

TABLE 1
PROPOSED MITIGATION AND MINIMIZATION MEASURES

Design

At the crossing of the Preferred Alternative and the Blue Ridge Parkway, construction of Interstate 73 will be confined to the existing Route 220 right-of-way (160 feet). As presented in the FEIS (Figure 2.6-8) the crossing at this location will consist of 12 foot exterior shoulders, 12 foot interior shoulders, three-12 foot travel lanes in each direction and a 6 foot median barrier. The median may be wider provided the entire cross-section remains within the existing right-of-way. In order to ensure that the footprint of the Preferred Alternative at this location will remain within the existing right-of-way, retaining walls will be included in the design as necessary.

The existing access to the Blue Ridge Parkway at existing Route 220 will be eliminated as part of this project and the existing ramps obliterated and returned to a natural condition in coordination with the National Park Service. New access to the Blue Ridge Parkway will be replaced at one of the two locations depicted in the Section 106 Programmatic Agreement. Development and construction of the new access will be funded as part of this project. A decision regarding the administration of the project to provide new access will be made when project funding becomes available. The final decision on which new access alternative will be selected and developed will be made by the National Park Service in accordance with its own procedures when project funding becomes available.

Given the concern over the crossing of the Pigg River due to endangered specie issues, FHWA will not commit any resources to the development of Segment 153, other than the necessary resources needed to carry out final design activities and develop information needed by the USFWS to carry out formal consultation and issue a biological opinion.

Based on preliminary engineering information, it appears that a crossing of the Pigg River can be accomplished without constructing any piers in the normal flow of the Pigg River. At this location, the normal flow width of the Pigg River is approximately 75-ft to 100-ft. Spans in the 150-ft to 200-ft range can easily clear-span the water at this location. Barring any extraordinary and unforeseen issues related to engineering or the site conditions, the I-73 crossing of the Pigg River will be accomplished without any piers being constructed in the normal flow of the river.

At the time of design approval, design plans will be based on a 20-year design year, minimally.

Relocations

(based on preliminary engineering)
249 Residential Units
60 Businesses
4 Churches
1 Fire Station
2 Other Non-Profit

Noise

2,062 Properties Impacted

Directional ramps at Interstate 73 (Interstate 581) and Orange Avenue will be reconfigured to avoid any use of the First Baptist Church Cemetery in the City of Roanoke.

Retaining walls will be used in the City of Roanoke to avoid any use of the Old Southwest Historic District.

No property will be acquired from Clearbrook Elementary School; the existing right-of-way limits in front of the school will be maintained. Wildlife crossings will be included in the project during final design at locations yet to be determined. FHWA and VDOT will use the Virginia Department of Game and Inland Fisheries' Virginia Natural Landscape Assessment to identify locations and opportunities for wildlife crossings.

Acquisition and relocation will be carried out in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Any individual or family displaced because of the acquisition of real property, in whole or in part, is eligible to receive reimbursement for fair market value of property acquired as well as moving costs. Displaced property owners will be provided relocation assistance advisory services. Relocation resources would be made available to all residents and businesses without discrimination.

Sufficient decent, safe, and sanitary replacement housing may not be available within and adjacent to the project area throughout its entire length, and last resort housing may be required and will be provided as necessary; last resort rent supplements and last resort replacement housing payments will also be provided as necessary. Under any event, decent, safe and sanitary replacement housing will be provided for all displaced residents.

All affected businesses, non-profits, and farms will be compensated for moving and re-establishment expenses if they choose to relocate and re-establish their businesses. Otherwise, they will be paid an in-lieu of payment should they decide not to re-establish.

Fourteen noise barriers were developed to provide a minimum 5 dB(A) noise reduction at the northern end of the project where the majority of impacted properties are located and clustered close together. These fourteen noise barriers would have provided the minimum noise attenuation required by FHWA to 231 impacted properties. In keeping with the Virginia State Noise Abatement Policy, consideration additionally of the reasonableness of these noise barriers (i.e. cost-

effectiveness) determined that only eight of the fourteen noise barriers are feasible and reasonable based on preliminary engineering information. These eight barriers would protect 174 properties. Recognizing that the determination that these barriers are feasible and reasonable is based upon preliminary engineering and limited design information, this determination is subject to change once traffic is updated and a detailed barrier analysis is conducted during final design. Notwithstanding, it is FHWA's intent to construct all noise barriers that are found to be feasible and reasonable during final design in accordance with the Virginia State Noise Abatement Policy. In support of this effort, the noise analysis will be updated to minimally reflect a 20-year design year from the date of FHWA approval of the plans, specifications, and estimates.

In the rural areas, noise barriers were not developed to mitigate for identified noise impacts because the spacing of receptors would make those noise barriers not cost-effective. Notwithstanding, these areas will be reviewed again during final design to determine if these circumstances still apply. Additionally, VDOT is in the process of updating the Virginia State Noise Abatement Policy which might effect the conclusions that have been reached about the reasonableness of noise barriers in rural areas.

It is possible that barriers determined to be feasible and appear to be reasonable during the environmental process based on preliminary engineering could fall out during final design. Likewise, it is possible that barriers that have not been found to be feasible and that do not appear to be reasonable based upon preliminary engineering could be found to be so during final design.

Consistent with the existing Virginia State Noise Abatement Policy, the final EIS acknowledged the possibility of third party funding for those noise barriers that are determined not to be cost-effective. However, revisions to FHWA's Highway Traffic Noise Policy that are currently being considered would eliminate the third party funding provision as an eligible mechanism for funding noise barriers.

A Section 106 Programmatic Agreement has been executed that takes into account the impact of the project on the Blue Ridge Parkway. That agreement includes stipulations related to the width of the Blue Ridge Parkway crossing, the aesthetic treatment of the crossing and the new access, the identification/evaluation/treatment of historic properties, post-review discovery of archeological properties, and treatment of human remains. The agreement has been executed by the Advisory Council on Historic Preservation, National Park Service, Virginia

Historic Resources

Adverse Effect: Blue Ridge Parkway

Endangered Species

Roanoke logperch
James spiny mussel
Smooth cone snail

Department of Historic Resources, Virginia Department of Transportation, and Federal Highway Administration and concurred in by Roanoke County, City of Roanoke, and Virginians for Appropriate Roads. A copy of the Programmatic Agreement is included in Appendix F of the final EIS.

Surveys for the Roanoke logperch and James spiny mussel will be repeated within two years from initiation of construction at each survey location per the U.S. Fish and Wildlife Service.

Bridges over waters containing federally listed species (the Pigg River crossing is the only applicable bridge at this time) will be constructed without deck drains/scuppers if it is determined to be feasible during final design and it does not create any safety issues with ponding water.

Based on preliminary engineering information, it appears that the Pigg River crossing could be constructed without any piers in the normal flow of the river. Therefore, barring any unforeseen and extraordinary issues related to the site conditions or engineering concerns, the Pigg River crossing will be constructed without any piers in the normal flow of the river.

The following erosion and sediment control and storm water management commitments will be implemented in conjunction with the development of segment 153:

- A project-specific erosion and sediment control plan and a storm water management plan will be developed for the project, including segment 153 (see section 4.6.3.3 for a list of measures that will be considered to control and mitigate for erosion and storm water runoff);
- Erosion and Sediment Control Inspectors certified by the Virginia Department of Conservation and Recreation will be assigned to the project during construction, and VDOT will consider employing a full-time erosion and sediment inspector while construction occurs over and in the immediate vicinity of the Pigg River;
- All contractors working on site will be certified through the VDOT Erosion and Sediment Control Contractor certification;
- Permanent storm water BMPs will be constructed and implemented as soon as practicable following clearing and grubbing operations and in conjunction with roadway construction activities;
- Storm water management facilities in proximity to receiving waters with known populations of the Roanoke logperch will be sized to accommodate the contents of a tanker truck in the

case of a hazardous material spill;

Pending completion of Section 7 and assuming that the U.S. Fish and Wildlife Service issues a “no jeopardy opinion” consistent with the draft Biological Assessment, it is anticipated that the U.S. Fish and Wildlife Service will identify discretionary measures that FHWA can implement consistent with its authority under Section 7(a)(1) of the Endangered Species Act. These conservation measures will be given consideration when they are offered by the U.S. Fish and Wildlife Service. Regardless of the outcome of the Section 7 formal consultation process, FHWA is committing to the following mitigation measures consistent with their authority under section 7(a)(1) of the Endangered Species Act to be implemented as segment 153 is developed:

- Restore and preserve riparian buffers in the study area and in particular in the Big Chestnut Creek-Pigg River Stream Conservation Unit by partnering with the U.S. Fish and Wildlife Service and others to identify and fund those restoration and preservation opportunities and to determine the parties and approach that is best suited for ensuring that the efforts are carried out (to be carried out in conjunction with mitigation for stream impacts);
- Fund U.S. Fish and Wildlife Service efforts to propagate and reintroduce the Roanoke logperch into streams and rivers within the study area and in particular the Big Chestnut Creek-Pigg River Stream Conservation Unit;
- Explore with the U.S. Fish and Wildlife Service and fund opportunities to create and restore Roanoke logperch habitat in the study area and in particular the Big Chestnut Creek-Pigg River Stream Conservation Unit;
- Barring any unforeseen and extraordinary issues related to the site conditions or engineering concerns, practicable measures to provide for the upstream/downstream movement of the Roanoke logperch at locations of proposed culvert installation (e.g. Powder Mill Creek, Doe Run, and an unnamed tributary to Doe Run) will be implemented so as not to preclude expansion of the species range in support of recovery efforts.

Floodplains

19 floodway crossings;
28 floodplain encroachments;
(named streams affected: Lick Run,
Roanoke River, Back creek,
Maggodee Creek, Blackwater River,
Pigg River, South Fork Little Chestnut

During final design, a detailed Location Hydraulic Study will be performed in accordance with 23 CFR 650. The detailed hydraulic analysis will identify engineering features that ensure that the 100-year floodplain elevations do not increase more than one foot or more and increase the risk of flooding to adjacent properties due to the construction of the facility within the impacted floodplain. All engineering features that are needed to ensure that the 100-year

Creek, Big Chestnut Creek, Reed Creek, Beaver Creek, Smith River, Leatherwood Creek, Doe Run, Matrimony Creek)

Wetlands

Type (Jurisdictional)	<u>Acres</u>
Palustrine forested (PFO)	0.00
Palustrine scrub shrub (PSS)	2.50
Palustrine emergent (PEM)	<u>1.70</u>
Total	4.20

Waterway (Watershed) Affected:

PSS: Leatherwood Creek and Beaver Creek (Roanoke River and Upper Dan Sub-basin)

PEM: Beaver Creek and Toeclout Branch (Roanoke River and Upper Dan Sub-Basin)

floodplain elevation does not increase more than a foot will be incorporated into the project. The hydraulic analysis will comply with all federal, state, and local floodplain regulations (44 CFR Part 60.3, Floodplain management criteria for flood prone areas, and Part 65.12, Revision of Flood Insurance Rate Maps to Reflect Base Flood Elevations Caused by Proposed Encroachments). For intermittent and smaller perennial streams, culverts will be sized to accommodate the effects of flooding.

Construction of the selected alternative will conform to applicable state and local floodplain protection standards. Control of storm water runoff, during both the construction and operational phases, will be achieved by incorporation of storm water management controls into the project. During final design, a storm water management plan will be developed to retain additional floodwater discharges created by an increase in impervious land cover.

In accordance with Executive Order 11990, it has been determined that there is no practicable alternative to the proposed construction in wetlands and the proposed action includes all practicable measures to minimize harm (that can be developed at this point given the limited amount of engineering and design work that has taken place), which may result from such use. Of the build alternatives considered in the draft EIS, the selected alternative has the least impact to wetlands. Since wetland impacts were determined based on a 600-foot corridor, it is expected that wetland impacts have been overstated and will be further reduced during final design. In addition, since wetland impacts were based on a 600 foot corridor, designers have the flexibility to shift the alignment within the 600 foot corridor in an effort to further avoid or minimize wetland impacts. As the Selected Alternative is developed during final design and coordinated for permits, additional design measures will be explored to minimize wetland encroachments and potential harm to wetlands, as much as practicable. Even after this effort, unavoidable wetland impacts are expected to remain. It is anticipated that these wetland impacts will be mitigated in accordance with the compensatory ratios for wetland losses that are typically accepted by the USCOE:

- ◆ 1 acre for each acre of palustrine emergent wetland impacted
- ◆ 1 ½ acres for each acre of palustrine shrub-scrub wetland impacted
- ◆ 2 acres for each acre of palustrine forested wetland impacted

Appropriate compensatory mitigation will be developed in coordination with the USACOE during the permitting process. Usually, mitigation is sought as close to the impacted wetlands as possible. If this proves

Streams

Type	<u>Feet</u>
Intermittent Streams	44,429
Perennial Streams	<u>18,012</u>
Total	62,441

Upland Forest Habitat

Type	<u>Acres</u>
Deciduous	803
Palustrine scrub shrub (PSS)	740
Palustrine emergent (PEM)	<u>1,827</u>
Total	3,370

Invasive Species

impracticable, mitigation is sought within the watershed. If this proves impracticable, then mitigation banks remain an option. Presently, options are limited in terms of the availability of wetland mitigation banks serving the watersheds in which the wetlands would be impacted, but this may change in the future as additional banks are established and come on line.

Specific mitigation for stream impacts has not been determined at this time and is typically handled on a case-by-case basis during the permitting process. Because impacts were determined based on a 600-foot corridor, it is expected that stream impacts have been overstated and will be further reduced during final design as the corridor is further refined. FHWA will participate in any mitigation for stream impacts developed in coordination with the USACOE. Minimally, unavoidable stream relocations will be accomplished using natural stream design, meaning that the relocated channel will mimic the dimension, pattern, and profile of a representative reference stream. In addition, stream crossings will include countersinking of pipe/culverts to allow for a low flow channel in both perennial and intermittent streams. Finally, riparian buffers impacted as a result of stream crossings will be mitigated by restoring riparian buffers or restoring degraded streams elsewhere in the project area or within watersheds affected by the project. FHWA will be in a better position to quantify the mitigation during final design after the impacts are refined.

In addition to the commitment for wildlife crossings and riparian corridor restoration, FHWA and VDOT will provide in-lieu payments to the Virginia Department of Game and Inland Fisheries for the purchase of lands for the preservation and enlargement of the Turkeycock and/or Havens Wildlife Management Areas with the amount of acreage to be preserved to be determined by FHWA and VDOT. In addition, FHWA and VDOT will work with the appropriate parties and pursue reforestation efforts in the study area with the number of acres to be reforested determined at a later date. Because impacts were determined based on a 600-foot corridor, it is expected that forest habitat impacts have been overstated and will be further reduced during final design as the corridor is further refined. FHWA will be in a better position to quantify the mitigation during final design after the impacts are refined.

VDOT will not plant any of the prohibited seeds from the statewide noxious-weed list. All seeds used by VDOT will be tested in accordance with the Virginia Seed Law and VDOT's standards and

Construction Impacts

specifications. VDOT will work with the Virginia Department of Agriculture and Consumer Services to implement a plan to restrict the spread of invasive species should they be found in the project area and impacted by construction. VDOT will only use invasives-free mulches, topsoils and seed mixes. Slopes will be seeded within 48 hours of being exposed.

Air Quality

Construction activities can have a short-term impact on local air quality during periods of site preparation, with particulate matter, also known as fugitive dust, having the greatest impact. This impact will occur in association with excavation and earth moving, cement, asphalt, aggregate handling, heavy equipment operation, use of haul roads and wind erosion of exposed areas and material storage piles. The effect of fugitive dust will be temporary and will vary in scale depending on local weather conditions, the degree of construction activity and the nature of the construction activity.

VDOT's *Road and Bridge Specifications* regulate construction procedures on all projects. The *Specifications* require contractors to comply with all applicable local, state, and federal laws, ordinances, regulations, orders and decrees. This includes compliance with emission standards for construction equipment and adherence to regulations for burning of materials from clearing and grubbing, demolition, or other operations. The *Specifications* have been reviewed by VDEQ and found to conform to the SIP. The *Specifications* prohibit burning of tires, asphalt materials, used crankcase oil, or similar materials that produce dense smoke. Provisions will be included in the contract to minimize airborne dust.

Noise

An increase in project area noise levels will occur during the construction of the proposed improvements. Although construction noise will be temporary and of shorter duration, noise receptors sensitive to highway traffic noise will also be sensitive to construction noise. The degree of noise impact during construction will be a function of the number and types of equipment being used, and the distances between the construction equipment and the noise-sensitive areas.

To minimize the effect of construction noise, VDOT's *Road and Bridge Specifications* contain noise control provisions which include, but are not limited, to the following:

- ◆ "The Contractor's operations shall be performed so that exterior noise levels measured during a noise-sensitive activity shall be not

more than 80 decibels. Noise sensitive activity is any activity for which lowered noise levels are essential if the activity is to serve its intended purpose. Such activities include, but are not limited to, those associated with residences, hospitals, nursing homes, churches, schools, libraries, parks, and recreational areas."

- ◆ "The Department may monitor construction-related noise. If construction noise levels exceed 80 decibels, the Contractor shall take corrective action before proceeding with operations. The Contractor shall be responsible for costs associated with the abatement of construction noise and the delay of operations attributable to noncompliance with these requirements."
- ◆ "The Department may prohibit or restrict to certain portions of the project any work that produces objectionable noise between 10 P.M. and 6 A.M. If other hours are established by local ordinance, the local ordinance shall govern."
- ◆ "Equipment shall in no way be altered so as to result in noise levels that are greater than those produced by the original equipment."

Water Quality and Pollution Control

Effects to water quality resulting from erosion and sedimentation, as well as from pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful waste, will be strictly controlled in accordance with VDOT's *Specifications*. The Contractor will exercise every reasonable precaution necessary during construction to prevent pollution of rivers, streams, or impoundments. Erosion and sediment control measures will be implemented to minimize water quality impacts from increased levels of sedimentation and turbidity. Control measures may include berms, dikes, sediment basins, fiber mats, straw silt barriers, netting, mulch, temporary and permanent seeding, and other measures. In the event the contractor dumps, discharges, or spills any contaminant, which may affect water quality, he/she will immediately notify all appropriate local, state, and federal agencies and will take immediate action to contain and remove the contaminant.