the CWA, all evaluated by the WVDEP under their respective implementing regulations.

	Comment	Response
	degradation of high quality waters • impacts on flows of streams, springs and ground water • impacts on drinking water quality • impacts on forest and forest habitat • failure to properly identify the least environmentally damaging alternatives to the mining operation and the authorized approximate original contour variance given to Consol by WVDEP • impacts on endangered and threatened species • impacts on biodiversity • impacts on communities and community integrity • impacts on human health and wellness including information from West Virginia University researchers documenting increased cancer rates, poor health and higher rates of birth defects in citizens living in the mining regions of West Virginia • impacts on flooding • impacts on air quality • impacts to citizens from dust and blasting • environmental justice issues • economic impacts during and after mining in the short and long term”	
AMA-3 (February	“Central Appalachia has been significantly impacted by the environmental devastation	The WVDEP evaluated the proposed Buffalo Mountain Surface Mine and its associated valley fills under Section 401 of the

	Comment	Response
24, 2012)	caused by the numerous valley fills already in existence; creating additional valley fills, as is proposed in this permit, would add significant degradation to the waters of the United States."	CWA. One purpose of this evaluation was to ensure the proposed mining project would not result in a violation of the state's antidegradation regulations. The WVDEP issued the WQC under Section 401 on November 23, 2011 for the proposed Buffalo Mountain Surface Mine.
AMA-4 (February 24, 2012)	"Since the PEIS [referring to the Mountaintop Removal Mining Programmatic Environmental Impact Statement published jointly by the USEPA and the Corps in 2005] was completed many more studies have documented environmental degradation from large scale surface mines. The results of those studies should be evaluated and included in the SEIS specifically relating to the Buffalo Mountain Mine. The final Spruce No 1 EPA 404(c) veto cites to nearly 100 articles and studies since 2007 outlining the degradation of valuable headwater streams through water quality impacts including conductivity and selenium and habitat loss. See http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/spruce.cfm at 20. In sum, the evidence that the impacts of past and future surface coal mining and valley filling have had, and will have, is simply overwhelming. All of these impacts must be addressed in the SEIS."	Refer to the responses to Comments AMA-1 and AMA-2.

	Comment	Response
AMA-5 (February 24, 2012)	"Large-scale surface mining causes significant water quality impacts. The degradation of the streams' water quality is severe."	Potential impacts to water quality by the proposed Buffalo Mountain Surface Mine were evaluated under Section 401 of the CWA and under the NPDES permit as indicated in the responses to other comments. The Section 401 WQC and NPDES permit were issued by the WVDEP, respectively on November 23, 2011 and October 29, 2012.

	Comment	Response
AMA-6 (February 24, 2012)	"Further, MTM/VF operations significantly alter the chemical composition and temperature of streams. The PEIS stated that, as a result of valley fills, "[s]tream chemistry showed increased mineralization and a shift in macroinvertebrate assemblages from pollution-intolerant to pollution-tolerant species. Water temperatures from valley fill sites exhibited lower daily fluctuations and less seasonal variation than water temperatures from reference sites...." PEIS at IV.B-4. It went on to state that "[t] he EPA Water Chemistry Report found elevated concentrations of sulfate, total and dissolved solids, conductivity, selenium and several other analytes in stream water at sampling stations below mined/filled sites." Id. In fact, the EPA Water Chemistry Report found that conductivity was "clearly impacted by MTM/VF [mountaintop/valley fill] mining." PEIS, App. D, EPA 2002b, at 2. "Conductivity at Filled sites can be 100 times greater than that at Unmined sites." Id. at 45. "Unmined sites have a consistently low conductivity no matter what the flow. Filled sites have a broad range of conductivity much higher than Unmined sites indicating that MTM/VF mining increases specific conductance in streams." Id. at 46. Mitigation fails to reduce conductivity to minimal levels. On the contrary, EPA found	See the responses to Comments EPA-4, ACEE-d, ACEE-e and ACEE-i.

	Comment	Response
	that "[t]he highest values are consistently at the Sediment Control Structure (MT-24) which is on a reclaimed MTM/VF mine." PEIS, App. D, EPA 2002b, p. 45. EPA describes science as based on a "growing consensus" that conductivity causes harm and that stream creation does not work. Veto at 8, 13, 20. Sediment ponds do not remove more than minimal amounts of TDS or conductivity. Veto, at 59; App. 6 at 97."	
AMA-7 (February 24, 2012)	"Further created streams do not hold water and it is often necessary to grout or line the bottoms of these created channels to maintain water flow. This disrupts the superficial surface water ground water exchange necessary to maintain stream function. All of these issues should be evaluated in the SEIS as they apply to the Tug watershed as a whole and also specifically to Miller Creek and Pigeon Creek."	See the response to Comment ACEE-m.
AMA-8 (February 24, 2012)	"Surface mining and valley fills significantly impact the biodiversity of streams. The 404(b)(1) Guidelines require the Corps to consider the "adverse effects of the discharge of pollutants on aquatic ecosystem diversity." 40 C.F.R. § 230.10(c)(3). A decrease or obliteration of the mayfly population equates to impairment of the aquatic life stream use. See EPA Pond at 717, 724. In recent EPA peer reviewed	See the response to Comment ACEE-e.

	Comment	Response
	articles stonefly and caddis fly populations dropped by about 70% when conductivity and pH were stressors. See http://trove.nla.gov.au/work/159509371 at Abstr. EPA, in its 404(c) veto of the Spruce No. 1 permit in West Virginia, stated that increasing levels of conductivity have "significant adverse effects" on biological communities in streams. See Veto at http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/spruce.cfm at 62. These water quality changes "are the primary cause of aquatic life impacts below valley fills. . ." Id. EPA concluded that increased conductivity has also been found to harm fish and levels over 714 µs/cm increases the risk of golden algae. Id., Veto at 69-70. One measure of significance is deviation from WVDEP's reference condition. …due to the quality of WVDEP's reference sites, the Final Determination generally has considered deviation below 5th percentile (in WV) of the reference distribution, a significant effect. Id., App. 6, at 106. The elimination of a variety of macroinvertebrate species ripples throughout the entire stream ecosystem and must be evaluated in areas impacted by the Buffalo Mountain Mine."	

	Comment	Response
AMA-9 (February 24, 2012)	"In order to decide whether discharges will cause or contribute to significant degradation of the affected streams, the 404(b)(1) Guidelines require the Corps to determine "the nature and degree of effect that the proposed discharge will have, both individually and cumulatively, on the structure and function of the aquatic ecosystem and organisms." 40 C.F.R. § 230.11(e) (emphasis added). "In determining compensatory mitigation, the functional values lost by the resource to be impacted must be considered." EPA/Corps Memorandum of Agreement (Feb. 6, 1990), Section II. This means that structural and functional assessments should be used. The Corps' stated policy on mitigation requires an analysis of stream functions and values and a net increase in those aquatic functions and values. However, the Corps has no valid guidelines for stream assessment on a functional basis at all. In order to evaluate the impacts of this project the Corps must use an assessment tool that has been validated through on the ground functional measures. If no functions have been measured, it is impossible to mitigate for their loss. Furthermore, there are no follow-up studies that show that stream functions have been replaced or improved by mitigation.	See the response to Comment ACEE-m.

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	In this case, Consol proposes to mitigate for the filling of over 50,000 feet of jurisdictional stream through stream creation, stream enhancement and preservation and waste water treatment. See June 2010 CMP Ex. Sum. Most of these strategies are typical of what is used at all mines sites. They are flawed because the Corps has no way to credibly verify they will work and they have been shown to miserably fail in the past. Stream ecologist, Dr. Margaret Palmer, explains "after having access to over 38,000 restoration project records (Bernhardt, Palmer et al. 2005), there is not a single study in the peer reviewed scientific literature that evaluated the functional effectiveness of building streams de novo." OVEC v. Army Corps of Engineers, Civil Action No. 3:05-0784, May 16, 2006. The PEIS also states that "to date functioning headwater streams have not been re-created on mined or filled areas as part of mine restoration or planned stream mitigation efforts." Id. at III.D-20. In addition, the August 2007 DSEIS on the proposed buffer zone rule change states, "[w]hile proven methods exist for larger stream channel restoration and creation, the state of the art in creating smaller headwater	

	Comment	Response
	streams onsite has not reached the level of reproducible success." And further, "[a]ttempts to reestablish the functions of headwater streams on the groin ditches on the sides of the fills have achieved little success to date." See http://www.regulations.gov/fdmspublic/component/main, p. III-111 and III-117. EPA in its 404(c) veto of the Spruce No. 1 permit in West Virginia further condemns the use of stream creation as mitigation. There is “no evidence in the peer-reviewed literature” that stream creation works. See Veto http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/spruce.cfm at 85. Information gathered in conjunction with the PEIS shows, “mitigation or compensation for stream losses that generally takes the form of restoring degraded streams at offsite locations will seldom replace the functions lost in the headwater areas. . .” August 15, 2001 Working Draft, Problems Identified/Confirmed/Inferred by Technical Studies, p. 3. Further, an expert witness for the coal industry testified that stream enhancements used for mitigation could be expected to last for twenty or twenty-five years - a sharp	

	Comment	Response
	contrast to the permanent impacts of valley fills. OVEC v. Army Corps of Engineers, Civil Action No. 3:05-0784"	
AMA-10 (February 24, 2012)	"In addition, the applicant and the Corps have failed to consider, or mitigate for, the major adverse effects of valley fills on downstream water chemistry. While building waste water treatment plants is undoubtedly beneficial and should reduce fecal coliform, it will not mitigate for stream impacts from high conductivity and selenium. It will not restore stream biota or ecological structure and function. It will not mitigate for likely whole effluent toxicity exceedences of the mine effluent or downstream. The applicant and the Corps have failed to consider, or mitigate for, the major adverse effects of valley fills on hydrology. The USGS study by Messinger in Appendix H of the MTM/VF PEIS states on page 3 that runoff is 1.75 times greater per unit surface area from mined than unmined catchments. Even worse, the 2002 EPA Water Chemistry Study in Appendix D of the MTM/VF PEIS, p. 86, found that "base flows of streams with valley fills are 6 to 7 times greater than the base flows of unmined areas." This means not only those areas downstream from valley fills will experience much higher flows, but also higher loadings of the excessive and harmful chemicals mentioned above. The application	CONSOL has included an adaptive management plan related to selenium and conductivity in its AEPP, approved as part of the NPDES permit by the WVDEP on October 29, 2012. The purpose of the AEPP is to prevent adverse downstream effects due to these parameters (among others) that may result from the mining activity. Downstream adverse effects would be assessed using WVSCI scores as required by the WVDEP for measuring biological effects. The SMCRA permit review includes potential effects to hydrology both on the mining site and downstream of the proposed mining site. Impacts to flooding and floodplains due to the Delbarton to Belo Project and its alternative are reviewed in the DSEIS Chapter 4 Section 4.3.3.

	Comment	Response
	and the Corps have failed to account for this impairment and have failed to require the applicant to do anything to mitigate for these harmful downstream effects."	
AMA-11 (February 24, 2012)	"In addition, the change in flows stemming from the proposed valley fills and other mining activities must be accurately accounted for in designing stream channel modifications. Stream channel modifications and successful restoration rely on accurate assessment of flow characteristics. Until reclamation of the fills and the mining site is complete and for many years afterwards, these streams will be in an unstable hydrological condition. "Changes to hydrological conditions due to mining activity are extensive. Surface mining is perhaps the only land use with a greater capacity to change the hydrological regime of a stream than urbanization. Increased runoff and decreased surface roughness will cause peaks earlier in the hydrograph with steeper rising and falling limbs." Thus hydrological assessments done now should not be used as the basis of flow assessments needed for stream restoration projects after mining and restoration has been completed. Restoration or design of the mitigation project (based on specifics of the current hydrology) when the site is unstable will further doom the project to failure."	See the responses to Comments EPA-7, ACEE-5, ACEE-10, ACEE-i, ACEE-k, ACEE-m and AMA-10.
AMA-12	"Importantly, the applicant and the Corps have	The Corps evaluated CONSOL's proposed CMP in accordance

	Comment	Response
(February 24, 2012)	failed to identify a single example of successful stream restoration or creation, as measured by a functional stream analysis."	with the requirements of the Mitigation Rule in the DSEIS Chapter 4 Section 4.3.6.13.
AMA-13 (February 24, 2012)	Commenter provided discussion on: "*Environmental Risks Must be Considered and Quantified Related to Toxic Selenium Discharges* Geological cores samples taken at the Buffalo Mountain Mine site show high selenium levels. See Section I of the SMCRA permit. Levels in these samples exceed 4 ppm total selenium. A study for the PEIS states that "coals can contain an average of 4 ppm of selenium, normal soils can average 0.2 ppm, and the allowable limits in the streams are 5 ug/L (0.005 ppm). Disturbing coal and soils during MTM/VF mining could be expected to result in violations of the stream limit for selenium." (Bryant, 2002 at 74)[1]. Thus, without a verified strategy to prevent selenium pollution, discharges from the mine can be expected to cause or contribute to selenium water quality standard exceedences. The current plan is to rely on the material handling plan (MHP) shown in Section O of the mining permit. The MHP is the same as plans that have and continue to fail at other mines sites. Material handling plans are intended to isolate high selenium material from water courses before the leaching of selenium can cause or	See the responses to Comments ACEE-7, ACEE-u, ACEE-v, ACEE-w and AMA-10.

	Comment	Response
	contribute to a WQS violation. See http://www.wvdep.org/Docs/14134_sect32.pdf . The WVDEP's and the Corps's reliance on material handling plans has a number of fatal flaws. First, the material handling plans do not apply to the coal itself. Thus, during active coal extraction, there is no mechanism to prevent selenium from entering the discharge or the receiving stream. Second, the material handling plans are based on too few core samples (used to identify high selenium strata) from new mines. Third, the material handing plans are based on past experience with preventing acid mine drainage and, thus, require alkaline encapsulation of high selenium materials. This is nonsensical because alkaline environments increase the mobility of selenium and cause it to be more likely to leach and reach surface and ground water. Fourth, finally, and perhaps most importantly, the material handing plans simply do not work. For example, Hobet Mining operates two mines in the Mud River Watershed, both of which are supposed to be implementing the most recent selenium handling plans. Discharges from both those facilities consistently contain selenium in concentrations that exceed selenium effluent limits. Indeed, a Hobet manager admitted in a sworn deposition that the selenium handling plan is not working to bring the company into compliance with its selenium limits.	

	Comment	Response
	EPA in its veto of the Spruce No. 1 Mine states, "[m]aterials handling plans will not prevent elevated selenium levels downstream." See veto http://water.epa.gov/lawsregs/guidance/cwa/dredgdis/spruce.cfm App. 6 at 9-11. "Available evidence makes clear that bottom-up fill construction and materials handling have not reduced levels of selenium or total dissolved solids below levels known to be harmful to wildlife." Id. App. 6 at 5. The failure of MHPs to control selenium discharges leads to complete reliance on NPDES permit limits to restrict selenium. Consol, however, has no current plans to build treatment facilities to reduce selenium in its pollution discharges. Those facilities would be most effective if planned in conjunction with mine design. Further, even if multiple wastewater treatment plants were planned and constructed, there is no defined endpoint for when selenium pollution will dissipate and not require treatment. Evidence shows that these discharges will likely be in perpetuity. The likelihood of perpetual selenium discharges from the mine site must be evaluated in the SEIS."	
AMA-14 (February	Commenter provided discussion on: "*Issues Impacting the State and Citizens in the Region*	The Corps and the FHWA evaluate potential impacts to property values in the DSEIS Chapter 4 Sections 4.2.1.2,

	Comment	Response
24, 2012)	*that Must be Considered by the Corps* The mine will have significant and irreparable impacts on the citizens living in the area. Property values will decline, making it difficult to sell homes and other real estate. Flooding will increase and cause irreparable harm to local citizens and to state and federal flood mitigation budgets. Dust and blasting will impact residence health and quality of life. Mines cause large amounts of noise, blasting impacts, and community disruption. MTM/VF PEIS at IV.H-3 (noise and vibration caused by mountaintop mining near populated areas generate "relatively high numbers" of complaints). All of these concerns must be address in SEIS done by the Corps."	4.2.1.4, and 4.7.3.6. See response to Comment AMA-12 related to potential flooding impacts/hydrology. The Corps and the FHWA evaluate potential impacts due to noise and dust in the DSEIS Chapter 4 Sections 4.2.1.4, 4.2.2.4 and 4.2.7.
AMA-15 (February 24, 2012)	Commenter provided discussion on: "*Mining is Related to Serious Impacts on Human Health* Various studies have shown that coal mining has significant, negative impacts on the health of those living in the coal fields: Even after mine-site reclamation (attempts to return a site to premined conditions), groundwater samples from domestic supply wells have higher levels of mine-derived chemical constituents than well water from unmined areas (*22*). Human health impacts may come from contact with streams or exposure to airborne toxins and dust. State	See the response to Comment ACEE-x.

	Comment	Response
	advisories are in effect for excessive human consumption of Se in fish from MTM/VF affected waters. Elevated levels of airborne, hazardous dust have been documented around surface mining operations (*23*). Adult hospitalizations for chronic pulmonary disorders and hypertension are elevated as a function of county-level coal production, as are rates of mortality; lung cancer; and chronic heart, lung, and kidney disease (*24*). Health problems are for women and men, so effects are not simply a result of direct occupational exposure of predominantly male coal miners (*24*). Ex. 1at 148. Another recent study states: We characterized ecological integrity using an index of benthic macroinvertebrate community structure (West Virginia Stream Condition Index, SCI) and quantified human cancer mortality rates using county-level data from the Centers for Disease Control and Prevention. Regression and spatial analyses revealed significant associations between ecological integrity and public health. SCI was negatively related to age-adjusted total cancer mortality per 100,000 people. Respiratory, digestive, urinary, and breast cancer rates increased with ecological disintegrity, but genital and oral cancer rates did not. Smoking, poverty, and urbanization were significantly related to total	

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	cancer mortality, but did not explain the observed relationships between ecological integrity and cancer. Coal mining was significantly associated with ecological disintegrity and higher cancer mortality. Spatial analyses also revealed cancer clusters that corresponded to areas of high coal mining intensity. Our results demonstrated significant relationships between ecological integrity and human cancer mortality in West Virginia, and suggested important effects of coal mining on ecological communities and public health. Ex. 2 at 1. A 2011 study also highlights the impacts of MTM on human health: Results indicate that previously documented HRQOL disparities in Appalachia's coal mining areas are concentrated in MTM zones in the central part of the region. These disparities partly reflect the chronic socioeconomic weaknesses inherent in coal-dependent economies and highlight the need for efforts at economic diversification in these areas. However, significant disparities persist after control for these risks and suggest that the environmental impacts of MTM may also play a role in the health problems of the area's population. Ex. 3 at 852. Further, EPA in its final memo on water quality	

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	and MTR shares these same concerns and states, "[p]ossible human health impacts from coal mining activities have also been documented, including peer-reviewed public health literature that has preliminarily identified associations between increases in surface coal mining activities and increasing rates of cancer, birth defects, and other health problems in Appalachian communities." See http://water.epa.gov/lawsregs/guidance/wetlands/upload/Final_Appalachian_Mining_Guidance_072111.pdf at 4. Perhaps most alarming is another recent peer reviewed study by Ahern et al describing increased incidence of birth defects in MTR areas. The study concludes: The prevalence rate ratio (PRR) for any birth defect was significantly higher in mountaintop mining areas compared to non-mining areas (PRR¼1.26,95%CI¼1.21, 1.32), after controlling for covariates. Rates were significantly higher in mountaintop mining areas for six of seven types of defects: circulatory, respiratory, central nervous system, musculoskeletal, gastrointestinal, urogenital, and 'other'. There was evidence that mountaintop mining effects became more pronounced in the latter years (2000–2003) versus earlier years (1996–1999.)	

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	Ex. 4 at Abstr. These impacts must be considered by the Corps in the SEIS. In summary, all of these issues must be evaluated in the SEIS as specifically related to the Tug Fork watershed and citizens in the region."	
West Virginia Division of Culture and History (WVDCH)-1 (March 15, 2012)	Reference to WVDCH comments on WVDOH/FHWA's pre-draft EA dated 6-2011 regarding potential impacts to one below ground historic property located within the preferred KCH alignment, and the requirement to conduct a Phase I archeological survey following the selection of a preferred KCH alignment	(FHWA)
WVDCH-2 (March 15, 2012)	Maintain the only above ground historic property within the Area of Potential Effect (APE) is the Belo segment of the Lenore Branch of the Norfolk & Western Railroad, but the proposed KCH alignment would not adversely affect this historic property.	(FHWA)
United States Environmental Protection Agency (EPA)-a (March 19, 2012)	Comments indicating the USEPA assumes "three projects" are under review: • Buffalo Mountain Surface Mine • KCH between Delbarton and Belo; and • Potential Economic Development	The purposes for which the DSEIS is being prepared by the Corps and the FHWA are discussed in the DSEIS Chapter 2 Section 2.3. Although the potential economic development associated with the agencies' preferred alternative is discussed as a potential beneficial impact in the DSEIS Chapter 4, it is not a purpose for the Delbarton to Belo Project as evaluated by the Corps and the FHWA.
EPA-b (March 19,	Comments that the purpose and need should include the three projects above [see EPA-b]	See response to EPA-a.

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EPA-c (March 19, 2012)	Comments indicating additional alternatives need to be developed to address three projects above	The Corps and the FHWA are evaluating the potential combination of the KCH and the Buffalo Mountain Surface Mine (described as the Delbarton to Belo Project) in the DSEIS. Potential economic development is not included as a purpose being evaluated by the agencies. In addition, the DSEIS Chapter 3 includes a discussion of alternatives to the Delbarton to Belo Project.
EPA-d (March 19, 2012)	Comments indicating environmental data should include disclosure of all water quality data	The water quality data related to the proposed compensatory mitigation associated with the Buffalo Mountain Surface Mine is included in the DSEIS Chapter 4 Section 4.3.6.13. The water quality data reviewed by the WVDEP as part of the NPDES process for the mining project is included in the NPDES permit issued by the WVDEP on October 29, 2012. Other water quality data was not reviewed by the Corps or the FHWA.
EPA-e (March 19, 2012)	Comments on environmental justice issues related to: • demographic profile; • human health effects from mine construction (fugitive dust, blasting, etc); • potential impacts to subsistence fishing, hunting, gardening and foraging from mine construction; and, • potential drinking water impacts from mine construction.	The Corps and the FHWA discuss environmental justice in the DSEIS Chapter 4 Section 4.2.6.
EPA-f (March 19, 2012)	Comments indicating cumulative impacts should include very large geographic scope with consideration of: • Proposed intermodal facilities; • Coalfields Expressway construction; • Future coal mining; and, • Future development.	The Corps and the FHWA identify the scope of review for the Delbarton to Belo Project in the DSEIS Chapter 1 Section 1.3. The temporal and geographic scope for the analysis of cumulative effects associated with the Delbarton to Belo Project and its alternative in the DSEIS Chapter 4 Section 4.7.3.DSEIS which includes the Corps cumulative effects scope of review under CWA Section 404.DSEIS. The proposed Prichard Intermodal

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		Facility and the Coalfields Expressway are located outside of the cumulative effects geographic scope of review. However, the Prichard Intermodal Facility it is identified and discussed in Chapter 4, Section 4.2.2.2.
EPA-g (March 19, 2012)	Comments related to the proposed mitigation (particularly related to the proposed Buffalo Mountain Surface Mine): • Concerns regarding the success of proposed establishment streams; • Concerns about the quality of proposed rehabilitation stream reaches and potential future mining impacts that may result in subsidence; and, • Benefits of proposed wastewater treatment improvements.	CONSOL's proposed CMP is discussed in the DSEIS Chapter 4 Section 4.3.6.13, including its compliance with the Mitigation Rule. The concerns indicated here are also discussed in that section of the DSEIS.