I-73 LOCATION STUDY

FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME 1

November 2006

Bedford, Botetourt, Franklin, Henry & Roanoke Counties
and the Cities of Roanoke & Martinsville

VDOT Virginia Department of Transportation

U.S. Department of Transportation Federal Highway Administration

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I-73 LOCATION STUDY
Between ROANOKE and the NORTH CAROLINA STATE LINE
COMMONWEALTH OF VIRGINIA

FINAL ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to the National Environmental Policy Act

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by the

U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL HIGHWAY ADMINISTRATION

and

VIRGINIA DEPARTMENT OF TRANSPORTATION

Cooperating Agencies
U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service,
U.S. Environmental Protection Agency, National Park Service,
U.S. Coast Guard

11/30/06
Date of Approval

Chief Engineer
Virginia Department of Transportation

12/1/06
Date of Approval

Division Administrator,
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The I-73 Location Study evaluates potential highway corridors from I-81 near Roanoke City, Virginia to the North Carolina State Line. The project Study Area is located in parts of Bedford, Botetourt, Franklin, Henry, and Roanoke counties, and the cities of Roanoke and Martinsville. As proposed, I-73 would be generally a four-lane, median divided, full limited access highway. The project would address the transportation and economic needs of the study area. The Environmental Impact Statement evaluates 11 Build Alternatives, a Transportation System Management Alternative, and a No-Build Alternative. For each alternative, engineering, economic, social, and environmental impacts are considered.

A Federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

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EXECUTIVE SUMMARY

S.1 PROJECT HISTORY

Initiation of the NEPA process for the I-73 project in Virginia started with scoping in the fall of 1997. In Virginia, the I-73 location, as established by Congress, generally follows U.S. Route 220 from the Virginia-North Carolina border to I-581 to I-81 north of Roanoke. The location of I-73 established by Congress continues south along I-81 to the proposed "smart highway" in the vicinity of Christiansburg in Montgomery County. The I-73 corridor follows the "smart highway" west of Christiansburg to U.S. Route 460 in the vicinity of Blacksburg and continues along U.S. Route 460 to the West Virginia state line. The section of the Congressionally designated I-73 in Virginia under evaluation in this EIS is that section from the Virginia – North Carolina border to I-581 to I-81 just north of Roanoke.

The I-73 Draft Environmental Impact Statement (DEIS) was approved for public availability by the Federal Highway Administration (FHWA) in October of 2000. Public hearings were held in December of 2000 followed by an alternative location decision by Virginia's Commonwealth Transportation Board (CTB) in June of 2001. The alternative selected by the CTB represented a mix of Options 1, 2 and 2a as presented in the DEIS. The approximately 72 mile long alternative adopted by the CTB became known as the Adopted Location Corridor (ALC). In the June 2001 resolution, the CTB resolved that the ALC be designated a limited access highway and be called "Virginia Interstate 73".

S.2 INTERIM ACTIVITY

For the remainder of 2001 through 2003, the following activities were accomplished:

- Developed responses to substantive agency and public comments received on the DEIS and during the public hearings.
- Following coordination with the appropriate state and federal agencies, conducted threatened and endangered specie surveys for the Smooth coneflower, the James spinymussel, and the Roanoke logperch.
- Developed a micro-simulation model (CORSIM) of the downtown I-581 and US 220 corridor and its interchanges to assess the operational impacts of I-73 traffic and new development in the downtown area on the corridor.
- Worked closely with the National Park Service (NPS) to address design and aesthetic issues associated with the I-73 crossing of the Blue Ridge Parkway.
- Completed a draft of the Final Environmental Impact Statement (FEIS).
- Conducted additional research and coordinated with the Virginia SHPO and in some cases, the Advisory Council on Historic Preservation and the Keeper of the National Register of Historic Places, to determine the historical significance of the Southeast Roanoke Neighborhood, Coopers Cove Community, the Oak Hill Old German Baptist Brethren Community, and other resources located in the study area.
- Regarding historic resources, in November of 2002, the Keeper of the National Register of Historic Places determined that a large urban neighborhood in downtown Roanoke (the Southeast Neighborhood) was eligible for the National Register as a historic district. As proposed, the ALC ran through and severed the Southeast Neighborhood Historic District. At the same time, the Keeper also determined that Coopers Cove Community was not eligible for the National Register as a historic district.

Further, in November of 2002, Virginians for Appropriate Roads (VAR) submitted a report asserting the existence of a rural historic district as well as a Traditional Cultural Property (TCP), which focused upon an agriculturally based ethnic group (Oak Hill Old German Baptist Brethren) in Franklin County. As

proposed, the historic district and TCP as delineated in the VAR report, would have been severed by the ALC. After extensive research, the Virginia Department of Historic Resources concurred with VDOT's findings in December of 2003 that the Oak Hill Old German Baptist Community was not eligible for the National Register as a historic district or TCP. In June of 2004, the Advisory Council on Historic Preservation, which reviewed the eligibility of the Oak Hill German Baptist Community at the request of VAR, found no cause to refer the eligibility of the Oak Hill German Baptist Community to the Keeper of the National Register.

S.3 RECENT ACTIVITY

Additional efforts in 2004 included the following activity:

- Reviewed the construction and right of way (ROW) costs;
- Developed a Benefit Cost Analysis (BCA) for the ALC;
- Updated and changed the travel demand forecast as well as operational conditions from a horizon year of 2020 to 2025;
- Updated the socioeconomic data to reflect the 2000 Census;
- Revised the typical section from Route 419 south to Buck Mountain Road (Route 679) to avoid any use of property associated with the Blue Ridge Parkway;
- Initiated development of a memorandum or agreement to document how the Section 106 adverse effect to the Blue Ridge Parkway would be taken into account;
- Updated of the Hazardous Material database to reflect existing conditions;
- Revisited the Secondary and Cumulative Impact discussions to include a broader historical perspective;
- Participated in informal Section 7 Consultation with the US Fish and Wildlife Service (USFWS) and prepared a Biological Assessment for the Roanoke Logperch;
- Re-evaluated the DEIS to determine the need for a supplemental EIS ;
- Conducted Citizen Information Meetings on June 1 and June 2, 2004 in Roanoke to inform the public and explain VDOT's proposal to reroute the ALC to avoid the recently designated Southeast Neighborhood Historic District.

As a direct consequence of the Keeper's decision on the historical significance of the Southeast Neighborhood in Roanoke, VDOT, after evaluating existing and new avoidance alternatives, elected to advance segments of an alternative which had previously been studied in the DEIS. On July 15, 2004, the CTB rescinded and amended their June 21, 2001 action as follows:

- Amending action approving Segment Alternatives 376, 287A and 399, as Segment Alternatives, to be rescinded
- Amending action approving Segment Alternatives 118 and 118B, as a connector to U.S. Route 200, to be rescinded
- Approval of Segment Alternatives 375, 118, 118B and 118C, and designation of these Segment Alternatives as a Limited Access Highway and add them to the Interstate System of Highways as a part of Virginia I - 73.

Factors which influenced the selection of the Adopted Location Corridor over other alternatives include the following:

- The existing I-581 corridor could be modified to accept additional traffic from I-73 with substantial yet acceptable improvements with little disruption to adjacent land uses.

- Use of the existing I-581 corridor would bring traffic to the Central Business District of the City of Roanoke and would coincide with the City's wish to have the I-73 facility constructed without bypassing the City to the east or west.
- The ALC would improve safety on existing U.S. Route 220 by removing through traffic (such as trucks, double-wides, and other commercial vehicles) from local traffic (such as school buses, emergency vehicles, and farm vehicles).
- Construction of the ALC along existing U.S. Route 220 in Roanoke City/County would avoid the newly designated Southeast Roanoke historic district.
- The ALC was consistent with the economic development goals of Martinsville and Henry County. Additionally just to the east of the study area Pittsylvania County and the City of Danville strongly supported the ALC due to the proximity of the ALC to their communities and the perceived economic benefit associated with an interstate facility within 30 to 45 minutes of the majority of their population base.
- The ALC would address safety issues associated with the present crossing of Windy Gap at Route 116 by providing an improved alternative to Route 116.
- The ALC would provide enhanced access to northeastern Franklin County and an expanding commercial zone located along Route 40 to the east of Rocky Mount, thereby contributing to economic growth within the corridor.
- The ALC would result in the lowest wetland impacts compared to other build alternatives considered in the DEIS.
- The ALC would have lower relocation impacts than the alternatives that improve existing U.S. Route 220, impact fewer historic resources and cross the Blue Ridge Parkway at the NPS' preferred crossing.

The comparative capital costs of segments and alternatives prepared in the in DEIS were based upon 1999 construction and right of way costs. Since 1999 construction materials, labor and property costs have escalated substantially. In the last three years concrete, steel and oil based products (asphalt) have escalated 40% to 65%. The ALC was estimated to cost $1.298 billion in 1999 dollars and is now estimated to cost $2.844 billion in 2007 dollars. The 2007 cost estimate updates the 1999 construction and property costs and includes a more conservative allowance for environmental mitigation, design fees, construction engineering and inspection services.

VDOT has not comprehensively developed nor has the CTB adopted a formal funding and construction schedule for the further development of I-73. However, recent FHWA policy requires that an estimate of capital cost for the expected year of expenditure be prepared. For the purposes of compliance with this policy, a five year preliminary engineering and right of way procurement phase followed by an eight year construction phase was assumed. Under this assumption, construction would be completed in 2020. Since the bulk of the expenditures are in the latter half of the construction period, the midpoint of the construction period plus one year was used to project the estimated cost for the year of expenditure (2017). The projected capital cost in 2017 dollars is estimated to be $3.992 billion. These costs are documented in the Capital Cost and the ROW Technical Memoranda, both dated November 2006.

S. 4 ALC IMPACT ON RESOURCES

The following table summarizes resource impacts incurred if the ALC is constructed. Resource impacts associated with the other alternatives are provided in Table S-1 in the October, 2000 DEIS.

Table S.4-1
QUANTIFIABLE ALC RESOURCE IMPACTS

RESOURCE	IMPACT QUANTITY
2020 Traffic and Transportation Impacts:	
Average Congested Flow Speed, Arterials and Expressway Network, (MPH)	51.1
Study Area Vehicle Hours Traveled, Per Day	68,800
Study Area Vehicle Miles (km) Traveled, Per Day (in millions)	5.73 (9.22)
Annual Reduction in Accidents/Crashes	218
Relocation Impacts (Displacements):	
Residential Units	249
Business	60
Land Use Impacts:	
Residential, Acres (Hectares)	756 (304)
Agricultural, Acres (Hectares)	1,715 (693)
Commercial/Industrial, Acres (Hectares)	1,193 (483)
Forest, Acres (Hectares)	3,370 (1,364)
Public/Institutional, Acres (Hectares)	12 (5)
Total, Acres (Hectares)	7,046 (2,849)
Community Facilities & Service Displacements:	
Schools	0
Neighborhoods	0
Churches	4
Fire Stations	1
Other Non – Profit	2
Hazardous Material Sites:	
Sites Within Segment Boundaries	61
Visual/Aesthetic Resources:	
View Cells Seen From Blue Ridge Parkway	284
Average Visual Quality Ranking (View From the Road)	4.42
Average Visual Impact Ranking (View of the Road)	-2.53
Air Quality (2020):	
Highest 1 Hour CO Concentration (PPM)	9.4
Highest 8 Hour CO Concentration (PPM)	6.0
Noise Impact:	
Homes Approaching or Exceeding 67 dBA or Exceeding the Substantial Increase Threshold (Increase of 10 dBA)	2062

Table S.4-1
QUANTIFIABLE ALC RESOURCE IMPACTS

RESOURCE	IMPACT QUANTITY
Energy, 2020 Consumption, Joules and (BTU's), both expressed in trillions:	
Operational	6,700 (6.67)
Construction	11,912 (11.29)
Total	18,612 (17.96)
Water Quality:	
Number of Stream Crossings	112
Number of Navigable Water Crossings	3
Number of Floodway Crossings	19
Waters of the US:	
Wetlands, Acres (Hectares)	21.3 (8.6)
Section 4(f) and Section 106 :	
4(f) Uses:	
Parklands Used	0
Historic Properties Used	0
106 Adverse Effect Determinations	1
Terrestrial Ecology/Agriculture, Acres (Hectares):	
Upland & Bottomland Hardwood Forests	802 (325)
Pine Forests	739 (299)
Mixed Hardwood & Pine	1,827 (739)
Cultivated Fields	1,707 (691)
Prime Farmlands	83.6 (34.8)
Threatened and Endangered Species (potential impact):	
Smooth coneflower	0
James spinymussel	0
Roanoke logperch	1
Design Elements and Costs:	
Length, Miles (km)	71.7 (115.4)
Construction & Contingency Costs ($Billions)	$2.844
Right of Way, Relocation & Utilities Costs ($ Billions)	$0.374
Total 2007 Capital Cost ($ Billions)	$2.844
Total 2017 Year of Expenditure Capital Cost ($Billions)	$3.992

The accompanying chapters of the FEIS provide additional discussion and supporting data for the figures depicted in Table S.4-1.

GLOSSARY OF COMMONLY USED ACRONYMS

AASHTO	American Association of State Highway Transportation Officials
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
ALC	Approved Location Corridor
APE	Area of Potential Effect
AST	Aboveground Storage Tank
B&K	Bruel and Kjaer
BMP	Best Management Practice
Brank	conservation site biodiversity rank value
BTU	British Thermal Unit
CALTRANS	California Transportation
C/D	Collector-distributor Road
CEDS	Comprehensive Environmental Database System
CEQ	President's Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COE	United States Army Corps of Engineers
CORSIM	Corridor Simulation
CTB	Virginia Commonwealth Transportation Board
dBA	A-weighted Decibel
DCR	Virginia Department of Conservation and Recreation
DNH	Division of Natural Heritage
DEIS	Draft Environmental Impact Statement
DEQ	Virginia Department of Environmental Quality
DGIF	Virginia Department of Game and Inland Fisheries
DHR	Virginia Department of Historic Resources
DOH	Virginia Department of Health
DOI	United States Department of the Interior
DOT	Department of Transportation
DSWC	Virginia Division of Soil and Water Conservation
EA	Environmental Assessment
EAC	Early Action Compact
EIS	Environmental Impact Statement

EPA	United States Environmental Protection Agency
ERNS	Emergency Response Notification System
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FINDS	Facility Index System
FIRE	finance, insurance and real estate
FPPA	Farmland Protection Policy Act
FWS	United States Fish and Wildlife Service
GIS	Geographic Information System
HC	Hydrocarbons
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
HEP	Habitat Evaluation Procedure
HMIRS	Hazardous Materials Information Reporting System
IACM	Inter Agency Coordination Meeting
ISTEA	Intermodal Surface Transportation Efficiency Act
L_{eq}	Equivalent Continuous Noise Level
LOS	Level of Service
LQGs	Large-Quantity Generators
LTANKS	Leaking Tanks Database
LUST	Leaking Underground Storage Tank
LWCFA	Land and Water Conservation Fund Act, also referred to as Section 6(f)
MINES	Mines Master Index File
MLTS	Material Licensing Tracking System
MOA	Memorandum of Agreement
MOU	Memorandum of understanding
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAP	Natural Area Preserve
NCHRP	National Cooperative Highway Research Program
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NFRAP	No Further Remedial Action Planned

NHPA	National Historic Preservation Act of 1966
NHS	National Highway System
NO_X	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NPS	National Park Service
NRC	Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	Ozone
O/D	Origin and Destination
Pb	Lead
PAD	Polychlorinated Activity Database
PCB	Polychlorinated Biphenyl
PDC	Planning District Commission
$PM_{(2.5,10)}$	Particulate Matter (2.5 or 10 Microns)
PPTA	Public-Private Transportation Act
PUBH	Palustrine Wetlands with Unknown Bottoms
RAATS	RCRA Administrative Action Tracking System
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
ROD	Record of Decision
SCU	Stream Conservation Units
SERP	State Environmental Review Process
SHPO	State Historic Preservation Officer
SO_X	Sulfur Oxides
SPCC	Spill Prevention Control and Countermeasures
SQGs	Small-Quantity Generators
STAA	Surface Transportation Assistance Act
STIP	Statewide Transportation Improvement Program
STURRA	Surface Transportation and Uniform Relocation and Assistance Act
SWF/LF	Solid Waste Management Facilities/Landfill Sites
TEA 21	Transportation Equity Act for the 21st Century
TEA-LU	The Transportation Equity Act: A Legacy for Users
TRIS	Toxic Chemical Release Inventory System
TSDs	treatment, storage, and disposal facilities

TSM	Transportation Systems Management
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USGS	United States Geological Survey
UST	Underground Storage Tank
VA SPILLS	Spills (in Virginia)
VDACS	Virginia Department of Agriculture and Consumer Services
VDOT	Virginia Department of Transportation
VEC	Virginia Employment Commission
VHT	Vehicle Hours Traveled
VIMS	Virginia Institute of Marine Science
VKT	Vehicle Kilometers Traveled
VMRC	Virginia Marine Resources Commission
VMT	Vehicle Miles Traveled
VPDES	Virginia Pollutant Discharge Elimination System
VRP	Voluntary Remediation Program
VTDP	Virginia Transportation Development Plan
VWPP	Virginia Water Protection Permit
WTP	Water Treatment Plant

GLOSSARY OF COMMONLY USED TERMS

Alternative:	General term that refers to possible solutions to satisfy the transportation deficiencies identified in the purpose and need statement.
Attainment area:	An area considered to have air quality as good as or better than the national standards defined in the Federal Clean Air Act.
Aquifer:	A water-bearing unit of permeable rock, sand or gravel which yield considerable quantities of water to springs and wells.
Benthic:	Located on the bottom of a body of water or in the bottom sediments, or pertaining to bottom-dwelling organisms.
Biodiversity:	The variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur.
Build Alternative	Includes all improvements in the No-Build Alternative, plus a new interstate with full access control. No turn lanes, cross traffic or driveway access would be permitted on the new interstate. The Build Alternative would be built to interstate design standards with a minimum of four travel lanes (two in each direction).
Corridor Options:	Term that refers to the various corridor alignments developed as possible solutions under the Regional Build Alternative.
Full Control of Access	Access connections to a roadway with full control of access are provided only with selected public roads, and at grade crossings and direct private driveway connections are prohibited. For full access controlled facilities, limited access lines are to encompass the entire periphery of the interchanges and should extend beyond the ramp terminals a minimum of 100 feet (30 meters) in urban areas and 300 feet (90 meters) in rural areas.
Groundwater:	Naturally occurring water that moves through the ground and underlying rock, at a depth of several feet to several hundred feet.
Level of Service (LOS):	The concept of *levels of service* uses qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers. The descriptions of individual levels of service characterize these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of service are defined, designated A through F. with A representing the best conditions and F the worst.
Nitrogen Oxide (No_x):	Colorless, sweet-tasting gas emitted directly by automobiles and trucks.
No-Build Alternative	A baseline of conditions against which other alternatives are compared. The No-Build Alternative includes all planned minor intersections, interchange and roadway improvements that address local problems, as well as routine maintenance improvements that maintain the continuing operation of the existing roadway.
Options:	Collection of alignment segments.
Ozone:	Unstable blue gas with a pungent odor formed principally in secondary reactions involving volatile organic compounds, nitrogen oxides, and sunlight.
Riparian:	Pertaining to anything connected with or immediately adjacent to the banks of a stream or river.
TSM Alternative	Includes all of the improvements in the No-Build Alternative plus improvements to upgrade U.S. Route 220 to design standards for a rural principle arterial system (GS-1) using a design speed of 50 miles per hour (80 kilometers per hour) from the North Carolina state line to Roanoke.
Watershed:	A specific geographic area drained by a major stream or river.