D

SELECTION OF FINAL MITIGATION MEASURES

D.1 INTRODUCTION

Mitigation measures include a variety of design features, construction practices, and operational policies aimed at avoiding or reducing harm to the environment. In developing this project, a number of such measures have been identified and incorporated into the project plans. Others are still being considered and may be incorporated depending on the final outcome of the studies. Still others have been considered but eliminated as not practical or feasible. The following sections describe the development of mitigation measures and factors considered in whether to implement them.

D.2 MITIGATION MEASURES IDENTIFIED IN FEIS

D.2.1 Erosion & Sediment Control

Chapter IV, Section M of the 1993 FEIS discussed the original stormwater mitigation measures that were planned to protect the South Fork Rivanna River Reservoir (the Reservoir) during and after the construction of the Bypass. The EIS stated that "erosion and sediment controls 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 methods." Though the specific designs and placements of these measures were not identified at that stage of project development, commitments were made to incorporate them as the project moved forward.

D.2.2 Highway Runoff Control

Chapter IV, Section H of the 1993 FEIS mentioned that vegetated slide slopes and ditches would be established and would minimize any potential water quality degradation. Though the specific placements and timing of these measures were not identified at that stage of project development, commitments were made to incorporate them as the project moved forward.

D.2.3 Hazardous Material Spill Control

The FEIS acknowledged the potential for hazardous material spills occurring as a result of vehicular accidents on the Bypass, but did not identify specific physical controls for containment of such spills. The FEIS also noted that local emergency response teams would be generally responsible for containing spills to prevent their reaching the Reservoir. Finally, the FEIS noted

that the design features that would be employed on the project (such as wide shoulders, a median separating opposing traffic, and appropriate roadway geometry) would help reduce the risk of hazardous material spills.

D.3 MITIGATION MEASURES DEVELOPED DURING DESIGN

As the project moved forward into the design phase, a number of specific features were developed to reduce the potential adverse effects of the Bypass on the Reservoir and its watershed. Many of these, such as stormwater management ponds and erosion and sediment controls, are incorporated routinely into all highway projects. These and other measures have evolved as the project has progressed through each stage of more detailed design and in coordination with Rivanna Sewer and Water Authority officials.

D.3.1 Erosion & Sediment Control

Black & Veatch Corporation, a consulting firm experienced in water resources analyses, evaluated proposed (not yet final) plans for erosion and sediment control in its 2001 reports for the Thomas Jefferson Planning District Commission/Charlottesville-Albemarle Metropolitan Planning Organization. Black & Veatch reviewed the *Virginia Erosion and Sediment Control Regulations*, the *Virginia Stormwater Regulations*, and the Virginia Department of Transportation (VDOT) *Manual of Practice for Planning Stormwater Management* and compared the planned erosion and sediment controls for the Route 29 Bypass project to these baselines to evaluate their adequacy. Black & Veatch concluded that the erosion and sediment controls for the Route 29 Bypass project, which included silt basins, silt traps, rock check dams, and silt fences, represented standard methods used by VDOT for controlling erosion and sediment at highway construction sites.

As described by Black & Veatch, "all disturbed areas will either be directed into stormwater ponds (which will be used temporarily for sediment control) or be directed into ditches and then into sediment traps." Black & Veatch also noted that "turbidity curtains will be installed at all three major natural drainage channels into the Reservoir downstream of the proposed construction. This will help to reduce the amount of sediment that reaches the main body of the Reservoir and the water treatment plant intake."

Black & Veatch indicated that the erosion and sediment control plans were expected to reduce sediment loads by 50% relative to a scenario of no controls. However, as noted by VDOT in a written review of Black & Veatch's report, a number of additional controls already were being considered for the Bypass project, but were not included in the Black & Veatch study (such as separate, two-phased Erosion and Sediment Control Plans; the employment of a full-time, Virginia Department of Conservation and Recreation-certified Erosion and Sediment Control Inspector, and installation of a concrete Jersey barrier along fill sections closest to the Reservoir).

D.3.2 Highway Runoff Control

The principal means of controlling pollution from highway runoff is to route the runoff through stormwater management (SWM) ponds. The ponds are designed to improve the quality and regulate the quantity of stormwater runoff discharging into receiving streams. The aim is to detain the runoff for a period of time over which particulate matter can settle out and to reduce

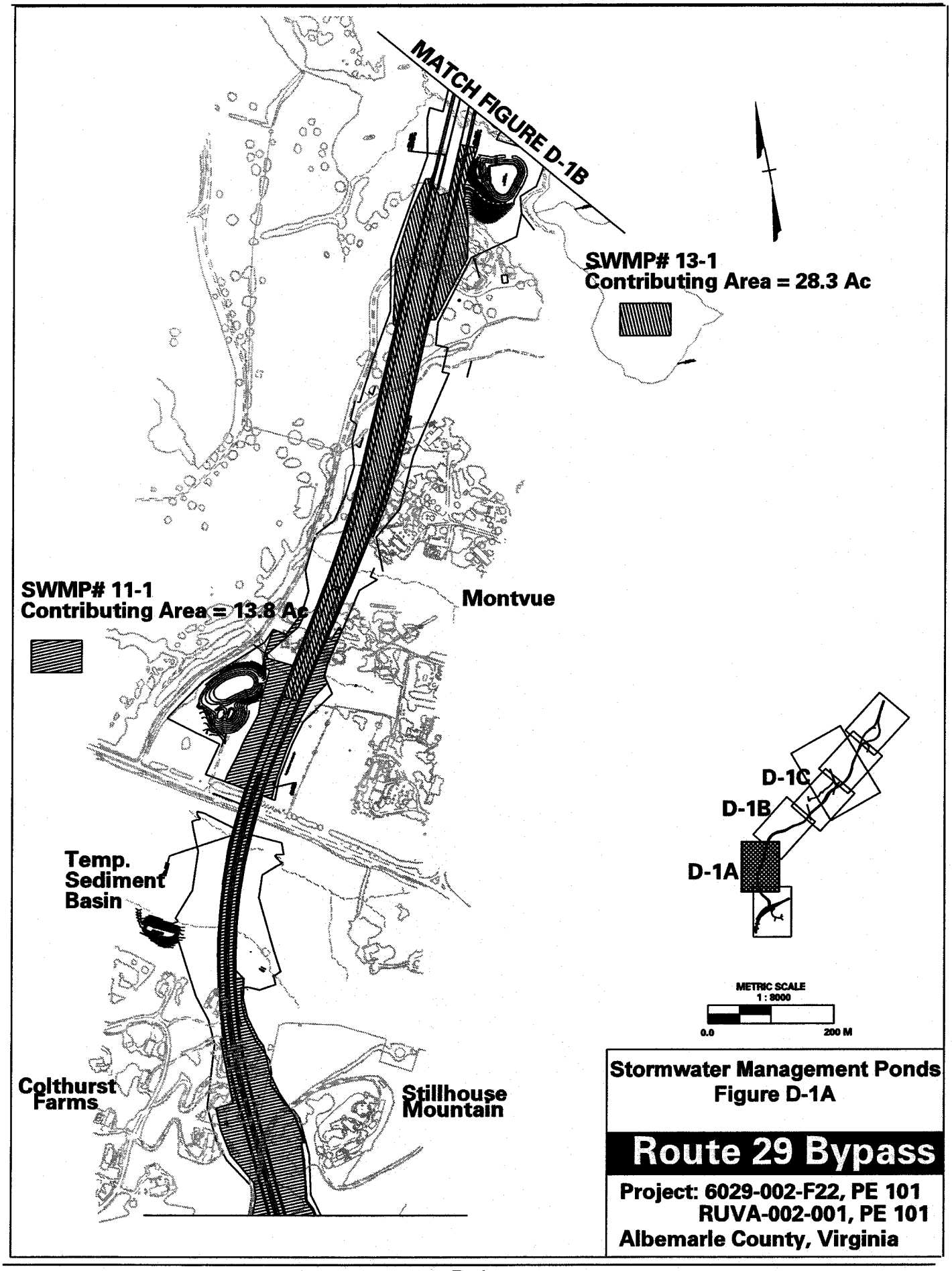
post-construction runoff to near pre-construction volumes. **Figures D-1A, D-1B, and D-1C** show the locations of stormwater management ponds proposed for the portion of the Bypass within the Reservoir watershed boundaries.

In 1998, VDOT initiated studies by Dr. Shaw Yu, a faculty member of the Civil Engineering Department at the University of Virginia (UVA) and also a Faculty Research Engineer for the Virginia Transportation Research Council, to review and comment on the project's stormwater management plans, and to recommend potential improvements to the plan. Dr. Yu's UVA team checked the sizing of the ponds and draw-down times versus design standards and literature values. In some cases, the team recommended changes to pond designs or to relocate conveyance ditches, such as a stormwater conveyance ditch leading into SWM pond 11-1, to avoid possible short-circuiting of the ponds' treatment abilities.

In July 1999, the UVA team recommended design modifications to the drainage swales that convey runoff to the treatment ponds. The UVA team concluded that "significant treatment of runoff can be accomplished if drainage swales are properly designed and maintained" (Kuo, et al., 1999, and Patron, 1998, as quoted in UVA, 7/99). The team recommended that all swales and ditches be constructed according to specific guidelines including: using soils with high permeability and infiltration rates; using vegetation in all open channels; setting maximum longitudinal and side slope values and minimum bottom widths; and including check dams wherever possible. The check dams already had been included as part of the construction phase erosion and sediment control plans; however, the UVA team concluded that the dams would enhance runoff control if they were made a permanent feature of the open drainage paths.

The UVA team also investigated methods for improving the pollutant removal efficiency of the ponds through the use of vegetation to increase pollutant uptake. In May 1999, the UVA team reported on several studies of biodetention and grassed swales. It monitored a bioretention area at Monticello High School in Charlottesville from November 1998 through the summer of 1999. It sampled 12 storms for removal efficiency of Total Suspended Solids (TSS), total phosphorous (TP), chemical oxygen demand (COD), oil & grease (O&G), and fecal coliform, and found high pollutant removal efficiencies. The team also reviewed a biodetention pond in Warrenton, Virginia that receives runoff from the Route 17 Bypass. The system is composed of an upper and lower pond, separated by a vegetated berm. Runoff is treated first by detention in the upper pond, and then by further detention in the lower pond.

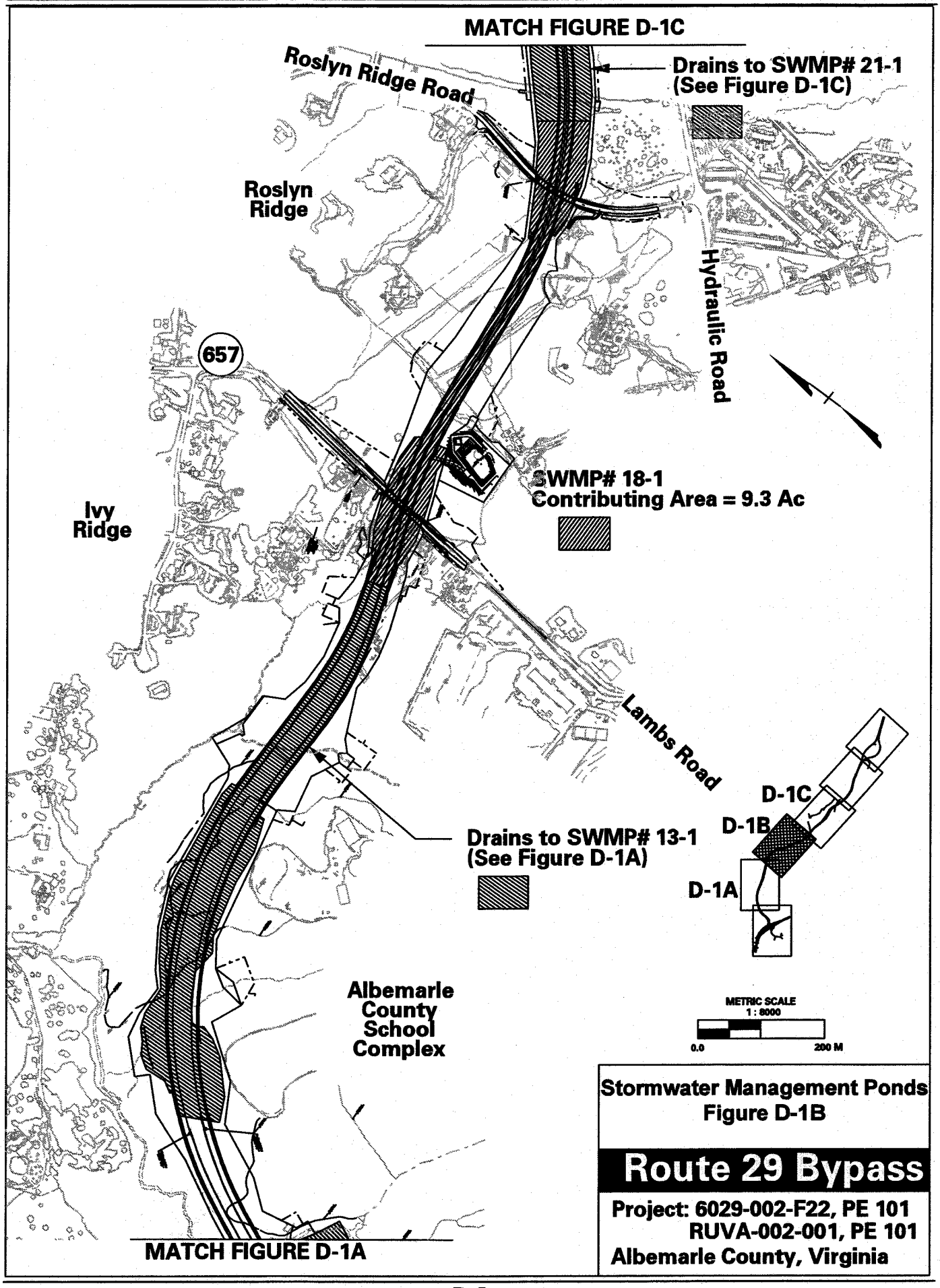
In July 1999, the UVA team recommended designing the berm between the sediment forebay and the permanent wet pond in each stormwater pond as a bioretention area. To create bioretention conditions, the team recommended constructing the berm from permeable soil with a high organic content and planting it with flood-tolerant vegetation. The team indicated that vegetation in the bioretention area could increase detention time, provide pollutant removal by plant uptake, and create an aerobic zone and substrate for the growth of micro-organisms responsible for the degradation of many compounds. In November 2000, the UVA team reviewed the updated plans for the stormwater detention facilities and suggested further improvements, as summarized below.



Stormwater Management Ponds
Figure D-1A

Route 29 Bypass

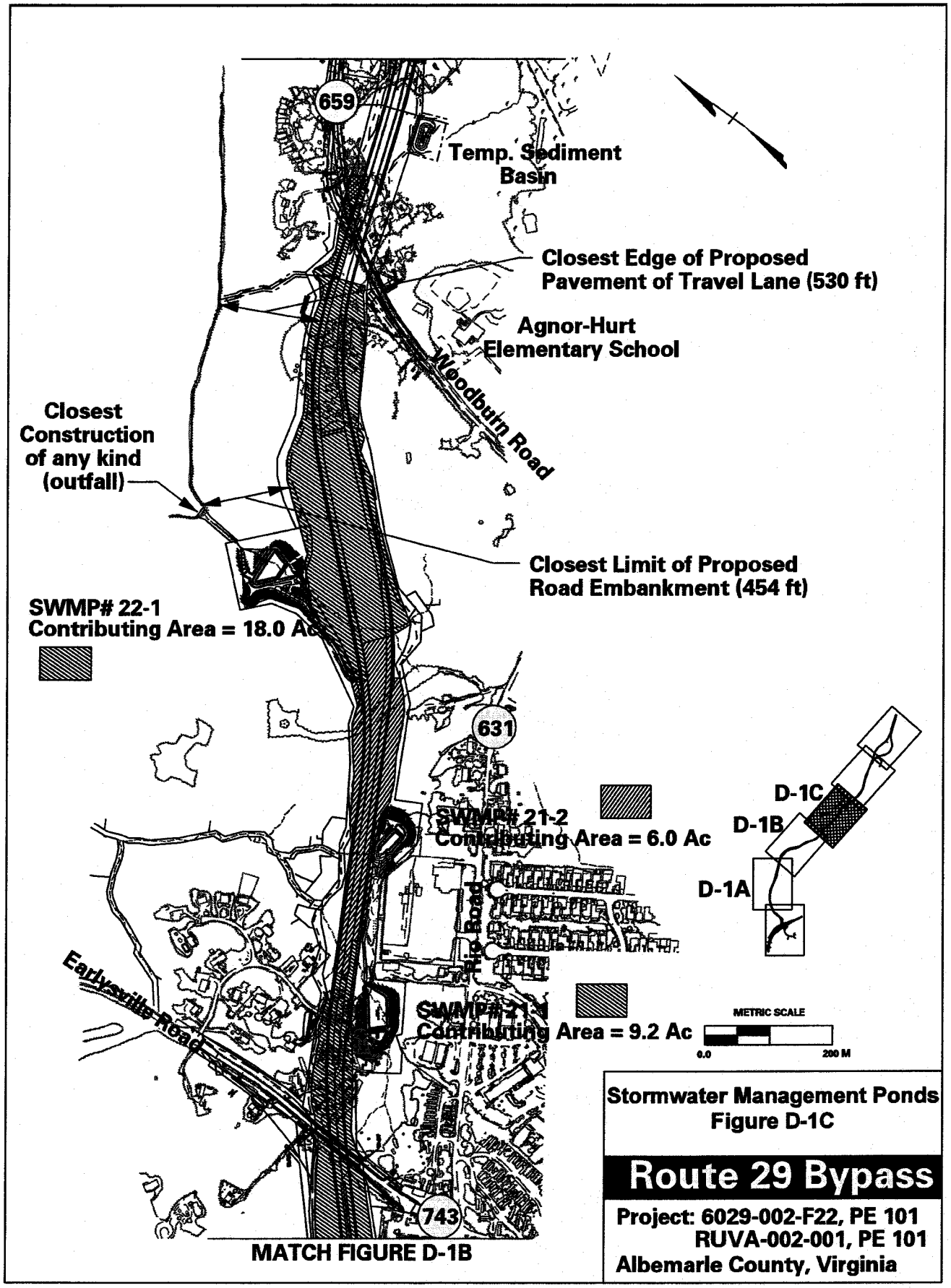
Project: 6029-002-F22, PE 101
RUVA-002-001, PE 101
Albemarle County, Virginia



Stormwater Management Ponds
Figure D-1B

Route 29 Bypass

Project: 6029-002-F22, PE 101
RUVA-002-001, PE 101
Albemarle County, Virginia



Stormwater Management Ponds
Figure D-1C

Route 29 Bypass

Project: 6029-002-F22, PE 101
RUVA-002-001, PE 101
Albemarle County, Virginia

SWM Facility 11-1. This facility is designed for a three-step treatment sequence consisting of a dry sump area, a sediment forebay, and a wet pond. The UVA team believed that the inlet ditch would enter the wet pond too close to the outlet, which could possibly result in a short-circuit of the system and a decrease in treatment effectiveness of runoff entering the pond from this ditch. The team recommended that the inlet ditch be moved to increase treatment effectiveness, and that the ditch be relocated to discharge directly into the sediment forebay. If the location of the ditch could not be moved such that it would discharge in the forebay, then it should be relocated such that it discharges as far away as possible from the outlet, or a baffle system could be added to increase the flow path and travel length from where the ditch enters the pond to the pond outfall structure.

SWM Facility 13-1. This facility is designed for a three-step treatment sequence consisting of a dry sump area, a sediment forebay, and a wet pond. The UVA team believed that the shape of the pond, combined with the location of the inlet to the wet pond from the sediment forebay, due to site constraints, would shorten the potential flowpath to the outlet. The team recommended that, if the inlet cannot be relocated, a vegetated berm/baffle system be added to the facility between the sediment forebay and the wet pond. The vegetated berm would function similarly to a bioretention area and would enhance the facility's treatment potential by lengthening the flow path and removing pollutants through uptake by vegetation. The team also noted that the addition of a vegetated berm or baffle would give emergency workers extra time to respond to a spill before it reached the wet pond portion of the facility.

SWM Facility 18-1. This facility is designed for a three-step treatment sequence consisting of a dry sump area, a sediment forebay, and a wet pond. The UVA team indicated that while the pond length-to-width ratio is low, the flowpath had been improved from the original design, which included some runoff that directly entered the creek into which the wet pond discharges without flowing through the facility. This flow would be diverted so that all runoff from this area enters the dry sump area. In addition, the facility's emergency spillway was redesigned to be located in the wet pond portion of the facility instead of in the sediment forebay. This will reduce the chance for scour and resuspension of sediments that might be carried out of the system during large events. The UVA team recommended that the flow be spread evenly over the forebay to prevent channelization and maximize pollutant removal efficiency.

SWM Facility 21-1. This facility is designed for a three-step treatment sequence consisting of a dry sump area, a sediment forebay, and a wet pond. The facility is in-line with an intermittent stream, and so it collects "clean" streamflow as well as runoff. The UVA team thought that the pond had a low length-to-width ratio and a short drawdown time and recommended modifications, such as the addition of a vegetated berm/baffle system, to increase the residence time in the facility.

SWM Facility 21-2. This facility is designed for a three-step treatment sequence consisting of a dry sump area, a sediment forebay, and a wet pond. In addition, this facility included a swale located directly adjacent to the outlet. The UVA team believed that the pond had a low drawdown time and a low length-to-width ratio and also recommended that runoff from the swale be redirected to the opposite side of the pond before entering the facility. Or, if this were not possible, the addition of a baffle system would help lengthen the flow path and travel time within the facility.

SWM Facility 22-1. This facility is designed for a three-step treatment sequence consisting of a dry sump area, a sediment forebay, and a wet pond. The UVA team recommended relocation of the two inlets discharging directly to the sediment forebay so that they would discharge into the dry sump area. The team also recommended that the sediment forebay be completely separated from the wet pond by a berm or other structure. Finally, the team suggested that the flowpath within the facility be lengthened, potentially by a vegetated berm/baffle system within the pond.

The UVA team also investigated the possibility of treating runoff before it reached the stormwater ponds. In November 1998, the UVA team compiled data on "space-limited BMPs," including Stormceptor, Isoilater, StormFilter, Vortechs, StormTreat, BaySaver, V2B1, Fox Flush, and HydroSwitch. They collected data on removal efficiency for TSS, COD, total nitrogen, TP, orthophosphate, O&G, lead, zinc, cadmium, copper, chromium, nickel, iron, total coliforms, and fecal coliform.

D.3.3 Hazardous Material Spill Control

In order to enhance the spill mitigation controls already built into the project, several consultants, including Black & Veatch and the UVA team, have suggested additional controls. Black & Veatch noted that installing sluice gates or shutoff valves at the outfall of the ponds could trap any spills within the SWM ponds and would give emergency response teams extra time to deal with spills. In addition, the UVA team investigated a series of absorbent products that could be used at various points along the potential flow route of a spill. These included repair materials that seal punctured containers and prevent additional leaks; road dikes and absorbent socks for containing spills before they reach the drainage system; and drain plug products for plugging the system either before it enters the drainage system or before it can exit a SWM facility.

The UVA team's final recommendations on this issue are that VDOT and the local response team should develop and implement an emergency spill response plan for the project that contains detailed drainage information for each segment of the roadway and each SWM facility, so that response personnel are aware of all options or potential sites for containment. In addition, the team recommended that all emergency response personnel be trained in using spill containment technology.

VDOT has committed to installing a concrete Jersey barrier along the shoulder of fill sections in the vicinity of the Reservoir to provide more positive containment of errant vehicles, and prevent them from running onto slopes leading to the Reservoir. Because no intermediate access points will be provided along the length of the Bypass, provision of special access points for emergency vehicles was discussed with the Design Advisory Committee. However, due to concerns of the Committee and the County that no additional access is ever provided onto the Bypass, they were not incorporated into the plans. Emergency vehicle crossovers would be installed at five locations along the Bypass to facilitate emergency responses should accidents occur.

D.4 SELECTION OF FINAL MITIGATION MEASURES

The design of erosion and sediment control measures, stormwater runoff controls, and hazardous spill protection measures still is incomplete at this point. However, the following sections describe the measures that have been incorporated into the plans, or that VDOT has committed to

incorporating in the plans. These measures may be supplemented or modified further following resumption of final design efforts and prior to construction. **Table D-1** shows a comparison of measures currently planned and measures identified during earlier stages of the studies and design.

D.4.1 Erosion & Sediment Control

During construction, erosion and sediment controls will consist of temporary filter barriers, temporary silt fences, temporary sediment traps, jute mesh and EC-3 mat erosion control in ditches, Type II rock check dams, culvert inlet protections, diversion dikes, block and gravel sediment filter curb inlet protection, block and gravel sediment filter drop inlet protection, stone outlet protection, and Type II turbidity curtains. Rock check dams would be used in all the ditches of the proposed roadway within the Reservoir's watershed. This would increase the travel time for runoff to reach the Reservoir, which would improve the sediment removal capability of the ditches. Turbidity curtains would be used during construction at the three major natural drainage channels into the Reservoir existing downstream from the proposed construction area. This will help to reduce the amount of sediment that reaches the main body of the Reservoir and the treatment plant intake.

VDOT plans to purchase permanent drainage easements along these existing swales and proposes the construction of rock check dams in the swales. The easements would allow VDOT to access the swales before, during, and after the construction, should the need arise. The following specifications for erosion and siltation control are included in the design plans:

- Specific information on erosion and sediment control is shown on site drawings and plans. All site erosion and sediment controls shall be constructed and maintained according to the details and specifications as shown on the site drawings and plans.
- Separate two-phased Erosion and Sediment Control Plans have been designed for this project. These specifications are in compliance with VDOT's *Road and Bridge Specifications* Sections 301.02 and 303.03(b) (see Appendix C).
- Full-time Department of Conservation and Recreation-certified Erosion and Sediment Control Inspectors will be assigned to this project.
- 100% of all roadway runoff water that would flow into the Reservoir would first be captured by a stormwater sewer or a ditch system and directed into SWM ponds.
- All perimeter siltation controls will be installed prior to any land-disturbing activities.
- All channel changes shall be constructed during the earliest stage of construction and shall be constructed in the dry if possible. Stabilizing vegetation shall be established before flow is redirected through the constructed area.
- Multiple sediment barriers will be constructed. All stormwater running off the site will first pass through a silt fence and then be conveyed through ditches with rock check dams, and eventually into sediment traps or sediment basins.
- Rock used in check dams, erosion control, and riprap shall be in accordance with Section 203 and Section 414 of the applicable VDOT *Road and Bridge Specifications.*

Table D-1
SUMMARY OF POLLUTION CONTROL MEASURES

Control Measure	1993 FEIS	2001 (Reviewed by Black & Veatch)	Current
Erosion and Sediment Control			
Block and gravel sediment filter curb inlet protection		✓	✓
Block and gravel sediment filter drop inlet protection		✓	✓
Check dams		✓	✓
Culvert inlet protection		✓	✓
Diversion dikes		✓	✓
Stone outlet protection		✓	✓
Temporary filter barriers	✓	✓	✓
Temporary sediment traps	✓	✓	✓
Temporary silt fences	✓	✓	✓
Turf reinforced mats		✓	✓
Type II turbidity curtains		✓	✓
Temporary and permanent seeding	✓	✓	✓
Stormwater Management			
Baffles			✓
Bioretention			✓
Dry sediment forebay		✓	✓
Wet ponds	✓	✓	✓
Spill Control			
Curbing		✓	✓
Oil/grit separator chambers			✓
Sorbent materials			✓
Tanker trap		✓	✓
Water quality inlets			✓
Jersey barrier along fill sections closest to Reservoir			✓

- Silt removal and sediment clean-out from erosion and siltation control items shall be performed in accordance with the following:
  - Temporary sediment basins and sediment traps: when the "wet" storage volume has been reduced by 50%.
  - Dewatering basins: when the excavated volume has been reduced by 50%.
  - All other erosion and siltation control items: when capacity, height, or depth has been reduced by 50%.

Runoff that leaves the construction site will be collected in sediment basins that also will be converted into permanent stormwater management facilities for future control of runoff once the construction is completed (see below for a full description of stormwater management ponds).

D.4.2 Highway Runoff Control

The completed Route 29 Bypass project will incorporate multiple features to reduce the effects of highway runoff on the Reservoir. Curbing will be installed along the entire length of fill sections of the roadway within the Reservoir watershed in order to capture 100% of the runoff from the road surface. In addition, strategic placement of inlets and drainage systems at several locations in the watershed would capture runoff from approximately 10 acres of existing developed areas outside of the project's right of way and convey it to the ponds for treatment. These areas include several businesses and existing roads whose runoff currently drains untreated directly into the Reservoir.

Once collected, the runoff will be conveyed to SWM ponds through concrete pipe systems. There are six SWM ponds within or discharging to the watershed (Ponds 11-1, 13-1, 18-1, 21-1, 21-2, and 22-1), as was shown in Figures D-1A, D-1B, and D-1C. The ponds also are designed to function as temporary sediment basins during the construction of the Bypass. After construction is complete, the ponds are to be restored to their original depth and converted into permanent stormwater retention ponds. The pond specifications called for a storage volume equal to three times the water quality volume (which is equal to the first one-half inch of runoff multiplied by the total impervious area of the land development project) and the ability to store and treat 20.76 m^3/ha each wet and dry storage during construction for sediment control. Ponds 11-1, 13-1, and 18-1 would discharge into tributaries of Ivy Creek, which in turn flows into the Reservoir. Ponds 21-1, 21-2, and 22-1 would discharge into tributaries of the Reservoir.

As mentioned above, the primary SWM facilities will be multi-chambered stormwater retention ponds that consist of an initial dry sump area, a sediment forebay, and a wet detention pond area. Specific information regarding the SWM facilities is shown on the site drawings and plans. All SWM facilities shall be constructed and maintained according to the details and specifications as shown on the site drawings and plans. The basic design features of these ponds are:

- The ponds are designed as "wet" retention facilities to increase pollutant removal efficiency and improve water quality;
- A shape using a 3:1 length-to-width ratio (this ratio is professionally accepted as maximizing the pollutant removal efficiency of the system);
- An outlet wider than the inlet;

- 3:1 side slopes for easy maintenance access;
- A shallow safety ledge around the perimeter;
- Fencing around the perimeter;
- A sediment forebay at the entrance to the pond, with rock riprap erosion protection, that is sized for a volume equal to 10% of the total pond volume;
- The use of perimeter vegetation in the wet ponds to increase biological uptake; and,
- Use of the pond as a temporary sediment control basin during construction.

All of the ponds are designed such that runoff enters from the inlet pipe to a dry sump area, sized to capture the volume of a tanker truck (1,300 ft^3) in the event of a spill. Inflow then is detained in a sediment forebay before it overflows into a permanent wet pond. The design also includes a berm that separates the sediment forebay from the permanent wet pond. The pond system is designed such that runoff from the entire construction site within the Reservoir watershed drains into one of the six ponds. In each case, the drainage during construction and the drainage after the Bypass is complete will be the same, so that each pond drains the same area during and after construction.

SWM Facility 11-1. This facility is located at Mainline Station 183+00 and collects runoff from Mainline Station 167+00 to 184+00. SWM Facility 11-1 is designed as a wet retention facility and is sized to control an ultimate drainage area of 24.78 acres. The water quality volume is 134,927 cubic feet, which is equal to three times the water quality volume for the total land development area (not just the impervious surface as required).

Storm runoff from the roadway enters SWM Facility 11-1 and passes through a sump area sized for a 10,000-gallon tanker spill. The runoff then passes over a weir and enters a shallow sediment forebay, which is sized at 10 percent of the maximum storage volume, or 28,388 cubic feet. The runoff then passes over another weir and enters the permanent pool, which is sized to provide the maximum storage volume of 283,883 cubic feet. The outlet structure is comprised of a modified SWM-1 riser at an elevation of 517.53 feet. The size of the outlet pipe is 375 mm to control the outlet flow. The emergency spillway is at an elevation of 518.64 feet. The 2-year water surface elevation is 518.43 feet, 10-year water surface elevation is 518.64 feet, and the 100-year water surface elevation is 519.03 feet. SWM Facility 11-1 provides stormwater management quantity control for the 2- and the 10-year event as required, but in addition, also provides quantity control for the 100-year event. The outfall would discharge into an unnamed tributary of Ivy Creek at a point approximately two miles from the Reservoir.

SWM Facility 13-1. This facility is located at Mainline Station 192+00 and collects runoff from Mainline Station 184+00 to 204+00. SWM Facility 13-1 is designed as a wet retention facility and is sized to control an ultimate drainage area of 35.21 acres. The water quality volume is 191,718 cubic feet, which is equal to three times the water quality volume for the total land development area (not just the impervious surface as required).

Storm runoff from the roadway enters SWM Facility 13-1 and passes through a sump area sized for a 10,000-gallon tanker spill. The runoff then passes over a weir and enters a shallow sediment forebay, which is sized at 10% of the maximum storage volume, or 33,859 cubic feet.

The runoff then passes over another weir and enters the permanent pool, which is sized to provide the maximum storage volume of 338,598 cubic feet. The outlet structure is comprised of a modified SWM-1 riser at an elevation of 454.62 feet. The size of the outlet pipe is 375 mm to control the outlet flow. The emergency spillway is at an elevation of 456.40 feet. The 2-year water surface elevation is 455.88 feet, 10-year water surface elevation is 456.40 feet, and the 100-year water surface elevation is 457.04 feet. SWM Facility 13-1 provides stormwater management quantity control for the 2- and the 10-year event as required, but in addition, also provides quantity control for the 100-year event. The outfall would discharge into an unnamed tributary of Ivy Creek at a point approximately two miles from the Reservoir.

SWM Facility 18-1. This facility is located at Mainline Station 207+50 and collects runoff from Mainline Station 204+00 to 213+00. The flowpath for this facility has been improved from the original design, which included some runoff that directly entered the creek into which the wet pond discharges without flowing through the facility. This flow has been re-diverted so that all runoff from this area enters the dry sump area. In addition, the facility's emergency spillway has been redesigned and now is located in the wet pond portion of the facility instead of in the sediment forebay. This will reduce the chance for scour and resuspension of sediments that might be carried out of the system during large events. SWM Facility 18-1 is designed as a wet retention facility and is sized to control an ultimate drainage area of 12.33 acres. The disturbed area draining to the temporary sediment basin during construction is 12.33 acres. There is an existing 3.04 acres of undisturbed and undeveloped grass that is being diverted around the pond. The pond's water quality volume is 67,137 cubic feet, which is equal to three times the water quality volume for the total land development area (not just the impervious surface as required).

Storm runoff from the roadway enters SWM Facility 18-1 and passes through a sump area sized for a 10,000-gallon tanker spill. The runoff then passes over a weir and enters a shallow sediment forebay, which is sized at 10% of the maximum storage volume, or 13,149 cubic feet. The runoff then passes over another weir and enters the permanent pool, which is sized to provide the maximum storage volume of 131,490 cubic feet. The outlet structure is comprised of a modified SWM-1 riser at an elevation of 512.54 feet. The size of the outlet pipe is 450 mm to control the outlet flow. The emergency spillway is at an elevation of 513.50 feet. The 2-year water surface elevation is 513.30 feet, 10-year water surface elevation is 513.50 feet, and the 100-year water surface elevation is 513.80 feet. SWM Facility 18-1 provides stormwater management quantity control for the 2- and the 10-year event as required, but in addition, also provides quantity control for the 100-year event. The outfall would discharge into an unnamed tributary of Ivy Creek at a point approximately one mile from the Reservoir.

SWM Facility 21-1. This facility is located at Mainline Station 217+00 and collects runoff from Mainline Station 213+00 to 219+00. SWM Facility 21-1 discharges into an intermittent unnamed tributary of the Reservoir approximately 1,750 feet from the Reservoir. The facility is an in-line facility that captures additional drainage area from off-site, providing additional water quality and quantity treatment to an area located between the proposed alignment and Hydraulic Road where previously there was none. SWM Facility 21-1 is designed as a wet retention facility and is sized to control an ultimate drainage area of 36.28 acres. The water quality volume is 197,272 cubic feet, which is equal to three times the water quality volume for the total land development area (not just the impervious surface as required).

Storm runoff from the roadway enters SWM Facility 21-1 and passes through a sump area sized for a 10,000-gallon tanker spill. The runoff then passes over a weir and enters a shallow sediment forebay, which is sized at 10% of the maximum storage volume, or 33,789 cubic feet. The runoff then passes over another weir and enters the permanent pool, which is sized to provide the maximum storage volume of 337,890 cubic feet. The outlet structure is comprised of a modified weir wall at an elevation of 501.82 feet. The size of the outlet pipe is 1,350 mm to control the outlet flow. The 2-year water surface elevation is 502.52 feet, 10-year water surface elevation is 502.71 feet, and the 100-year water surface elevation is 503.04 feet. SWM Facility 21-1 provides stormwater management quantity control for the 2- and the 10-year event as required, but in addition, also provides quantity control for the 100-year event.

SWM Facility 21-2. This facility is located at Mainline Station 220+00 and collects runoff from Mainline Station 219+00 to 222+00. SWM Facility 21-2 discharges into an intermittent unnamed tributary of the Reservoir at a point approximately 1,450 feet from the Reservoir. The facility is an in-line facility that captures additional drainage area from off-site, providing additional water quality and quantity treatment to an area located between the proposed alignment and Hydraulic Road where previously there was none. SWM Facility 21-2 is designed as a wet retention facility and is sized to control an ultimate drainage area of 15.61 acres. The water quality volume is 84,996 cubic feet, which is equal to three times the water quality volume for the total land development area (not just the impervious surface as required).

Storm runoff from the roadway enters SWM Facility 21-2 and passes through a sump area sized for a 10,000-gallon tanker spill. The runoff then passes over a weir and enters a shallow sediment forebay, which is sized at 10% of the maximum storage volume, or 17,095 cubic feet. The runoff then passes over another weir and enters the permanent pool, which is sized to provide the maximum storage volume of 170,950 cubic feet. The outlet structure is comprised of a modified weir wall at an elevation of 505.86 feet. The size of the outlet pipe is 1,050 mm to control the outlet flow. The 2-year water surface elevation is 506.22 feet, 10-year water surface elevation is 506.33 feet, and the 100-year water surface elevation is 506.53 feet. SWM Facility 21-2 provides stormwater management quantity control for the 2- and the 10-year event as required, but in addition, also provides quantity control for the 100-year event.

SWM Facility 22-1. This facility is located at Mainline Station 225+00 and collects runoff from Mainline Station 222+00 to 230+00. SWM Facility 22-1 discharges into a ravine that drains to the Reservoir approximately 450 feet from the Reservoir and is the closest of the stormwater management facilities to the Reservoir. SWM Facility 22-1 is designed as a wet retention facility and is sized to control an ultimate drainage area of 25.30 acres. The water quality volume is 137,759 cubic feet and is equal to three times the water quality volume for the total land development area (not just the impervious surface as required).

Storm runoff from the roadway enters SWM Facility 22-1 and passes through a sump area sized for a 10,000-gallon tanker spill. The runoff then passes over a weir and enters a shallow sediment forebay, which is sized at 10% of the maximum storage volume, or 27,282 cubic feet. The runoff then passes over another weir and enters the permanent pool, which is sized to provide the maximum storage volume of 272,823 cubic feet. The outlet structure is comprised of a modified SWM-1 riser at an elevation of 444.09 feet. The size of the outlet pipe is 600 mm to control the outlet flow. The emergency spillway is at an elevation of 445.22 feet. The 2-year

water surface elevation is 444.76 feet, 10-year water surface elevation is 444.98 feet, and the 100-year water surface elevation is 445.22 feet. SWM Facility 22-1 provides stormwater management quantity control for the 2- and the 10-year event as required, but in addition, also provides quantity control for the 100-year event. Because of the facility's proximity to the Reservoir, the 2-, 10-, and 100-year design events all pass through the principal spillway. An emergency spillway has been provided as a safety feature, but should only have flows greater than the 100-year design event passing over it.

Table D-2 shows the characteristics (water quality volume and storage volume) of the six stormwater management ponds within the Reservoir watershed.

Table D-2
SWM FACILITY CHARACTERISTICS

Facility Number	Drainage Area (acres)	Water Quality Volume (cubic feet)	Storage Volume (cubic feet)
11-1	24.78	134,927	283,883
13-1	35.21	191,718	338,598
18-1	12.33	67,137	131,490
21-1	36.28	197,272	337,890
21-2	15.61	84,996	170,950
22-1	25.30	137,759	272,823

D.4.3 Hazardous Material Spill Control

In the event of a spill of hazardous materials onto a highway, local resources initiate a Level II response to contain the spill and prevent its spread with absorbent booms and pads. Albemarle County Officials indicate that the vast majority (99%) of spills are of petroleum-related products, and that this method is effective for containing petroleum-based spills. However, this method may not be as effective for non-petroleum spills, and local ability to control spills other than petroleum is limited. If there is a requirement for response to other types or more severe spills, responsibility is transferred to the regional Department of Emergency Services. Regional Level III hazmat response teams are based in Fredericksburg, Harrisonburg, and Henrico County.

The drainage and stormwater treatment system for the Bypass is designed to capture and treat 100% of the runoff originating from the road surface, as well as some off-site runoff. If a liquid hazmat spill were to occur during dry weather, it potentially could be contained before it reached the drainage system, depending on the location and severity of the spill and the rapidity of response crews in reaching the scene. If not contained in time, material spilled onto the road surface would eventually enter the drainage system and flow toward the SWM pond. Upon reaching the SWM pond, the spilled liquid would be contained in the dry sump area, which is designed to store the volume of a typical tanker truck (1,300 cubic feet, or approximately 10,000 gallons). The material could then be cleaned up from there. However, the possibility still would exist of material seeping into the ground and eventually reaching the groundwater table.

If the spill occurred during a rain storm, it would of course be more difficult to contain it before it could reach the drainage system. During wet weather, the dry sump portion of the SWM pond would contain stormwater runoff in addition to the spill material, making it more problematic to recover the spilled material before it could overflow to the sediment forebay and the wet pond. In this scenario, without additional controls at the SWM pond outlet (e.g., gate valves), and depending on the size of the spill and the intensity of the storm event, the spilled materials could flow through the pond and exit the outfall. If additional controls are provided at the outlet, the ponds have enough capacity above the normal pool level to provide temporary storage of the spill without causing an overflow of the pond.

One of the principal concerns expressed by County officials and local citizens is the potential for a truck carrying hazardous materials to run off the road, down the slope, and into the Reservoir, resulting in a discharge of the material directly into the Reservoir. To counter this scenario, VDOT has committed to installing concrete Jersey barrier along the shoulder of fill sections closest to the Reservoir to provide more positive containment of errant vehicles.

D.5 ADDITIONAL MITIGATION MEASURES CONSIDERED

Several recommendations have been made to improve the stormwater runoff mitigation measures for the Route 29 Bypass project, but have not yet been incorporated into the project design.

D.5.1 Additional Changes to SWM Pond Systems

The UVA team has recommended that the design of several of the stormwater retention ponds include baffles to lengthen the flowpath within the ponds, and also perimeter vegetation that would enhance pollutant uptake. Their findings were based on analyses of the design flowpath, the length-to-width ratios of the ponds, and the locations of the ponds' inlet and outlet structures.

The UVA team determined that ponds 13-1 and 22-1 had length-to-width ratios that were less than the recommended ratio, or had the potential for short-circuiting. UVA recommended that the design of these pools include baffles that would lengthen the flowpath. These baffles would be constructed of plywood and would be located in the bottom of the permanent pools.

UVA scientists also recommended that the ponds include perimeter vegetation to increase pollutant removal efficiency. Previous research has shown that vegetation can increase detention time, provide pollutant removal by plant uptake, and create an aerobic zone and substrate for the growth of microorganisms capable of degrading many pollutants. UVA collected data on "bioretention" practices that used vegetation in combination with wet pond retention to enhance pollutant removal efficiency. Studies of bioretention areas conducted at Monticello High School in Charlottesville and the Route 17 Bypass in Warrenton both showed increased pollutant removal in the bioretention area. Therefore, the UVA team recommended creating bioretention areas in the wet ponds by constructing the berms that separate the sediment forebays from the permanent wet ponds with permeable soil with a high organic content, and planting of flood-tolerant vegetation on the berms.

D.5.2 Additional Spill Containment

A site-specific evaluation of the applicability of using a combination of hydrodynamic separators (such as VORTECS units manufactured by Vortechnics, Inc.) and catch basin inserts with oil sorbents to help mitigate potential spills was conducted for the Route 29 Bypass site. The hydrodynamic separator technology is being considered as part of the treatment-train rather than as a stand-alone device with the purpose of providing pre-treatment and spill containment capacity. Within the VORTECs unit, this volume is provided within a sump area from the pipe inlet to the oil (baffle) wall. This volume is dependent upon the size of the unit ordered, with the largest pre-cast unit providing 2,500 gallons of storage (design flow 25 cfs). The units could be installed upstream of the proposed stormwater ponds. A flow splitter could be used to provide multiple units to treat the maximum 10,000-gallon requirement for containing the contents of a tank truck. These units must be properly sized with bypass provisions to limit the potential for washout. As with other stormwater devices, these devices must be properly maintained (usually quarterly inspection and cleanout).

Sorbent materials could provide an additional layer of protection from very small spills and typical oil runoff from roadways. Sorbent materials such as the AbTech Smart Sponge filtration media (AbTech Industries, Scottsdale, AZ) are designed for use in storm drains and catch basins. This technology is an appropriate BMP for handling residual runoff after initial clean-up operations are complete. The cost of sorbent materials is typically $400-$600 per catch basin insert.

A conceptual cost estimate for installing hydrodynamic separators and catch basin inserts with oil sorbents was obtained by using vendor information for the units themselves and estimating other construction costs by Means (2001) manual. In addition to the installation of the devices, access for a vacuum truck would need to be provided to each unit.

The construction cost of units at SWM ponds 11-1, 13-1, and 18-1 is estimated to be $1,200,000 to $1,800,000. The construction cost of units at SWM ponds 21-1, 21-2, and 22-1 is estimated to be $1,500,000 to $2,500,000. Yearly maintenance costs on the order of $15,000 would be expected.

Membrane lining of the SWM basins would provide an additional layer of protection for limiting the fate and transport of spill material into ground and surface water. For costing purposes, it was assumed that the basins could be lined with 120-mil-thick membrane lining, and an additional one foot of depth would need to be excavated and backfilled. A manually operated gate valve, which would provide an additional control measure, is included in the cost estimate. The cost estimate for basin liners and shut-off valves for all six SWM ponds totals approximately $246,000.

In summary, the use of hydrodynamic separators and oil sorbents could provide a layer of protection for tanker truck spills within the stormwater treatment system. Hydrodynamic separators such as the VORTECs unit could be used as containment structures for larger spills while sorbents have potential to reduce residual concentrations. A membrane lining in the forebay of each SWM pond is a BMP that easily could be integrated into the existing site grading and development plan.

D.5.3 Construction of a New Emergency Intake

One of the measures that has been suggested for mitigating potential spill contamination of the Reservoir, and resulting treatment plant shutdown, was the construction of an emergency water treatment plant intake upstream of areas that could be affected by a spill on the Bypass. Because of the factors discussed below, the constraints on Reservoir capacity, and the difficult site conditions for constructing the needed pump station, the feasibility of constructing such an intake appears limited.

Adequate Drawdown. The depth of water that can be drawn from the Reservoir above the potential location of an emergency intake may be restricted owing to natural bottom and siltation. To further investigate this possibility, the storage volume upstream of a new intake location was evaluated using the information in the 1994 bathymetric study. The analysis indicates that about 20-25% (or about 40 M cf; actual available volume depends on specific intake location) of the Reservoir capacity is located upstream of this location. Given the historical siltation rates in the Reservoir of about 1.7 million cubic feet/year (Black & Veatch, 1994), the available storage capacity would be lost within 25 years unless dredging or other activities to prevent silt from draining to the Reservoir occur. Therefore, it is estimated that 40 million cubic feet or 300 million gallons of storage is available but declining.

Construction Impacts. The construction of an emergency intake would require a new intake, pressure pipeline, pump station, and the acquisition of adequate right of way. The Black & Veatch report provides a preliminary cost estimate for the new intake ($500,000), pressure pipeline ($2,390,000), and pump station ($2,850,000). The pump station would include four vertical turbine, constant-speed pumps. The Black & Veatch report cites construction costs based on pumping station construction cost curves. However, the site conditions include very high head requirements and steep slopes. While the pipeline could be constructed along the length of the Reservoir to avoid these conditions, construction along the shoreline presents significant construction challenges and construction impacts stemming from the proximity adjacent to the Reservoir. The additional length of pipe needed nearly doubles the cost of this option. With the former option, hydraulic controls would be needed to control supercritical flow stemming from the steep descent toward the intake.

In either option, the pipe would have to cross the Reservoir either at the bottom surface of the Reservoir (requiring very deep excavation) or snake around at the surface near the dam structure and uphill toward the treatment plant. The 1,900-foot segment of 36-inch ductile iron pipe would have head requirements of about 200 feet, while the shoreline option would extend over 5,200 feet with lower head requirements. Adequate cathodic and freeze/thaw protection would be required for these scenarios. Owing to these factors, the total cost of this alternative is likely higher than the original estimate provided in the Black & Veatch report. Given these conditions, the costs are likely 1.5 to 3 times higher than the original $5,300,000 estimate.

E

MODELS FOR ASSESSING WATER QUALITY IMPACTS

E.1 INTRODUCTION

Many computer models are available to assess highway runoff water quality impacts. While only the FHWA model was developed specifically for highway applications, all of the models described in this Appendix can be applied to assess the water quality impacts of highway runoff. The following sections describe the attributes of various models for different applications.

E.2 POLLUTANTS OF CONCERN

The following pollutants are associated with highways and have been identified as pollutants of concern. Therefore, when reviewing the capability of a model to assess impacts to water quality, these are the pollutants given priority consideration.

Sediment: During construction, exposed soils erode during storm events. After construction, sediment can collect on road surfaces due to spillage from vehicles, settlement of atmospheric dust, or deliberate application of abrasives such as sand during icy conditions. This sediment then can wash off the road surface during storms. Sediment may inhibit water purification systems, reduce flood capacity and reservoir storage capacity, and smother aquatic organisms. Sediment suspended in water reduces light available to plants and makes surface waters visually unappealing for recreation. Most roadway pollutants are carried with sediment in stormwater runoff.

Turbidity: The presence of suspended material, such as clay, silt, finely divided organic material, and plankton in water is known as turbidity. Turbidity is measured in national turbidity units (NTUs) and not as a concentration. Turbidity in excess of 5 units is detectable easily in a glass of water and usually is objectionable for aesthetic reasons. Clay or other inert suspended particles in drinking water may not adversely affect health, but water containing such particles may require treatment to make it suitable for use and may affect chlorination requirements. Another parameter that is measured as a concentration, total suspended solids (TSS), generally is used in model simulations to represent turbidity loadings.

Nutrients: Nitrate concentrations are regulated in public water supplies, but there are no formal regulatory standards currently in place for nutrients in natural waters. Nitrogen and phosphorous

compounds, present in highway runoff, can contribute to eutrophication (accelerated aging) of water bodies by stimulating algal blooms and other aquatic plant growth. Natural lakes and impoundments are at the greatest risk of eutrophication because they are not flushed out rapidly.

Metals: Metals associated with highway runoff include lead, iron, copper, zinc, and mercury. Many metals may be toxic to wildlife and people at certain concentrations. The metals generally travel with sediment to varying degrees, depending on the cation exchange capacity of the soil being eroded. Zinc and copper are more mobile in solution than other metals.

Deicing Materials: Liquid calcium chloride, treated abrasives (sand and sodium chloride), bulk calcium chloride, sodium chloride, and sand are used by transportation departments to maintain drivable conditions during icy weather. Sodium is a concern at low levels in drinking water for taste, and at higher levels as a possible human health concern by causing high blood pressure or heart problems. Elevated levels of sodium and chloride adversely impact aquatic life. Salt is highly soluble in water. Deicing salts also can contain various contaminants such as anti-caking compounds or other substances to aid in application and wetting.

Oil and Grease: Oil and grease are hydrocarbons that leak from vehicles or are emitted in exhaust and can be toxic to people and wildlife. Oil and grease generally are carried with sediment from roads.

E.3 MODEL PRECISION AND ACCURACY

Models are tools to simulate processes and predict outcomes. Environmental models, specifically those applied to estimate impacts to water resources, are designed to replicate processes occurring in the affected environment and produce outputs that are not currently measured, as well as to predict changes expected to occur as a result of proposed actions. A model is accurate if its outputs are close to actual conditions observed in the same system. A model's accuracy can be tested by a verification study. This is usually an application of the model to a small part of the system where the model's output is checked against the actual measurement of the same data in that same small part of the system.

Environmental processes are very complex. Models that simulate those processes can be complex or simple. Complex models potentially have greater accuracy in their predictions than simple models because they capture more environmental processes at a greater level of detail. However, more types of data, and more site-specific data, are required to fully utilize these complex models. Typically, all the required data are not available for large environmental systems and for multiple parameters. Collection of such data can be costly and very labor- and time-intensive. If the available data are limited, complex models can be populated with assumptions from the literature. In these cases, the complex model still simulates all the processes built into the model, but using assumptions that may not necessarily replicate actual site-specific conditions. A complex model with limited site-specific data may produce a more refined prediction, yet the prediction may not be more accurate than that produced by a simpler model.

Simple models simulate only those processes that exert major control over the output. They tend to use grosser assumptions and require less intensive data inputs. The outputs tend to provide

more conservative estimates (e.g., in water quality modeling, the model would overestimate pollutant loadings).

Selection of a simple or complex model depends on the purposes for which the output will be used and the availability of suitable data. For example, academic researchers would tend to use more complex models to reflect more detailed source, pathway, and fate processes. Decision-makers often need no more than order-of-magnitude estimates, which can be obtained from simple models, on which to base their decisions. In many cases, essentially the same answer can be obtained using either complex or simple models (sometimes colloquially referred to as "the same answer in 5 hours or 5 minutes").

E.4 CONTINUOUS AND EVENT- BASED SIMULATION

There are generally two approaches in water quality modeling for wet weather conditions: continuous modeling and event-based modeling. The pros and cons of these two approaches are as follows.

Continuous modeling uses input values over a particular time interval to predict receiving water conditions. A representative hydrological time period (e.g., dry, average, and wet rainfall years) is used to account for the varying climatic and hydrologic conditions occurring within the watershed over time. It is an appropriate basis for determining average annual pollution loadings because it allows for a more accurate analysis of long-term pollutant loading and in-stream conditions. Further, the continuous modeling approach can generate multiple data points, which are essential for an accurate application of certain water quality criteria (e.g., 30-day geometric mean criteria for fecal coliform). For highway pollutants, the deposition of these pollutants is based on the volume of vehicle traffic. The worst-case hydrologic event may not be the worst-case event from a water quality perspective, because the length of antecedent dry periods affects the amount of pollutants deposited and the saturated condition of the soil. Runoff water quantity and quality also are affected by seasonal variations in evaporation, transpiration, and infiltration. One argument against using a continuous simulation approach in water quality application is that the use of data during specific representative hydrologic periods does not necessarily cover the most "critical" condition or the worst-case scenario. Theoretically, if the period of modeling is sufficiently long, the critical conditions might be captured. However, there is no guarantee that the most limiting condition will be included during the specified time period, which normally corresponds to a short period of time (i.e., a couple of years). Moreover, using a continuous simulation approach can be data-intensive. Continuous rainfall and stream flow data, and preferably several decades of data, are considered ideal. If adequate data are not available, values can be estimated, but these estimations will increase the uncertainty in the model predictions.

In contrast, event-based modeling simulates the water quality impact of a specific storm event on the receiving water body. Input values are based on the characteristics of that specific storm (e.g., intensity, duration). In many cases, a storm with a particular return frequency (e.g., 2-year storm, 10-year storm, 100-year storm) is used, usually tending to the longer return frequency to reflect what may be perceived as worst-case conditions. Seasonal variations and long-term cumulative effects are not accounted for because this approach essentially represents a snapshot

at a particular moment in time of a particular event. One argument against this approach is that the storm event chosen may not coincide with the period of interest (e.g., the actual period of construction of a particular ground-disturbing project). Nevertheless, proponents argue that using this approach would better represent a worst-case scenario (i.e., the worst storm event occurring during the time of maximum ground disturbance).

Either approach can be used to illustrate the relative differences between given scenarios, such as build versus no-build conditions. The continuous simulation would produce differences in average long-term values whereas the event-based simulation would produce differences in extreme values. Another way to look at it would be as chronic (continuous, or long-term) versus acute (single-event, or short term) pollutant loadings. Either way, the relative comparison of one condition against another likely would result in the same general outcome. Single storm events affect not just the project in question, but also the entire watershed, so that increased erosion and subsequent sedimentation would occur over the entire watershed as well as over the project. So, for example, a 100-year storm that might cause a great deal of erosion on a specific area of interest (say, a road under construction) also would cause a correspondingly large amount of erosion from all over the watershed. Similarly, an average of storms over a year would apply equally over the entire watershed and the project.

E.5 WATERSHED LOADING MODELS

E.5.1 Model Types

Based on their complexity, operation, time step, and simulation technique, watershed loading models can be grouped into three types – simple methods, mid-range models, and detailed models.

Simple Methods. The major advantage of simple methods is that they can provide a rapid means of identifying critical areas with minimal effort and data requirements. Simple methods typically are derived from empirical relationships between physiographic characteristics of the watershed and pollutant export. Simple methods often are used when data limitations and budget and time constraints preclude the use of complex models. They are used to diagnose nonpoint source (NPS) pollution problems where relatively limited information is available. They can be used to support an assessment of the relative significance of different sources, guide decisions for management plans, and focus continuing monitoring efforts. Typically, simple methods rely on large-scale aggregation of characteristics and neglect features of small patches of land. They rely on generalized sources of information and therefore have low to medium requirements for site-specific data. Default values provided for these methods are derived from empirical relationships that are evaluated based on regional or site-specific data. The estimations usually are expressed as mean annual values. Simple methods provide only rough estimates of sediment and pollutant loadings and have limited predictive capability.

Mid-range Models. The advantage of mid-range watershed loading models is that they evaluate pollution sources and impacts over broad geographic scales and, therefore, can assist in defining target areas for pollution mitigation programs on a watershed basis. Mid-range models represent

a compromise between the empiricism of the simple methods and the complexity of detailed mechanistic models (e.g., relating pollutant loading to hydrologic and erosion processes). These models usually include detailed input-output features.

Detailed Models. Detailed models attempt to represent the current understanding of watershed processes affecting pollution generation, transport, and fate. If properly applied and calibrated, detailed models can provide relatively accurate predictions of variable flows and water quality at any point in a watershed. The additional precision they provide, however, comes at the expense of considerable time and resources for data collection and model application.

E.5.2 Model Comparison

Detailed models incorporate the manner in which watershed processes change over time in a continuous fashion rather than relying on simplified terms for rates of change. Algorithms in detailed models more closely simulate the physical processes of infiltration, runoff, pollutant accumulation, in-stream effects, and groundwater/surface water interaction. The input and output of detailed models also have greater spatial and temporal resolution. Moreover, the manner in which physical characteristics and processes differ over space is incorporated within the governing equations. However, input data file preparation and calibration of detailed models require professional training and adequate resources. Their added accuracy might not always justify the amount of effort and resources they require.

In comparison, simple methods use large simulation time steps to provide long-term averages or annual estimates. Their accuracy may decrease in estimating seasonal or storm event loading, because they cannot capture the large fluctuations of pollutant loading or concentration usually observed at smaller time steps. Neither the simple nor the mid-range models consider degradation and transformation processes, and few incorporate detailed representation of pollutant transport within and from the watershed. Although their applications might be limited to relative comparisons, simple methods often can provide useful information to water quality managers for watershed-level planning decisions. If adequate site-specific data are not available, values can be estimated and assumptions can be made, but these estimations will increase the uncertainty in the model predictions. It will be difficult to validate whether simple or complex models provide better estimates. Therefore, if data availability does not reach the level required by a detailed model, a simpler model is more appropriate.

E.5.3 Available Watershed Loading Models

USGS Regression Equations. The U.S. Geological Survey (USGS) has developed equations for determining pollutant loading rates based on regression analyses of data from sites throughout the country (76 gaging stations in 20 states). The regression approach is based on a statistical description of historical records of storm runoff responses on a watershed level. This method may be used for rough preliminary calculations of annual pollutant loads when data and time are limited. Input data include drainage data, percent imperviousness, mean annual rainfall, general land use pattern, and mean minimum monthly temperature. Application of this method provides storm-mean planning loads and corresponding confidence intervals.

MWCOG Simple Method. The Simple Method, as its name implies, is an easy-to-use empirical equation developed by the Metropolitan Washington Council of Governments (MWCOG) for estimating pollutant loadings of an urban watershed. The method is applicable to watersheds less than one square mile in area, and can be used for analysis of smaller watershed or site planning. The method was developed using the database generated during a Nationwide Urban Runoff Program (NURP) study in the Washington, D.C. area and the national NURP data analysis. The equations, however, may be applied anywhere in the country. Some precision is lost as a result of the effort to make the equation general and simple. The method is adequate for use in decision making at the site-planning level.

FHWA Model. FHWA has developed a simple statistical spreadsheet procedure to estimate pollutant loading and impacts to streams and lakes that receive highway stormwater runoff. The FHWA model uses a set of default values for pollutant event mean concentrations that depend on traffic volume and the rural or urban setting of the highway's pathway. FHWA uses this method to identify and quantify the constituents of highway runoff and their potential effects on receiving waters and to identify areas that might require controls. The FHWA model is well suited for screening applications and is capable of evaluating lake and stream impacts of highway stormwater discharges. However, it assesses seasonal variability in a limited manner and does not consider the soluble fraction of pollutants or the precipitation and settling in lakes. The FHWA model is by far the easiest model for a highway practitioner to apply, and, in most cases, will more than meet the practitioner's needs. Unlike the sophisticated models, it does not incorporate detailed fate (kinetics) and transport (advection and dispersion) processes. Because these mechanisms are not in the model, the results tend to be conservative or over-estimate the actual conditions.

USDA Revised Universal Soil Loss Equation. The Revised Universal Soil Loss Equation (RUSLE) is an easily and widely used computer program that estimates rates of soil erosion caused by rainfall and associated overland flow. The most current version of RUSLE is Version 1.06b, released on January 19, 2001. RUSLE has been developed and is maintained by the U.S. Department of Agriculture (USDA)-Agricultural Research Service (ARS) in cooperation with the USDA-Natural Resources Conservation Service (NRCS), U.S. Department of Interior-Office of Surface Mining, Reclamation, and Regulation and the Bureau of Land Management, Soil and Water Conservation Society, University of Tennessee, Purdue University, and the University of Minnesota. Other users include the Department of Defense, U.S. Environmental Protection Agency (EPA), U.S. Department of Energy, USDA-Forest Service, state agencies regulating landfills, surface mine companies, commercial firms that develop and retail erosion control products, private consultants that develop conservation plans and teach erosion control technology, and university faculty who teach RUSLE in the classroom. RUSLE is used in numerous foreign countries as well.

In the United States, NRCS is the principal user of RUSLE and has implemented RUSLE in most of its local field offices. NRCS also is the major source for data needed to apply RUSLE and is the leading authority on field application of RUSLE.

RUSLE is used by numerous government agencies and private organizations and individuals to assess the degree of rill and interrill erosion, identify situations where erosion is serious, and

guide development of conservation plans to control erosion. RUSLE has been applied to cropland, rangeland, disturbed forest lands, landfills, construction sites, mining sites, reclaimed lands, military training lands, parks, land disposal of waste, and other land uses where mineral soil material is exposed to the erosive forces of raindrop impact and overland flow.

RUSLE estimates average annual soil loss, expressed as mass per unit area per year, which is defined as the amount of sediment delivered from the slope length assumed in the RUSLE computation. RUSLE computes soil loss in units of tons/acre/year, which is the sediment load at the end of the slope length divided by the slope length. In that context, RUSLE is a sediment yield equation that describes sediment yield at the end of the RUSLE slope length.

Another application of RUSLE is to estimate the amount of sediment leaving a landscape that may cause off-site damages, such as sedimentation in a road ditch. In this application, the slope length is the distance from the origin of overland flow through depositional overland flow areas to the first "concentrated flow" area that collects the overland flow to the point that the runoff can no longer be considered overland flow. Consideration outside of RUSLE must be given to deposition that occurs in concentrated flow areas, except terrace and diversion channels that are considered by RUSLE, to fully estimate sediment yield from a landscape area. RUSLE also computes soil loss for individual slope segments. These soil loss values represent net sediment production for those segments, which is the net between detachment and deposition within the segment.

USDA AGricultural Non-Point Source Pollution Model. The AGricultural Non-Point Source Pollution Model 2001 (AGNPS 2001) is a joint USDA ARS and NRCS system of computer models developed to predict NPS pollutant loadings within agricultural watersheds. AGNPS is a distributed-parameter mid-range model. [Distributed parameter models attempt to account for the spatial variability influences of its independent variables, or parameters, by applying governing equations to small elemental areas within which the parameters are assumed to be uniform. Outputs from one element become inputs for adjacent elements. The advantage of a distributed parameter approach is its potential to characterize more accurately the influences of spatial changes; the disadvantage is the more intense data and computational demands.] The model contains a continuous-simulation surface runoff model designed to assist with determining Best Management Practices (BMPs), the setting of Total Maximum Daily Loads (TMDLs), and for risk and cost/benefit analyses.

One component of AGNPS 2001 is the Annualized Agricultural Non-Point Source pollution loading module (AnnAGNPS), a continuous-simulation, multi-event, distributed parameter version of the single-event AGNPS model. Whereas AGNPS is limited to the analysis of runoff water quality resulting from a single storm event, AnnAGNPS allows researchers to model and compare the effects of various actions within a watershed over time. The AnnAGNPS model subdivides the watershed into land areas (cells) that are homogenous with respect to soil type, land use, and land management. It then simulates surface water and selected pollutants leaving the cells and their transport through the watershed system. The model can be used to examine current conditions or to assess the pollutant removal effectiveness of BMPs or mitigation strategies used within the watershed.

The AnnAGNPS model includes special agricultural land use components such as feedlots, gullies, field ponds, and point sources. It also incorporates several variables not included in the original AGNPS (e.g., source accounting, and settling of sediments due to in-stream impoundments), as well as the capabilities of RUSLE, used by USDA-NRCS to evaluate the degree of erosion on agricultural fields and to guide development of conservation plans to control erosion.

The UVA researchers used AnnAGNPS to build a model of the Ivy Creek subwatershed, which is where the bulk of the Bypass portion within the Reservoir watershed would be. The model was employed to estimate NPS pollution under various scenarios, and the increased loading due to the Bypass was compared with the total loads from the entire watershed to assess the potential impact of the Bypass. The BMP routine embedded in the model was used to evaluate the sediment removal efficiency of VDOT's proposed stormwater management ponds. The Ivy Creek subwatershed was divided into 1,017 cells, each assumed to be homogeneous with respect to soil type and land cover. Inputs for each cell included drainage area, average land slope, average elevation, and overland flow length and slope. The reach lengths and slopes were automatically generated by another subroutine, AIDPM. The principal output of the model was the sediment load generated from the subwatershed for the different scenarios evaluated. Total phosphorus loads also were estimated as fractions of sediment loads, because the two parameters are closely related ($R^2 = 0.9716$). Phosphorus often is adsorbed onto, and transported with, particulate matter.

EPA Storm Water Management Model. EPA's Storm Water Management Model (SWMM) is a dynamic rainfall-runoff simulation model used primarily, but not exclusively, for urban areas, for single-event or long-term (continuous) simulation. Flow routing is performed for surface and sub-surface conveyance and groundwater systems, including the option of fully dynamic hydraulic routing in the Extran Block. NPS runoff quality and routing also may be simulated, as well as storage, treatment, and other BMPs. SWMM can be used to model several types of pollutants provided that input data are available. The model is relatively data-intensive and requires special effort for validation and calibration. Its application in detailed studies of complex watersheds might require a team effort and highly trained personnel. SWMM has been applied to analyze conditions in various urban counties.

VirginiA STorm Model. The VirginiA STorm Model (VAST) for stormwater management is a lumped parameter, event-based model. [In a lumped parameter model, the coefficients, or parameters, are assumed to apply over the entire region being modeled. Often, these "lumped" parameter values are determined by an averaging technique (e.g., area-weighting) to improve their ability to account for spatial variability. The advantages of a lumped parameter modeling approach are computational simplicity and noncumbersome data input intensity.] The model includes a collection of three individual computer programs to simulate stormwater runoff, NPS pollution, and pollutant transport. The first program is a hydrologic simulation model entitled VASTQ. VASTQ combines widely used hydrologic theories to compute rainfall abstractions, generate overland flow hydrographs, and route outflows downstream and through BMPs. The VASTNPS2 computational algorithm models the NPS pollutant loading from the watershed. VASTNPS2 allows users to define specific pollutants. Another program called VAPOLL is used

to route pollutants downstream through the sub-basins to determine the total pollutant load from the watershed.

Source Loading and Management Model (SLAMM). The Source Loading and Management Model (SLAMM) originally was developed to better understand the relationships between sources of urban runoff pollutants and runoff quality. It has been continually expanded and now includes a wide variety of source area and outfall control practices (infiltration practices, wet detention ponds, porous pavement, street cleaning, catchbasin cleaning, and grass swales). Runoff is calculated by a method developed by the University of Alabama at Birmingham for small-storm hydrology. SLAMM is based on actual field observations, with minimal reliance on theoretical processes that have not been adequately documented or confirmed in the field. As a mid-range model, SLAMM is used primarily as a planning tool, to better understand sources of urban runoff pollutants and their control. Special emphasis has been placed on small storm hydrology and particulate wash-off in SLAMM. However, SLAMM does not model erosion from pervious areas or construction sites. Neither does it consider in-stream processes that remove or transform pollutants. SLAMM has been used in many areas of North America and has been shown to accurately predict stormwater flows and pollutant characteristics for a broad range of rains, development characteristics, and control practices.

Hydrological Simulation Program FORTRAN (HSPF). HSPF is one of the most comprehensive modeling systems for simulating watershed hydrology, point and nonpoint loading, and receiving water quality for both conventional pollutants and toxicants. Time series of the runoff flow rate, sediment yield, and user-specified pollutant concentrations can be generated at any point in the watershed. Compared with many other watershed models and receiving water models, HSPF has several advantages. First, HSPF is both a watershed model and a receiving water model, i.e., it can simulate both the pollutant loads on land surfaces and in-stream water quality in a complex watershed. Second, HSPF can be run under both continuous and storm event-based situations. Data requirements for HSPF are very intensive, and calibration and verification are strongly recommended. Because of its comprehensive nature, the HSPF model requires highly trained personnel.

E.6 RESERVOIR WATER QUALITY MODELS

E.6.1 Water Quality Analysis and Simulation Program (WASP)

The Water Quality Analysis and Simulation Program (WASP) is a general-purpose dynamic modeling system for assessing the fate and transport of conventional and toxic pollutants in surface water bodies. WASP Version 5 (WASP5) has a modular structure and allows the incorporation of specialized user-written routines into its computational structure. The model can be applied in one, two, or three dimensions and is designed for linkage with the hydrodynamic programs (e.g., DYNHYD5). WASP5 includes two sub-models for water quality/eutrophication and toxics, referred to as EUTRO5 and TOXI5, respectively.

A significant advantage of the WASP5 system is that the EUTRO5 and TOXI5 sub-models can be used at variable levels of complexity by considering different processes, variables, and

computations. The WASP modeling system has been used in a wide range of regulatory and water quality management applications for rivers, lakes, and estuaries.

As specified in its manual, there are no special process descriptions for solids transport in the WASP modeling system. Erosion rates, for example, are not programmed as a function of sediment shear strength and water column stress. Consequently, the TOXI sediment model should be considered descriptive, and must be calibrated to site data. In a strict sense, WASP is not intended to be a sediment transport model because it does not calculate re-suspension, shear stress, or other processes relating to sediment transport. However, WASP performs a simple mass balance on each solid variable in each compartment based upon specified water column advection and dispersion rates, along with special settling, deposition, erosion, burial, and bed load rates.

E.6.2 Hydrological Simulation Program FORTRAN (HSPF)

HSPF is a general purpose and detailed modeling system for both conventional and toxic organic pollutants. The receiving water component of HSPF allows dynamic simulation of one-dimensional stream channels, with several hydrodynamic routing options. Therefore, HSPF is limited to well-mixed rivers and reservoirs. The eutrophication routines simulate Biochemical Oxygen Demand (BOD)/Dissolved Oxygen (DO) interactions, temperature, and phytoplankton dynamics as affected by nutrients and organic material. The toxics routines combine organic chemical process kinetics with sediment balance algorithms to predict dissolved and sorbed chemical concentrations in the upper sediment bed and overlying water column.

E.7 SPILL MODELS

E.7.1 Model Types

The risk from an adverse event is a product of its consequence (or severity) and the probability of the event occurring. There are two approaches for estimating water quality impact on a reservoir due to a spill event: probabilistic risk analysis (PRA) and deterministic analysis. The two approaches are designed to answer different questions. In general, PRA offers a more comprehensive and informative way to evaluate risk than a traditional one-influence-at-a-time sensitivity analysis approach. Deterministic analysis (e.g., using sophisticated specialized models) can perform site-specific and detailed environmental impact analysis. However, the probability associated with an event (e.g., oil spill) cannot be quantified through deterministic analysis.

Probabilistic Risk Analysis (PRA). PRA is a decision tool that answers "what are the chances of a spill occurring?" This type of analysis is effectively used in a risk mitigation program for large public capital development projects, where investment is high, benefits are very slowly manifested, and complexities abound. Risk communication is a natural adjunct to a risk mitigation program, which begins with probabilistic risk analysis. This approach is particularly well-suited to promoting communication by fostering high participation of vested parties, a collaborative orientation, and descriptive, intuitively appealing graphics that convey

simultaneous complexities in a sure, straightforward manner. PRA replicates real-world events through Monte Carlo modeling, or the statistics of chance. It also models realistic outcomes and promotes discussion on risk from all parties in the decision-making process. PRA can help the general public understand complicated scientific processes.

While not yet mandated by government regulations, PRA is an increasingly preferred method of assessing contamination risk, especially in cases where there is an absence of site-specific data. Monte Carlo simulation is a long-established method for defining the uncertain components in a mathematical model and for providing an estimate of uncertainty in the analysis of risk. EPA has published several handbooks and papers, such as *Guiding Principles for Monte Carlo Analysis, The Use of Monte Carlo Simulation in Risk Assessments,* and hundreds of other documents that describe case studies, recommended parameter values, and policy issues.

Deterministic Analysis using Specialized Spill Models. Deterministic analyses require highly specialized spill models. Although deterministic models could be used to evaluate the water quality impact of an oil spill event, they cannot determine relative levels of risk (and probability) associated with such an event. Return period or recurrence interval (in years) is usually an important piece of information in risk assessment. Conceptually, quantifying water quality impacts due to spills can be divided into two major steps. The first step includes using a specialized spill fate and transport model and the second step includes using a reservoir water quality model.

E.7.2 Spill Fate and Transport Models

EPA's Center for Subsurface Modeling Support (CSMoS) provides public domain groundwater and vadose (unsaturated) zone modeling software and services to public agencies and private companies throughout the nation. CSMoS provides direct technical assistance for a broad spectrum of modeling applications. These models include Hydrocarbon Spill Screening Model (HSSM), Non-Aqueous Phase Liquid (NAPL) Simulator, UTCHEM, and BIOPLUME III. The models can be used to assist in performing site characterization, groundwater flow and transport simulations, and selecting groundwater remediation options for RCRA sites, Superfund studies, and also for the determination of well head protection areas.

Hydrocarbon Spill Screening Model (HSSM). HSSM simulates flow of the Light Non-Aqueous Phase Liquid (LNAPL) and transport of a chemical constituent of the LNAPL from the surface to the water table; radial spreading of the LNAPL phase at the water table, and dissolution and aquifer transport of the chemical constituent. The HSSM model is one-dimensional in the vadose zone, radial in the capillary fringe, and two-dimensional vertically averaged in the saturated zone. The most current Windows version 1.20a was released in September 1997.

NAPL Simulator. NAPL Simulator simulates contamination of soils and aquifers resulting from the release of organic liquids commonly referred to as Non-Aqueous Phase Liquids (NAPLs). The Simulator is applicable to three interrelated zones: a vadose zone, which is in contact with the atmosphere, a capillary zone, and a water-table aquifer zone. Three mobile phases are accommodated: water, NAPL, and gas. The 3-phase k-S-P sub-model accommodates capillary

and fluid entrapment hysteresis. NAPL dissolution and volatilization are accounted for through rate-limited mass transfer sub-models. The most current version 1.0 was released in October 1997.

UTCHEM. UTCHEM was developed by the Department of Petroleum Engineering at University of Texas in Austin. UTCHEM is capable of modeling transient and steady-state, three-dimensional flow and mass transport in the groundwater (saturated) and vadose zones of aquifers. Physical, chemical, and biological process models important in describing the fate and transport of NAPLs in contaminated aquifers have been incorporated into the simulator. These include multiple organic NAPL phases; the dissolution and/or mobilization of NAPLs by nondilute remedial fluids; chemical and microbiological transformations; and changes in fluid properties as a site is remediated. The model allows for non-equilibrium inter-phase mass transfer, sorption, geochemical reactions, and the temperature dependence of pertinent chemical and physical properties. It can simulate the flow and transport of remedial fluids whose density, temperature, and viscosity are variable, including surfactants, cosolvents, and other enhancement agents. The most current version 6.1 was released in February 1999.

BIOPLUME III. BIOPLUME III is two-dimensional, finite difference model for simulating the natural attenuation of organic contaminants in groundwater due to the processes of advection, dispersion, sorption, and biodegradation. Biotransformation processes are potentially important in the restoration of aquifers contaminated with organic pollutants. As a result, these processes require evaluation in remedial action planning studies associated with hydrocarbon contaminants. The most current version is Version 1.0 - September 1997.

MODFLOW. The MODular three-dimensional finite-difference groundwater FLOW model (MODFLOW)-2000 simulates steady and non-steady flow in an irregularly shaped flow system in which aquifer layers can be confined, unconfined, or a combination of confined and unconfined. The program was constructed in the early 1980s and has continually evolved since then with development of many new packages and related programs for groundwater studies. Currently, MODFLOW is the most widely used program in the world for simulating groundwater flow. The popularity of the program is attributed to many factors. First, the finite-difference method used by MODFLOW is relatively easy to understand and apply to a wide variety of real-world conditions. Secondly, MODFLOW works on many different computer systems, ranging from personal computers to super computers. MODFLOW can be applied as a one-dimensional, two-dimensional, or quasi-or full three-dimensional model. Each simulation feature of MODFLOW has been extensively tested.

VS2DI. VS2DI is a graphical software package for simulating fluid flow and solute or energy transport in variably saturated porous media. The VS2DI software package includes three applications: (1) **VS2DTI**, for simulation of water and solute transport; (2) **VS2DHI**, for simulation of water and energy transport; and, (3) **VS2POST**, a stand-alone postprocessor for viewing results saved from previous simulation runs.

The numerical models used for flow and transport calculations are USGS's computer models VS2DT (for solute transport) and VS2DH (for energy transport). These models have been updated to version 3.0 for implementation in the VS2DI package.

VS2DT is a finite-difference model that solves Richard's equation for fluid flow, and the advection-dispersion equation for solute transport. The model can analyze problems in one or two dimensions using either Cartesian or radial coordinate systems. Solute transport processes include advection, dispersion, first-order decay, adsorption, and ion exchange. VS2DH is a version of VS2DT that has been modified to simulate energy transport instead of solute transport.

WASP. Several environmental processes can affect the transport and fate of organic chemicals in the aquatic environment. The most important include physical processes such as hydrophobic sorption, volatilization, and sedimentation; chemical processes such as ionization, precipitation, dissolution, hydrolysis, photolysis, oxidation, and reduction; and biological processes such as biodegradation and bioconcentration. WASP explicitly handles most of these, excluding only reduction and precipitation-dissolution. WASP allows the simulation of a variety of processes that may affect toxic chemicals. The model is designed to provide a broad framework applicable to many environmental problems and to allow the user to match the model complexity with the requirement of the problem.

A component of the WASP model called TOXI is used to model toxic pollutants in aquatic systems. However, some limitations should be kept in mind when applying the TOXI module. First, chemical concentrations should be near trace levels (e.g., below half the solubility). At higher concentrations, the assumptions of linear partitioning and transformation begin to break down. Chemical density may become important, particularly near the source, such as in a spill. Large concentrations can affect key environmental characteristics, such as pH or bacterial populations, thus altering transformation rates.

E.8 APPLICATIONS

E.8.1 AnnAGNPS

Ivy Creek directly drains into the Reservoir and is the major tributary receiving stormwater runoff from the proposed Bypass right of way area. Approximately 80% of the portion of the Bypass within the Reservoir watershed would run through the Ivy Creek subwatershed, and the remaining 20% would drain directly into the Reservoir via several small unnamed tributaries. AnnAGNPS was used to simulate the NPS pollutant generation and transport processes within the Ivy Creek watershed, and to estimate the NPS loads from the watershed and Bypass area. In the watershed modeling study by UVA, suspended solid (SS) was selected as the representative pollutant.

E.8.2 SWMM and VAST

SWMM was used to predict the NPS load from the Bypass right of way area. The pollution loading from the South Fork Rivanna River watershed was estimated using the VAST model. Two average synthetic storms were applied to generate the NPS loading from both the Bypass right of way area and the Reservoir drainage area. SWMM was used to model the Bypass area because SWMM has some features, for instance, the capability to simulate erosion processes, that VAST does not have.

E.8.3 Runoff Estimation in Black & Veatch's Study

Black & Veatch (2001) used RUSLE to estimate loadings from Bypass runoff. This section provides an overview of Black & Veatch's study and an evaluation of the study by UVA. (See Appendix K for views of others on the Black & Veatch study.)

RUSLE is a valid model for estimating erosion and to predict runoff pollutant loads entering the Reservoir from the proposed Route 29 Bypass. In general, Black & Veatch's application of the RUSLE model followed a systematic approach. They analyzed the current erosion, the expected erosion during construction, and the expected erosion after construction. Most of the assumptions used in Black & Veatch's analysis were good and key parameter values were within proper ranges. The spreadsheet format used by Black & Veatch is an effective and efficient way of calculating and displaying the data. In addition, UVA considered the stormwater analysis performed by Black & Veatch to be reasonable (technical memo by UVA, November 8, 2001). Sources of inconsistency between findings of the Black & Veatch study and the UVA study originate from available data and the models used. UVA had access to more detailed information regarding VDOT roadway and stormwater management plans. UVA's source of baseline water quality data is more reliable because it was collected over a long period of time in the Reservoir itself. Sampling by the UVA team confirmed some findings of the historical water quality database and provided insight as to the accuracy of modeling parameters. UVA used a more sophisticated computational model, which improves the prediction of watershed and Reservoir dynamics and pollutant/water quality interactions.

To predict annual load, Black & Veatch multiplied concentration data and total runoff volume. This very simple approach did not take into account the effect of dissipation during transport, which is very important because most portions of the Bypass would be fairly far away from the Reservoir, and thus the runoff would have a long route to travel before entering the Reservoir. Black & Veatch used a conservative approach that overestimated load because the transport effect would in all likelihood reduce the pollutant load.

The conclusions from both the UVA study and the Black & Veatch study indicated that the Bypass runoff pollutant load to the Reservoir constitutes a small fraction of the loads coming from the other parts of the watershed. Black & Veatch estimated the Bypass contribution to range from 0.006% to 0.2% of the total pollutant load to the Reservoir, while the UVA study found the Bypass runoff contribution to be negligible.

E.8.4 WASP

WASP was applied by UVA researchers to simulate and evaluate the effect of total suspended solids on the water quality of the Reservoir. After calibration with currently available field data, the calibrated model was used to predict the Reservoir response under different load scenarios. The UVA modeling efforts are still ongoing.

E.8.5 Risk Simulation of Spill in Black & Veatch's Study

In the Black & Veatch study, a risk simulation model entitled Crystal Ball was used. Crystal Ball is a forecasting and risk analysis add-in for MS Windows-based spreadsheet applications. It has

been used in various environmental and risk analyses by governmental agencies and the private sector. Black & Veatch used three steps to assess the risk of chemical spills:

- Development of an inventory of potential spill situations that could endanger the quality of the raw water supply.
- Assessment of the treatment plant's capability to respond to a spill.
- Determination of relative levels of risk associated with transportation-related spills.

When evaluating effects of a chemical spill, the assumption of no mixing of pollutant spill in the Reservoir, as used by Black & Veatch, yields a conservative estimate of actual conditions. Realistically, some detention will occur in the stormwater ponds, and substantial dilution most likely would occur if any pollutant were to reach the Reservoir itself. The computed risks therefore overestimate the actual risk.

Table E-1 on the next page provides a summary comparison of models discussed in this appendix.

Table E-1
SUMMARY OF MODEL COMPARISON FOR WATER QUALITY IMPACT ANALYSIS

Model Name	Sponsor Agency or Distributor	Level of Complexity	Pollutants Analyzed	Model Capability / Pros and Cons
Watershed Loading Models				
FHWA	FHWA	Simple	Heavy metals, nitrogen, and phosphorus	Screening application; statistical approach; capable of evaluation of lake and stream impacts of highway stormwater discharges; assesses seasonal variability in a limited manner; does not consider the soluble fraction of pollutants or precipitation and settling in lakes.
RUSLE	USDA	Simple	Sediment	Easily and widely used model for estimating soil erosion by rainfall and associated overland flow; used by numerous government agencies and private organizations and individuals.
VAST	University of Virginia	Simple to mid-range	Sediment, nutrients, BOD	Event-based modeling; capable of simulating NPS loads; does not have the capability to simulate erosion process.
SWMM	EPA	Detailed	Sediment, nutrients, metals	General-purpose urban stormwater model; capable of both continuous and event simulation; lack of subsurface quality routing; weak scour-deposition routines.
AGNPS	USDA	Mid-range to detailed	Sediment, nutrients, pesticide, COD	Single-event simulation of pollutant loads from agricultural watersheds; distributed parameter model.
AnnAGNPS	USDA	Mid-range to detailed	Sediment, nutrients, pesticide, COD	Continuous multi-event simulation of pollutant loads from agricultural watersheds; distributed parameter model.
SLAMM	University of Alabama at Birmingham	Mid-range	Sediment, phosphorus, TKN, COD, bacteria, metals	Screening application; does not model erosion from pervious areas or construction sites.
HSPF	EPA and USGS	Detailed	Sediment, BOD, DO, nitrogen, phosphorus, temperature, pesticide, toxics	Both watershed loading and detailed receiving water quality modeling system; capable of continuous and event-based simulation, BMP evaluation; lumped parameter model; very data intensive
Reservoir Water Quality Models				
WASP	EPA	Dynamic and detailed	Temperature, salinity, bacteria, DO, BOD, nitrogen, phosphorus, phytoplankton	General purpose modeling system for conventional and toxic pollutants (EUTRO5 and TOXI5); strong capability for eutrophication application; limited capability modeling organic pollutants (e.g., petroleum products); no sediment transport module in current version.
HSPF	EPA and USGS	Dynamic and detailed	Sediment, BOD, DO, nitrogen, phosphorus, temperature, pesticide, toxics	General purpose and detailed modeling system; capable of both conventional and toxic organic pollutants; limited to well-mixed rivers and reservoirs; very data intensive

F

FEDERAL REGISTER NOTICES

In order to notify the public and the regulatory community of FHWA's action to prepare a Supplemental Environmental Impact Statement, a Notice of Intent was published in the *Federal Register* on September 28, 2001. The availability of the Draft Supplemental Environmental Impact Statement for review and comment was announced in the *Federal Register* on February 22, 2002. This appendix contains copies of the published notices.

United States Trade Representative, (202) 395–6120.

Robert B. Zoellick,
United States Trade Representative.
[FR Doc. 01–24333 Filed 9–27–01; 8:45 am]
BILLING CODE 3190–01–M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Air Traffic Procedures Advisory Committee

AGENCY: Federal Aviation Administration (FAA), DOT.

SUMMARY: The FAa is issuing this notice to advise the public that a meeting of the Federal Aviation Administration Air Traffic Procedures Advisory Committee (ATPAC) will be held to review present air traffic control procedures and practices for standardization, clarification, and upgrading of terminology and procedures.

DATES: The meeting will be held from October 10–12, 2001, from 8 a.m. to 4 p.m. each day.

ADDRESSES: The meeting will be held at the Department of Transportation, NASSIF Building, 400 7th Street, SW., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Mr. Eric Harrell, Executive Director, ATPAC, Terminal and En Route Procedures Division, 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267–3725.

SUPPLEMENTARY INFORMATION: Pursuant to Section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463; 5 U.S.C. App. 2), notice is hereby given of a meeting of the ATPAC to be held October 10 through October 12, 2001, at the Department of Transportation, NASSIF Building, 400 7th Street, SW., Washington, DC 20590.

The agenda for this meeting will cover: a continuation of the Committee's review of present air traffic control procedures and practices for standardization, clarification, and upgrading of terminology and procedures. It will also include:

1. Approval of Minutes.
2. Submission and Discussion of Areas of Concern.
3. Discussion of Potential Safety Items.
4. Report from Executive Director.
5. Items of Interest.
6. Discussion and agreement of location and dates for subsequent meetings.

Attendance is open to the interested public but limited to the space available. With the approval of the Chairperson, members of the public may present oral statements at the meeting. Persons desiring to attend and persons desiring to present oral statements should notify the person listed above not later than October 1, 2001. The next quarterly meeting of the FAA ATPAC is planned to be held from October 10–12, 2001, in Washington, DC.

Any member of the public may present a written statement to the Committee at any time at the address given above.

Issued in Washington, DC, on September 18, 2001.

David W. Madison,
Executive Director, Air Traffic Procedures Advisory Committee.
[FR Doc. 01–23778 Filed 9–27–01; 8:45 am]
BILLING CODE 4910–13–M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Planned Establishment of the Raleigh-Durham International Airport Class B Airspace Area, NC; and Revocation of the Raleigh-Durham International Airport Class C Airspace Area, NC

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of public meetings.

SUMMARY: This notice announces two fact-finding informal airspace meetings to solicit information from airspace users, and others, concerning a plan to establish a Class B airspace area at the Raleigh-Durham International Airport, NC. The purpose of these meetings is to provide interested parties an opportunity to present views, recommendations, and comments on the plan to establish the Raleigh-Durham, NC, Class B airspace area. All comments received during these meetings will be considered prior to any revision or issuance of a notice of proposed rulemaking.

TIMES AND DATES: *Meetings.* These informal airspace meetings will be held on Tuesday, December 4, 2001, at 7 p.m.; and Wednesday, December 5, 2001, at 7 p.m. Comments must be received on or before January 4, 2002.

ADDRESSES: Both meetings will be held at the Raleigh-Durham Airport Authority, Room 100, 1000 Trade Drive, at the Raleigh-Durham International Airport, NC.

Comments: Send comments on the proposal in triplicate to: Manager, Air Traffic Division, ASO–500, Federal Aviation Administration, P.O. Box 20636, Atlanta, GA 30320.

FOR FURTHER INFORMATION CONTACT: Richard A. Belmonte, Manager, Raleigh-Durham Airport Traffic Control Tower, Raleigh-Durham International Airport, 1000 Sawyer Circle, Raleigh, NC 27623; telephone (919) 840–5502.

SUPPLEMENTARY INFORMATION:

Meeting Procedures

(a) These meetings will be informal in nature and will be conducted by one or more representatives of the FAA Southern Region. A representative from the FAA will present a formal briefing on the proposed Class B airspace area. Each participant will be given an opportunity to deliver comments or make a presentation at the meetings. Only comments concerning the proposal to establish a Class B airspace area will be accepted.

(b) These meetings will be open to all persons on a space-available basis. There will be no admission fee or other charge to attend and participate.

(c) Any person wishing to make a presentation to the FAA panel will be asked to sign in and estimate the amount of time needed for such presentation. This will permit the panel to allocate an appropriate amount of time for each presenter.

(d) These meetings will not be adjourned until everyone on the list has had an opportunity to address the panel.

(e) Position papers or other handout material relating to the substance of these meetings will be accepted. Participants wishing to submit handout material should present three copies to the presiding officer. There should be additional copies of each handout available for other attendees.

(f) These meetings will not be formally recorded.

Agenda for the Meetings

—Presentation of Meeting Procedures.
—Presentation on the planned Class B airspace area at Raleight-Durham, NC.
—Public Presentations and Discussions.
—Closing Comments.

Issued in Washington, DC, on September 24, 2001.

Reginald C. Matthews,
Manager, Airspace and Rules Divis
[FR Doc. 01–24428 Filed 9–27–01; [illegible]am]
BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Supplemental Environmental Impact Statement: City of Charlottesville and Albemarle County, Virginia

AGENCY: Federal Highway Administration, DOT.

Federal Register / Vol. 66, No. 189 / Friday, September 28, 2001 / Notices 49739

ACTION: Notice of Intent.

SUMMARY: The Federal Highway Administration (FHWA) is issuing this notice to advise the public of its intent to prepare a supplemental Environmental Impact Statement (EIS) in cooperation with the Virginia Department of Transportation (VDOT) to more thoroughly examine the impacts associated with the selected bypass alternative (Alternative 10) from the Route 29 Corridor Study final EIS and the subsequent changes to the termini on the South Fork Rivanna River Reservoir and archeological resources not previously accounted for.

FOR FURTHER INFORMATION CONTACT: Edward Sundra, Senior Environmental Specialist, Federal Highway Administration, Post Office Box 10249, Richmond, Virginia 23240–0249, Telephone 804–775–3338.

SUPPLEMENTARY INFORMATION: In the late-1980s, an EIS was initiated to address congestion on Route 29 through the City of Charlottesville and Albemarle County in central Virginia. In 1993, a Record of Decision (ROD) was issued by FHWA which identified a series of improvements to address the project's purpose and need. This series of improvements included a bypass alternative known as Alternative 10 located west of existing Route 29. Shortly after issuing the ROD, changes were requested by the localities to the termini of the bypass. To address these changes, an Environmental Assessment was prepared which concluded that a supplemental EIS was not required. In 1996, a Reevaluation was initiated to address design changes to the bypass recommended by a local design advisory committee as well as other issues that arose since the EA. In 1998, litigation was brought against the project by the Southern Environmental Law Center on behalf of the Piedmont Environmental Council and Sierra Club alleging violations of the National Environmental Policy Act and section 4(f) of the U.S. Department of Transportation Act of 1966. On March 13, 2000, FHWA completed its Reevaluation and issued a revised ROD documenting the changes to the selected alternative and the mitigation for the bypass. In August of 2001, a judge for the United States District Court in the City of Charlottesville rendered his decision on the litigation granting the plaintiffs motion for summary judgment in part. As a result, the Court enjoined further action on the project until a supplemental EIS was completed which addressed the issues enumerated in the judge's memorandum opinion—impacts to the South Fork Rivanna River Reservoir and archeological resources which had not been previously considered. On the other eight counts raised by the plaintiffs, the judge granted the defendants' motion for summary judgment concluding that FHWA adequately considered the issues raised by the plaintiffs in the NEPA process and were not arbitrary and capricious in rendering its decision. Therefore, this supplemental EIS will be of limited scope with the purpose of determining whether the FHWA decision for the selected alternative represented by the revised ROD dated March 13, 2001, remains reasonable once the impacts of the bypass on the South Fork Rivanna River Reservoir and archeological resources not currently accounted for are thoroughly examined and considered.

In accordance with 40 CFR 1502.9(c)(4), scoping will not be reinitiated for the project. To support the development of the supplemental EIS, local officials and State and Federal agencies will be coordinated with as necessary, given the limited scope of the supplemental EIS. Letters describing the proposed study and soliciting input will be sent to the appropriate agencies which are known to have an interest or legal role in the project. Once completed, copies of the supplemental EIS will be sent to all recipients of the final EIS for the Route 29 Corridor Study. A public hearing is planned where the draft supplemental EIS will be made available to the public for review and comment prior to and after the hearing. Notices of the public hearing will be given through various forums, including the newspaper, providing the time and place of the meeting along with other relevant information. Any comments that are received during the public comment period that address the issues for which the supplemental EIS is being prepared will be considered before FHWA renders its decision regarding the existing selected alternative. Any comments that are received which address issues which the Court has already determined have been adequately addressed will be reviewed but not considered unless they raise significant new information.

Comments and questions concerning the development of the supplemental EIS and its scope should be directed to FHWA at the address provided above. Preparation of this supplemental EIS does not require the withdrawal of any previous approvals or documents.

(Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this proposed action.)

Authority: 23 U.S.C. 315; 49 CFR 1.48.

Issued on: September 14, 2001.

Edward S. Sundra,

Senior Environmental Specialist.

[FR Doc. 01–24287 Filed 9–27–01; 8:45 am]

BILLING CODE 4910–22–M

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Environmental Assessment or Environmental Impact Statement: Summit County, OH

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental assessment or environmental impact statement will be prepared for a proposed project in Summit County, Ohio.

FOR FURTHER INFORMATION CONTACT: Michael B. Armstrong, Urban Programs Engineer, Federal Highway Administration, 200 N. High Street, Room 328, Columbus, Ohio 43215, Telephone: (614) 280–6855.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the Ohio Department of Transportation (ODOT), will prepare an environmental assessment (EA) or environmental impact statement (EIS) on a proposal to upgrade 5.2 miles of SR 8 between SR 303 and I–271 in Summit County, Ohio.

Upgrading SR 8 is considered necessary to improve the traffic flow and to meet current design standards. The proposal will reduce the existing vehicular traffic congestion along SR8.

Alternatives under consideration include: (1) Taking no action; (2) upgrading the existing 4-lane controlled access facility to a 4-lane limited access facility; (3) constructing a highway on new alignment; and (4) upgrading the existing 4-lane controlled access facility to a 6-lane controlled access facility.

Letters describing the proposed action and soliciting comments will be sent to appropriate Federal, State and, local agencies, and to private organizations and citizens who have previously expressed or are known to have interest in this proposal. A public hearing was previously held for the project on May 24, 2000. In Spring of 2002, an additional public hearing will be held in the project area. Public notice will be

Summary: EPA continues to have environmental concerns about impacts of the project related to traffic/air quality, water supply, wastewater treatment and land use and associated mitigation. EPA continued to encourage the Navy to consider mechanisms (smart growth and others) to determine whether the base redevelopment could occur in a manner that would result in fewer environmental impacts.

Dated: February 19, 2002.

Joseph C. Montgomery,

Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. 02–4270 Filed 2–21–02; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–6626–7]

Environmental Impact Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–7167 or *www.epa.gov/oeca/ofa.* Weekly receipt of Environmental Impact Statements filed February 11, 2002 through February 15, 2002 pursuant to 40 CFR 1506.9.

EIS No. 020061, Final EIS, SFW, WA, Icicle Creek Restoration Creek Project, To Protect and Aid in the Recovery of Threatened and Endangered Fish, Leav[illegible]rth National Fish Hatchery (LN[illegible] [illegible]OE Section 404 and NPDES P[illegible] Leavenworth, WA. Wait Period En[illegible]ch 25, 2002, Contact: Greg Pra[illegible]ner (509) 548–7641.

EIS No. 020062, Draft Supplement, FHW, VA, U.S. Route 29 Bypass Improvement, between Route 250 Bypass in Charlottesville and the South Rivanna River in Albemarle, Updated Information, To consider the Effects of the Selected Alternative on the South Fork Rivanna River Reservoir and its Watershed, US COE Section 404 Permit, Albemarle County, VA, Comment Period Ends: April 16, 2002, Contact: Edward S. Sundra (804) 775–3338.

EIS No. 020063, Draft EIS, FHW, AR, Springdale Northern Bypass Project, US Highway 412 Construction, Funding, NPDES Permit, Benton and Washington Counties, AR , Comment Period Ends: April 15, 2002, Contact: Randal Looney (501) 324–5625.

EIS No. 020064, Final EIS, USN, CA, Point Molate Property Naval Fuel Depot (NFD) for the Disposal and Reuse, Implementation, Fleet and Industrial Supply Center, City of Richmond, Contra Costa County, CA , Wait Period Ends: March 25, 2002, Contact: Larry Dean (619) 532–0936.

EIS No. 020065, Draft EIS, FAA, PA, MD, VA, WV, DC, Potomac Consolidated Terminal (PCT) Radar Approach Control Facility (TRACON) Airspace Redesign, in Baltimore-Washington Metropolitan Area, Newly Consolidated (TRACON), Improved Aircraft Performance, and Emerging ATC Technologies, PA, MD, DE, VA, WV and DC, Comment Period Ends: May 28, 2002, Contact: William Carver (800) 762–9531.

EIS No. 020066, Draft EIS, COE, CO, Rueter-Hess Reservoir Project, Construction and Operation, Proposed Water Supply Reservoir and Off-Stream Dam, COE Section 404 Permit, Endangered Species Act (Section &) and Right-of-Way Use Permit, Located on Newlin Gulch along Cherry Creek, Town of Parker, Douglas County, CO , Comment Period Ends: April 08, 2002, Contact: Rodney J. Schwartz (402) 221–4143.

EIS No. 020067, Final EIS, USN, FL, Renewal of Authorization to Use Pinecastle Range, Continue Use of the Range for a 20-Year Period, Special Use Permit Issuance, Ocala National Forest, Marion and Lake Counties, FL , Wait Period Ends: March 25, 2002, Contact: Darrell Molzan (843) 820–5796.

EIS No. 020068, Final EIS, FRC, CA, Big Creek No. 4 Hydroelectric Project, Issuing New License, (FERC Project No. 2017), San Joaquin River Basin, Sierra National Forest, Fresno, Madera and Tulare Counties, CA , Wait Period Ends: March 25, 2002, Contact: John Ramer (202) 219–2833.

This document is available on the Internet at: *http://rimsweb1.ferc.gov.*

EIS No. 020069, Draft EIS, FTA, TX, Southeast Corridor Light Rail Transit Project, Construction and Operation, Funding, NPDEs Permit and COE Section 404 Permit, Mobility 2025 Plan Update, Dallas Area Rapid Transit (DART), the City of Dallas, Dallas County, TX , Comment Period Ends: April 08, 2002, Contact: Jesse Balleza (817) 860–9663.

EIS No. 020070, Draft EIS, FTA, NV, Las Vegas Resort Corridor Project, Transportation Improvements, Funding, City of Las Vegas, Clark County, NV, Comment Period Ends: April 08, 2002, Contact: Ray Sukys (415) 744–3115.

EIS No. 020071, Draft EIS, BPA, WA, OR, Wallula Power Project and Wallula-McNary Transmission Line Project, Construction and Operation, 1300 megawatt(MW) Natural Gas Fired Combustion Gas Turbine Facility and a new 500-kilovolt(kV) Transmission Line and Upgrade of the McNary Substation, US COE Section 10 and 404 Permits, Walla-Walla Co., WA and Umatilla Co., OR, Comment Period Ends: April 11, 2002, Contact: Donald L. Rose (503) 230–3796.

This document is available on the Internet at: *http://www.efsec.wa.gov.*

Dated: February 19, 2002.

Joseph C. Montgomery,

Director, NEPA Compliance, Office of Federal Activities.

[FR Doc. 02–4271 Filed 2–21–02; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–7148–3]

Availability of FY 00 Grant Performance Reports for States of Tennessee and Georgia, and the Commonwealth of Kentucky

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability of grantee performance evaluation reports.

SUMMARY: EPA's grant regulations (40 CFR 35.150) require the Agency to evaluate the performance of agencies which receive grants. EPA's regulations for regional consistency (40 CFR 56.7) require that the Agency notify the public of the availability of the reports of such evaluations. EPA performed end-of-year evaluations of all state air pollution control programs. Evaluations for the Commonwealth of Kentucky, and the States of Georgia and Tennessee are now available for public review. These evaluations were conducted to assess the agencies' performance under the grants awarded by EPA under authority of section 105 of the Clean Air Act. EPA Region 4 has prepared reports for each agency identified above and these reports are now available for public inspection. The evaluations for the remainder of the States and local governments were published at an earlier date.

ADDRESSES: The reports may be examined at the EPA's Region 4 office, 61 Forsyth Street, SW., Atlanta, Georgia 30303, in the Air, Pesticides, and Toxics Management Division.

FOR FURTHER INFORMATION CONTACT: Gloria Knight, (404) 562–9064, for information concerning the State of Tennessee; or Marie Persinger (404) 562–9048, for information concerning Kentucky and Georgia. They may be contacted at the above Region 4 address.

Dated: February 7, 2002.

A. Stanley Meiburg,

Deputy Regional Administrator, Region 4.

[FR Doc. 02–4302 Filed 2–21–02; 8:45 am]

BILLING CODE 6560–50–P

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SUMMARY OF FINAL ENVIRONMENTAL IMPACT STATEMENT

This appendix contains the Title Sheet and the Summary from the Final Environmental Impact Statement approved by FHWA on January 20, 1993.

FHWA-VA-EIS-90-02-F
State Project No. 6029-002-122, PE 100

Virginia Department of Transportation

U.S. ROUTE 29 CORRIDOR STUDY
CITY OF CHARLOTTESVILLE AND ALBEMARLE COUNTY

FINAL ENVIRONMENTAL IMPACT STATEMENT

SECTION 4(f)/106 EVALUATION

Submitted Pursuant To: 42 U.S.C. 4332(2) (c), 23 U.S.C. 128(a)
49 U.S.C. 303(c), and 16 U.S.C. 470(f)

U.S. Department of Transportation
Federal Highway Administration
and
Virginia Department of Transportation

12/14/92
Date of Approval

Chief Engineer, Virginia Department of Transportation

1/20/93
Date of Approval

Director, Office of Planning and Program Development
Federal Highway Administration, Region 3

The following persons may be contacted for additional information concerning this document:

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Virginia Department of Transportation
1401 E. Broad Street
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400 N. Eighth Street
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The proposed project is to provide relief from current and anticipated traffic congestion on the Route 29 north corridor in the City of Charlottesville and Albemarle County. A Base Case alternative with eight corridor construction alternatives have been considered in addition to Mass Transit and Transportation System Management (TSM) alternatives. An alternative has been selected following circulation of the Draft Environmental Impact Statement, a Location Public Hearing, and a full consideration of comments received.

SUMMARY

PROJECT DESCRIPTION

The selected alternative and the basis for its selection are presented in this Final Environmental Impact Statement along with other alternatives considered. This Final Environmental Impact Statement, a revision and expansion of the Draft Environmental Impact Statement, also incorporates comments and suggestions received from the public and federal, state, and local agencies during the public review process. Added or revised text is denoted by a vertical line along the left margin.

The proposed action is located in the U.S. Route 29 corridor in the City of Charlottesville and Albemarle County, Virginia. This section of Route 29 is a four-lane divided highway with at-grade, signalized intersections. It begins at the U.S. Route 250 Bypass in Charlottesville and ends at the South Fork Rivanna River in Albemarle County, a distance of approximately 3.3 miles.

Improvements already programmed for this section, designated the "Base Case" for purposes of this document, involve widening the existing road to six lanes divided with at-grade, signalized intersections and continuous right turn lanes.

The proposed action involves construction of one of the following alternatives:

- An expressway 3.3 miles long, along existing Route 29, from Route 250 Bypass to the South Fork Rivanna River, consisting of four express lanes with three-lane, one-way service roads on both sides.

- A new location, four-lane divided, controlled access facility along one of seven alignment alternatives, designated as 6, 6B, 7, 7A, 10, 11, and 12, within a study area eight miles wide and nine miles long.

Four alternatives begin east of Route 29 on Route 250 or Route 250 Bypass and end on Route 29 between Route 649 (Airport Road) and the North Fork Rivanna River for lengths of 7.0 to 8.1 miles. Three of the alternatives begin west of Route 29 at the junction of Route 29 Bypass, Route 29/250 Bypass, and Route 250 Business (Ivy Road), and end on Route 29 between Route 631 (Rio Road) and the North Fork Rivanna River for lengths of 5.4 to 12.9 miles.

The proposed action is needed to solve existing and future traffic congestion problems and to complete the Charlottesville area element of ongoing improvements to Route 29 throughout central Virginia. Route 29 is the most heavily travelled highway in the

Charlottesville area. Not only is it the only major north-south highway for interregional transportation through central Virginia, it is the main connecting route between developments north of Charlottesville and Charlottesville itself. Furthermore, geographic and topographic features, along with city and county economic development objectives, have led to extensive growth of business and residential development along the Route 29 corridor north of Charlottesville.

The increasing traffic volumes on this section of Route 29 have approached capacity. Congestion and delays, already experienced during morning and afternoon peak traffic periods, will become worse in the future as levels of service continue to deteriorate.

Except for the area north of Charlottesville, controlled access improvements at all urbanized areas along Route 29 through central Virginia, including a portion of Charlottesville, have been built or committed. These improvements prevent delays to through traffic.

A major part of the study was the development of a travel demand model based on detailed land use and socioeconomic data, household surveys, roadside surveys, historical traffic data, and the existing road network. The model was used to project each alternative's effect on future traffic volumes.

The results of the traffic modeling showed that in the design year, 2010, the Base Case would function at level of service F. The expressway alternative also would operate at level of service F although the express lanes would operate slightly better at level of service D. Under all of the new location alternatives, assuming Base Case improvements are also implemented, Route 29 would still operate at level of service F. If, in addition to the Base Case improvements, grade separated interchanges were built at three intersections, the average level of service on Route 29 would improve to B. (See Table IV-3 in Chapter IV.) Further, with these additional improvements and construction of one of the bypass alternatives, level of service would improve to A or B depending on the alternative.

OTHER MAJOR FEDERAL ACTIONS IN SAME GEOGRAPHIC AREA

There are no known major federal actions in the same geographic area. However, a local initiative to build a project called the Meadowcreek Parkway could potentially become a federal action at some future time. The Parkway, an element of the Charlottesville Area Transportation Study (CATS, the regional transportation plan) follows the alignment of Alternative 7A discussed in this Environmental Impact Statement. The Parkway would be a four-lane divided controlled access facility, but with a narrower median than that provided by bypass alternatives presented in this document.

ALTERNATIVES CONSIDERED

Between October, 1987, and June, 1988, many potential bypass alternatives were examined. These were screened based on environmental, traffic, and engineering factors and those that were not feasible, did not satisfy the need, or had severe impacts were eliminated. In June, 1988, 27 conceptual alternatives were presented to the public with a recommendation that five be retained as Candidate Build Alternatives in addition to the Base Case and the expressway alternative. Subsequently, two additional 4(f) avoidance alternatives were added to avoid impacts to McIntire Park, Pen Park, and Rivanna Park. All of the alternatives were then refined as additional data became available. Figure S-1 shows the Candidate Build Alternatives. The alternatives considered are as follows:

Base Case - This alternative, as contained in the Virginia Department of Transportation's six-year improvement plan, consists of widening 3 miles of Route 29 from the existing four lanes divided to six lanes divided between Hydraulic Road and the South Fork Rivanna River. At-grade signalized intersections would remain at major intersections. Left turn lanes and continuous right turn lanes would be provided. For this study, this is considered the "No-Build" Alternative since these improvements are already programmed and will be implemented under any alternative selected except Alternative 9, the Expressway Alternative. A design public hearing for these improvements was held in 1986 and a separate Environmental Assessment was completed to address their impacts.

Base Case With Interchanges - This alternative consists of the Base Case improvements described above, plus grade separated interchanges at Rio Road, Greenbrier Drive, and Hydraulic Road. A diamond configuration would be used for the interchanges. This alternative has been included as suggested by local officials and citizens.

Transportation System Management (TSM) - This alternative consists of relatively low-cost actions designed to maximize efficiency of the existing transportation system. Such actions include high occupancy vehicle lanes, intersection improvements, and signal optimization. Evaluation of TSM actions revealed none that would solve the transportation problems.

Mass Transit - This alternative involves improvements to the existing bus system. There are no mass transit improvements that will solve the transportation problems. The transit system and its potential as a project alternative are addressed in Chapter II.

Alternative 6. This alternative, 8.1 miles long, is located to the east of Route 29. Its northern terminus is at Route 29, just north of Route 649, and its southern terminus is at Route 250 in the Pantops area east of the Rivanna River. It has interchanges where it crosses Route 20 and Route 643.

Alternative 6B. This alternative is 7.8 miles long, has the same terminus points as Alternative 6 but for most of its length is located farther east. It has interchanges where it crosses Route 20 and Route 643. This alternative is designed to avoid the park land impacts of Alternative 6.

Alternative 7. This alternative, 7.3 miles long, follows the general corridor of the proposed CATS Plan Meadowcreek Parkway. It has the same northern terminus as Alternatives 6 and 6B. At its southern end, it connects with McIntire Road south of Route 250 Bypass, and relocates the McIntire Road intersection with Route 250 Bypass. It has grade-separated interchanges with Rio Road (Route 631) and Route 643. This alternative is designed to avoid the impacts on McIntire Park.

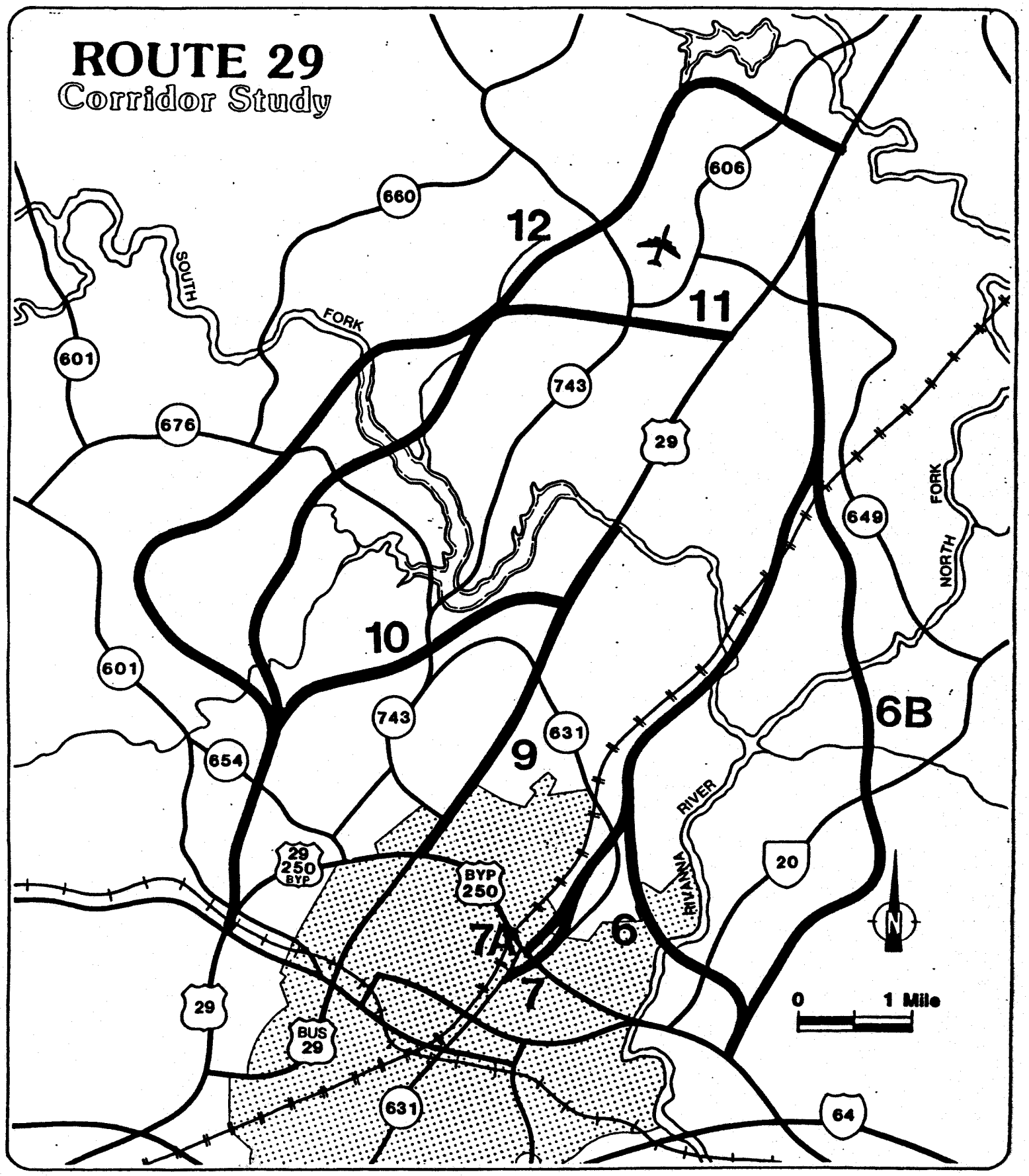
Alternative 7A. This alternative, 7.0 miles long, is identical to Alternative 7, except for the southern terminus. Instead of remaining east of McIntire Park, this alternative passes through the eastern third of the park and connects with Route 250 Bypass just opposite McIntire Road.

Alternative 9. This alternative, also called the "Expressway Alternative" follows the existing corridor of Route 29 North. It is 3.3 miles long, from its southern end near the intersection of Route 29 and 250 Bypass to its northern end at the South Fork of the Rivanna River. The facility would have a four-lane limited access freeway in the center of the right of way flanked by one-way three-lane service roads on either side. Existing cross streets would be maintained with the expressway lanes generally depressed below the at-grade intersections. Slip ramps at various locations would connect the express lanes and the service roads.

Alternative 10. This alternative, 5.4 miles long, is the nearest new location alternative on the west side of Route 29. Its southern terminus is at the interchange of Route 29 Bypass, Bypass 29/250, and Business 250 (Ivy Road). It has its northern terminus at Route 29 near Woodbrook Drive, with additional grade-separated interchanges at Route 654 (Barracks Road) and Route 743.

Alternative 11. This alternative, 9.4 miles long, has the same southern terminus as Alternative 10. It crosses the South Fork Rivanna River Reservoir and connects with Route 29 south of the Charlottesville-Albemarle airport. Interchanges are located at Route 654, Route 676, and Route 743.

Alternative 12. This alternative, 12.9 miles long, is the farthest west and the longest of the Candidate Build Alternatives. It has the same southern terminus as alternatives 10 and 11, crosses the reservoir, and connects with Route 29 approximately 0.3 miles north of the North Fork Rivanna River. It has interchanges with the same roads as Alternative 11.



Candidate Build Alternatives

Figure No. S-1

SELECTED ALTERNATIVE AND SUMMARY OF ENVIRONMENTAL IMPACTS

The Route 29 Corridor Study shows the need for highway improvements to:

- Maintain an acceptable level of traffic service both now and in the future.
- Preserve Route 29's role as a key element of the State Arterial System, as mandated by the Virginia General Assembly.
- Fulfill Route 29's function as a principal arterial highway.
- Fulfill Route 29's role as part of the new network of Highways of National Significance being developed by the Federal Highway Administration.

After consideration of all study factors and input provided through the Draft Environmental Impact Statement review and Location Public Hearing process, it has been concluded that the No-Build (Base Case), TSM, and Mass Transit alternatives are not capable of meeting traffic needs in the study area.

The study also shows that no single alternative by itself will satisfy all of these needs. For example, a bypass alternative alone will not substantially improve traffic conditions on existing Route 29. Providing improvements only to existing Route 29 will not satisfy anticipated future needs for additional highway capacity, nor will it satisfactorily fulfill Route 29's function as an arterial route for through traffic.

A resolution of the Route 29 issue is needed to permit highway improvements to continue and to allow Albemarle County, the City of Charlottesville, and the University to plan for future development within the Route 29 corridor.

In considering the overall balance among transportation needs, costs, community impacts, impacts on the natural environment, and the input received from citizens, local government officials, and university officials, it appears that a combination of improvements over a number of years would provide the best solution.

The following improvements were selected by the Commonwealth Transportation Board. For the short range, construct the Base Case and begin planning for grade-separated interchanges at Hydraulic Road, Rio Road, and Greenbrier Drive. Access to the North Grounds of the University of Virginia is recommended to be developed as soon as possible. Alternative 10 modified to eliminate interchanges at Routes 654 and 743, is approved as a corridor for future development and Albemarle County is requested to assist in preserving the necessary right of way.

For the medium range improvements, grade-separated interchanges are to be constructed on existing U.S. Route 29 at Hydraulic Road, Greenbrier Drive, and Rio Road, as traffic and economic conditions allow. Right of way for Alternative 10 is to continue to be preserved, with advance acquisition of right-of-way procedures exercised as needed and as economics permit.

For the long term improvements, the Alternative 10 bypass, modified to eliminate interchanges at Route 654 and Route 743, is to be constructed when traffic conditions dictate and economic conditions permit. The interchanges were eliminated due to objections from Albemarle County officials and citizens.

The following subsections provide a narrative summary of major impacts associated with the selected alternative.

Traffic

The proposed project was developed in response to existing and projected traffic volume demands for the study area. Consequently, the major beneficial impact of the action would be to relieve traffic congestion on Route 29 through a redistribution of traffic patterns and to improve the safety, efficiency, and convenience of the area's future transportation system.

Alternative 10 will carry between 17,400 and 17,900 vehicles per day in 2010. Construction of this alternative will decrease by almost 11,000 vehicles per day the traffic in the segment of existing Route 29 between Rio Road and Hydraulic Road.

The addition of grade-separated interchanges to the Base Case along Route 29 will improve the northbound evening peak period of service from F to A with the construction of Alternative 10.

Economics and Employment

Construction of Alternative 10 will require the displacement of 8 businesses. It is estimated that each displaced business employs between 5 and 100 persons. Construction of the Base Case with grade-separated interchanges will displace four businesses employing a total of 28-36 employees. These displacements will not involve any major employer, and displaced establishments have the potential to be relocated in the same general areas.

Neighborhoods

Construction of Alternative 10 would displace 17 residences. Sixteen of the families are owners and one is a tenant.

The construction of Alternative 10 may result in the acceleration of local development and related indirect environmental impacts. However, unwanted or undesirable growth may be controlled through local planning and zoning procedures. A part of the short range improvements includes recommending that Albemarle County assist in preserving the necessary right of way for Alternative 10. The construction of the Base Case with grade-

separated interchanges would not displace any residences. The northern section of the Base Case would pass near Woodbrook and Carrsbrook subdivisions.

Land Use

Alternative 10, near its intersection with Route 29 north, passes through an area designated for medium density residential and commercial uses. The alternative divides two neighborhoods which are currently under construction (Roslyn Heights and Roslyn Ridge). Removal of the interchanges at Barracks Road and at Route 743 decreases the impacts on Montvue and Squirrel Ridge subdivisions.

The Base Case is in an area of existing commercial use.

Fire, Rescue and Public Safety

Alternative 10 will displace the University of Virginia Police Headquarters. A replacement for this facility will be provided.

Alternative 10 will improve response by the Seminole Trail Volunteer Fire Department to areas to the southwest.

Schools

Alternative 10 will displace two support facilities of the University of Virginia, the University Police Headquarters and the University Printing Services. Replacements for these facilities would be provided.

Alternative 10 passes alongside the County schools complex that includes Albemarle High School, Jack Jouett Middle School, and Mary Greer Elementary School. This alternative would require a small piece of this property (a wooded area on the edge of the property) but would not directly impact any of these schools. It would pass about 600 feet from Greer School and within 1,200 feet of Jouett School.

The Base Case includes reconstruction of Route 29 about 900 feet from Woodbrook Elementary School.

Churches, Cemeteries, and Hospitals

Two cemeteries and no churches or hospitals will be impacted.

Cultural Resources

Two historic properties determined by the Virginia Department of Historic Resources to be eligible for the National Register of Historic Places are in the vicinity of the Alternative 10 bypass alignment. Section 106 evaluations were done on the two properties. The project was determined to have an adverse effect on one of the properties, the Schlesinger Farm. The highway will be visible from the property, which will disturb the tranquil rural setting that is a contributing factor of this historic resource. The project was determined to have no adverse effect on Westover. The Section 106 evaluation and Memorandum of Agreement are presented in Appendix B.

Archaeological surveys located one archaeological site, site number 44AB348, which was recommended for further evaluation. It is a small pre-historic site where tools and stone fragments were found. Phase II investigations at the site revealed a disturbed context lacking integrity. Therefore, the site was determined not eligible for the National Register of Historic Places and no further studies were recommended.

Visual Impacts

The view of Alternative 10 will be that of a typical rural divided highway, with two travel lanes in each direction separated by a wide vegetated median. The view from the road will be a pleasant one of generally rolling terrain, with a variety of woods, farms, open fields, and residential areas.

There will be little visual impact caused by the construction of the Base Case with grade-separated interchanges since it passes through a developed suburban commercial area.

Water Quality

Temporary increases in sedimentation and turbidity levels of surface water resources can be expected during construction. This will be minimized by implementation of erosion and sediment controls.

Long term impacts are primarily limited to direct loss of aquatic habitat.

Alternative 10 crosses 13 streams, displaces 0.1 acres of wetland at one site, and does not cross any designated 100-year floodplains.

Alternative 10 would have the least amount of pollutant buildups of the build alternatives. However, concentrations of pollutants in runoff would be the greatest for Alternative 10 because of the higher traffic volume projected for this alternative.

Alternative 10 does not cross the reservoir; it does cross the reservoir watershed for a length of 4.2 miles. Runoff from the highway is not expected to compromise the reservoir's use as a water supply.

Agricultural and Forestal Impacts

The selected alternative takes approximately 32 acres of agricultural land use and 49 acres of prime farmland soil. Since the publication of the Draft Environmental Impact Statement, the Alternative 10 alignment has been refined so that it does not take any Agricultural/ Forestal District land. The Base Case with grade-separated interchanges has no impacts on agricultural and forestal acreage.

Noise

The construction of Alternative 10 will result in noise impacts at 62 noise receptors while the Base Case with grade-separated interchanges will result in impacts at 44 receptors. Feasibility studies have shown that noise barriers are not reasonable to protect these noise-impacted properties.

Construction-related noise will be unavoidable. However, VDOT construction specifications provide for adherence to noise control requirements on construction equipment and time-of-day restrictions of construction activities in sensitive areas if needed.

Air Quality

The carbon monoxide concentration will be well below the National Ambient Air Quality Standards (NAAQS) for the selected alternative. Construction activities may cause minor short-term air quality impacts, such as dust from earthwork or smoke from burning of debris. However, these impacts will be minimized by adherence to all state and local regulations and to the VDOT Road and Bridge specifications.

Energy

Operation and maintenance of Alternative 10 and the Base Case with grade-separated interchanges will result in annual energy consumption of approximately 2,442 million BTU's.

OTHER FEDERAL ACTIONS REQUIRED

Fill placement in wetlands will require appropriate approvals under Section 404 of the Clean Water Act. The Federal Highway Administration is a signatory to a Section 106 Memorandum of Agreement with the Advisory Council on Historic Preservation and the Virginia Department of Historic Resources for two historic sites eligible for the National Register in the vicinity of the selected alternative.

Figure No. S-2

Comparative Summary of Impacts (a)

ALTERNATIVE	6	6B	7	7A	9	10	11	12	BASE CASE	BASE CASE WITH INTERCHANGES (b)
TRAFFIC IMPACTS ON ROUTE 29										
% Change in Traffic from Base Case Between:										
Rte 250 and Hydraulic Rd	-2.2	-3.1	-4.2	-1.1	+16.2	-16.4	-11.4	-8.0	0.0	0.0
Hydraulic Rd and Rio Rd	-3.8	-4.3	-4.4	-2.3	+20.2	-17.9	-12.8	-9.2	0.0	0.0
Rio Rd and S. Fork Rivanna	-5.0	-3.8	-3.8	-8.3	+18.8	-26.9	-10.0	-7.5	0.0	0.0
Rte 29 Arterial LOS	F	F	F	F	F	F	F	F	F	B
RIGHT OF WAY REQUIRED (ACRES):	373	420	311	306	24	290	473	500	5	16
DISPLACEMENTS:										
Families	40	33	51	27	0	17	13	19	0	0
Businesses	1	1	2	1	7	8	0	2	0	4
Non profit organizations	0	0	1	0	0	0 (c)	0 (c)	0 (c)	0	0
ESTIMATED TAX REVENUE LOSS:										
Albemarle County	$52,270	$49,658	$39,662	$39,662	$96,018	$249,910	$73,161	$82,804	$7,874	$50,811
City of Charlottesville	$0	$0	$37,575	$5,650	$47,241	$0	$0	$0	$73	$1,741
Total	$52,270	$49,658	$77,237	$45,312	$145,259	$249,910	$73,161	$82,804	$7,947	$52,552
CULTURAL RESOURCES IMPACTED:										
Standing Structures Eligible for National Register	0	2	0	0	0	2	4	5	0	0
Archaeological Sites	6	2	10	6	0	1	2	1	0	0
4(f) INVOLVEMENTS:										
Parks	2	0	0	1	0	0	0	0	0	0
Historic Sites	0	0	0	0	0	0	2	1	0	0
NOISE RECEPTORS IMPACTED:	136	53	172	177	46	62	49	52	44	44
AGRICULTURAL/FORESTAL LAND USE (ACRES):										
Agricultural (d)	27.9	47.6	11.9	11.9	0.0	31.7	100.1	133.9	0.0	0.0
Forestal (d)	16.8	16.8	7.9	7.9	0.0	0.0	0.0	0.0	0.0	0.0
Ag/Forestal District	0.0	0.0	0.0	0.0	0.0	0.0	116.3	174.2	0.0	0.0
Prime Farmland	89.5	78.1	78.2	78.2	0.0	48.7	101.7	157.8	0.0	0.0
AQUATIC AND WATER RESOURCES:										
Stream Crossings (Number)	27	26	26	27	4	13	28	41	4	4
Length Across Watershed (Miles)	0	0	0	0	0	4.2	7.4	8.4	0	0
Reservoir Crossings (Number)	0	0	0	0	0	0	1	1	0	0
Wetland Sites (Number)	5	3	4	4	1	1	3	4	1	1
Wetland (Acres)	1.5	0.1	0.2	0.2	0.1	0.1	0.3	0.6	0.0	0.0
Floodplains Crossed (Number)	7	5	9	9	0	0	4	8	0	0
COST ($1000s):										
Construction and Engineering	$103,287	$108,304	$87,732	$89,395	$133,859	$77,523	$98,338	$180,315	$17,584	$32,304
Right of Way	$10,078	$9,802	$12,095	$8,102	$23,618	$44,466	$16,890	$18,064	$8,487	$14,441
Utility	$927	$836	$745	$567	$3,684	$1,317	$1,359	$2,228	$343	$2,829
Total	$114,292	$118,942	$100,572	$98,064	$161,161	$123,306	$116,587	$198,607	$26,414	$49,574

Notes:

(a) Candidate Build Alternatives do not include Base Case costs or impacts.

(b) Three grade-separated interchanges will be located at Hydraulic Road, Greenbrier Drive, and Rio Road.

(c) Displaces two support units of University of Virginia.

(d) These areas do not include "Agricultural/Forestal Districts".

H

SUMMARY OF ENVIRONMENTAL ASSESSMENT

H.1 PURPOSE OF ENVIRONMENTAL ASSESSMENT

In accordance with 40 CFR 1501.3, 23 CFR 119, and 23 CFR 130(c), an Environmental Assessment (EA) was prepared (draft dated November 4, 1994; final dated June 8, 1995) for changes to the proposed termini of the approved alignment for the Route 29 Bypass described in the Final Environmental Impact Statement (FEIS). The purpose of the EA was to determine if the changes to the project would result in significant environmental impacts that would warrant preparation of a supplemental EIS. The proposed southern terminus was relocated from its approved position west of St. Anne's-Belfield School to a position east of St. Anne's-Belfield School (between the school and the Canterbury Hills subdivision). The proposed northern terminus was relocated from its approved position at the Bypass's intersection with existing Route 29 north of Woodbrook Drive to a position north of the South Fork Rivanna River at the request of Albemarle County officials. Several factors led to the reconsideration of the approved alignment:

1. At the southern terminus, the approved alignment would impact soccer fields associated with the private St. Anne's-Belfield School and facilities associated with the University of Virginia (University Police Headquarters and University Printing Services). In discussions with University and St. Anne's-Belfield officials, it was agreed that the alignment would be redesigned to avoid those facilities and to connect directly with the proposed access road into the University's North Grounds.
2. Because the County zoning ordinance allowed new commercial development to occur in the area of the northern terminus, building Alternative 10 as approved would now eliminate eight businesses. The terminus relocation would decrease the business displacements to one.
3. The Agnor-Hurt Elementary School was not yet built when the Route 29 Corridor Study began. The approved Alternative 10 would displace the school's baseball field and a parking lot. Relocation of the northern terminus would avoid these impacts.
4. Potential damage to an African-American family cemetery by Alternative 10 resulted in a Phase II cultural resources investigation and a Title VI investigation. The new alignment would not impact the cemetery.

The alternatives discussed in the EA included a No-build scenario (which in this case would involve construction of Alternative 10 as originally approved), one alternative for the northern terminus (making small adjustments to minimize the impacts on resources such as cemeteries, recreation areas at the Agnor-Hurt Elementary School, a water tank, and a water treatment plant), and one interchange design for the southern terminus (which also was to be tweaked during the design stage to minimize its obtrusiveness and lessen environmental impacts). The following sections summarize the information from the EA.

H.2 ENVIRONMENTAL CONSEQUENCES OF CHANGES

H.2.1 Cultural Resources

A survey of the northern and southern termini areas confirmed 12 archaeological sites previously identified in the original Route 29 Corridor Study and discovered additional portions of an already documented site. Three of the 12 sites warranted Phase II evaluations. Site 44AB429 was found to be not eligible for listing on the National Register of Historic Places. Sites 44AB428 and 44AB430, which are located near the northern terminus, *were* determined to be eligible for nomination under Criterion D because they possess integrity and contain information useful for the study of regional prehistory. Because both sites are important chiefly for the information they may contain, they are not subject to Section 4(f) of the Department of Transportation Act and they do not warrant preservation in place. Commitments were made to conduct Phase III data recovery work to mitigate project impacts on these sites. The Virginia Department of Historic Resources (VDHR) concurred on June 12, 1995 that the project would have no adverse effect on these sites, provided that data recovery efforts were implemented. The Advisory Council on Historic Preservation stated on July 24, 1995 that it did not object to the no-adverse-effect determination. In addition to these archaeological resources, 33 architectural properties older than 50 years were identified. None, however, were determined eligible for listing in the National Register of Historic Places. VDHR concurred with that determination on August 5, 1994.

H.2.2 Endangered Species

Because the James spinymussel (*Pleurobema collina*), a federally listed endangered species, is known to occur in the drainage pattern of the Rivanna River, a mussel survey was conducted to determine the presence of the species in the Rivanna River in the vicinity of the proposed alignment change. No other suitable habitat areas were involved in the termini relocations. The survey revealed only two specimens of lake-dwelling mussels, neither of which was endangered.

H.2.3 Social Impacts

The proposed realignment of the northern terminus would impact Albemarle County's planned expansion of the Society for the Prevention of Cruelty to Animals (SPCA) property, but the proposed alignment was selectively located to preserve another County project on Berkmar Drive. The Route 29 North Business Council and Agnor-Hurt Elementary School officials indicated support for the northern modification.

H.2.4 Recreational Resources

A Section 4(f) evaluation was determined unnecessary for the Agnor-Hurt Elementary School recreation areas because no land from those recreational areas would be used by the project. [Note: see Appendix J, Summary of Final Section 4(f) Evaluation, for discussion of subsequent evaluations under Section 4(f) pertaining to the entire Agnor-Hurt Elementary School property.]

H.2.5 Ecological and Agricultural Impacts

The modified portions of the alignment would not impact any natural, ecological, or scenic resources of national, state, or local significance, nor any prime or unique farmland. There are no endangered or rare tree species found in the area, and the project would not affect any historic trees, trees in the National or Virginia Social Register of Big Trees, or properties under the Natural Area designation. Although soils in the project area are considered erosive, topography indicates that the greatest portion of the northern terminus realignment would drain into the Rivanna River below the dam, not into the Reservoir. Sediment basins and other erosion control mechanisms would be used to retain silt within the project area during construction.

H.2.6 Relocations and Property Damage

Under the modified design for the northern terminus, it was estimated that three single-family homes and one duplex would be displaced, two private human cemeteries would be impacted, and one business would be displaced. Displaced families range in size from three to five persons and range in tenure from five to fifty years. Because this area is sparsely populated, however, the project will not have the disruptive effect of separating residences from community facilities or splitting neighborhoods in half. The SPCA would be displaced and VDOT would assist in finding a suitable area to relocate it. It was noted that if any cemeteries would be displaced, they could be relocated to commercial cemeteries. Design features such as retaining walls or steepened grade would be used as much as possible to avoid displacing cemeteries. No farms would be displaced.

The proposed interchange at the southern terminus actually would be smaller than the approved interchange, so its impact would be less than that described in the FEIS. Rather than displacing the two University of Virginia buildings, 2 tenant-occupied residences, and an old frame horse stable and impacting property of the University of Virginia Children's Rehabilitation Center and recreational fields at St. Anne's Belfield, the proposed interchange would displace only the University Village maintenance building and the old frame horse stable (both of which have adequate residue on which to relocate).

H.2.7 Noise Impacts

The revised termini were evaluated in accordance with the Federal Highway Administration's noise standards published in 23 CFR 772. Under the proposed scenario, 23 residential properties near the northern terminus of the Bypass would experience a noise level of 66 dBA, which approaches FHWA's Noise Abatement Criterion. The Agnor-Hurt Elementary School baseball field would experience a noise level of 68 dBA. Sound barriers were considered to mitigate this

impact but were found to be neither feasible nor cost effective for the amount of protection they would provide.

H.2.8 Air Quality

The proposed project is in conformance with the State Implementation Plan and is not expected to cause significant air pollution, so a detailed air analysis was not deemed necessary. The assessment did include estimating one- and eight-hour carbon monoxide concentrations, using assumptions that would result in the highest expected concentrations. The project was found to be in attainment with the National Ambient Air Quality Standards established by EPA, and temporary air quality impacts from construction are not expected to be significant.

H.2.9 Hazardous Materials

Field reviews did not indicate the presence of any hazardous materials, such as underground tanks or contaminated soil. If any hazardous material is found during construction, it will be removed and disposed of in compliance with all applicable regulations.

H.2.10 Aquatic Resources

Surface waters in the project area include Meadow Creek, the South Fork Rivanna River Reservoir, and the South Fork Rivanna River. Waters below the South Fork Rivanna River dam are classified as Class III. No trout were found at this site, and the location is currently inaccessible to anadromous fish. Only a small portion of the shifted northern terminus lies within the watershed of the Reservoir. The remainder drains into the South Fork Rivanna River below the dam. None of the shifted southern terminus drains to the Reservoir watershed.

The proposed bridge across the South Fork Rivanna River would cross a narrow band of wetlands located between the north shore of the river and Route 643. Impacts would include the actual areas where bridge piers would be placed and temporary impacts associated with construction. Every effort will be made to avoid and minimize damage, and mitigation will replace wetlands at a 2:1 ratio. The exact quantity of displaced wetlands will be determined when final plans are available during the permit process

There are no problems with groundwater quality or quantity in the project area, and no property in the vicinity is designated a "groundwater protection area." Commitments were made to create and implement a stormwater management plan in accordance with the Virginia Stormwater Management Act, the Stormwater Management Regulations, and the annual stormwater standards and specifications approved by the Virginia Department of Conservation and Recreation.

H.3 COORDINATION AND COMMENTS

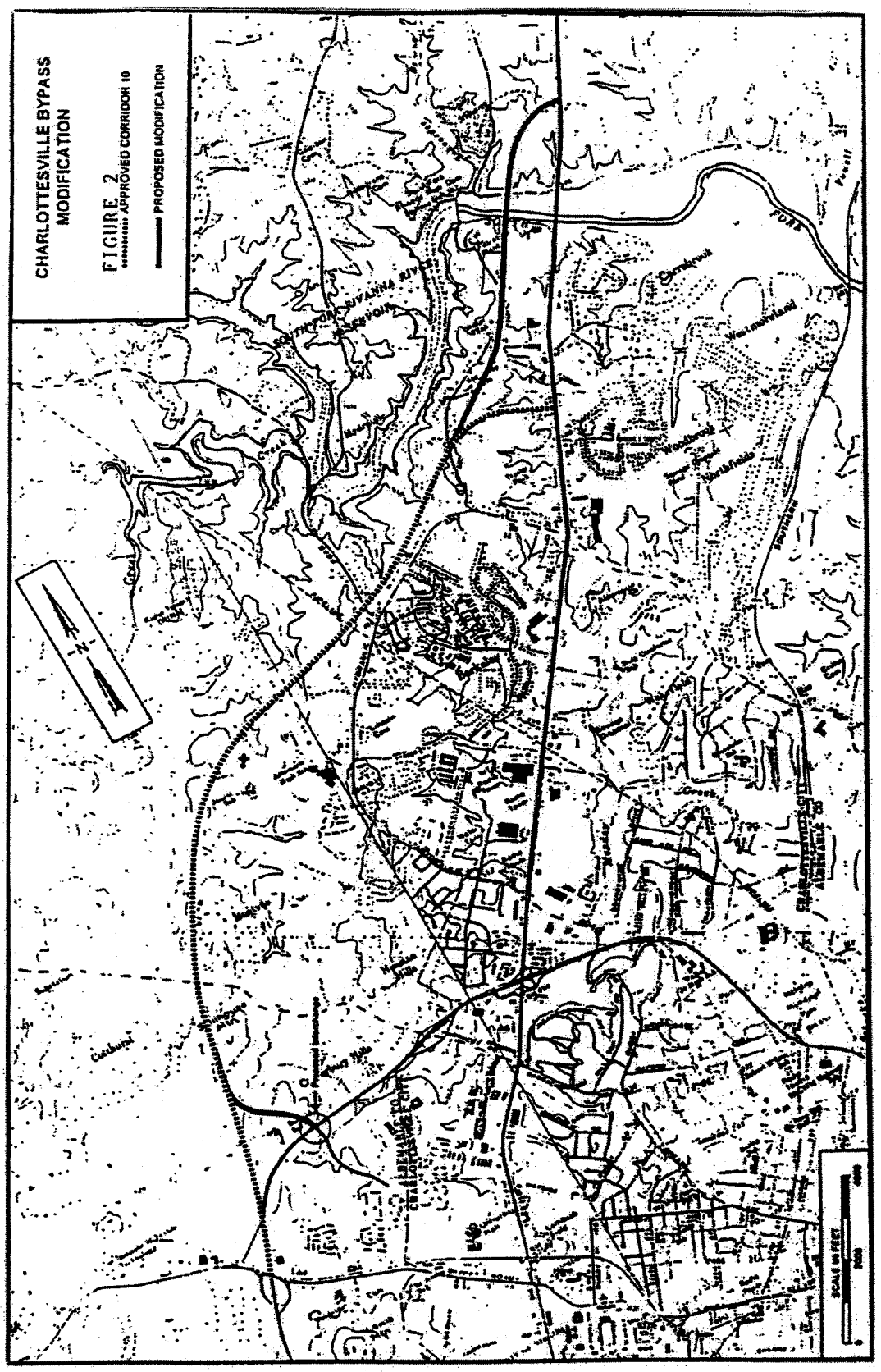
The EA was written with the assistance of the Virginia Departments of Game and Inland Fisheries, Conservation and Recreation, and Historic Resources, as well as the Planning District Commission, Albemarle County Administrator, Health Department, District Forester, U.S. Fish and Wildlife Service, District Conservationist, and the Albemarle County Superintendent of

Schools. Information regarding the project was supplied to the U.S. Army Corps of Engineers, the Environmental Protection Agency, the U.S. Coast Guard, the Virginia Department of Environmental Quality-Water, Air, and Waste Divisions, Marine Resources Commission, and the Virginia Institute of Marine Science.

VDOT met several times with an advisory committee made up of residents of all affected neighborhoods and community groups, formed with the help of the MPO. A public hearing was held on the proposed modifications in February 1995. Six hundred citizens supplied 1,600 comments, most dealing with the Bypass plan as a whole rather than the specific termini modifications. Comments related to the modifications included suggestions to avoid the SPCA property, extend the northern terminus to Airport Road or farther north, add an interchange at the northern terminus, landscape the project, minimize its impact on the Reservoir, and move the Bypass away from schools. Many participants stated a preference for the modifications to the approved Alternative 10.

H.4 FINDING OF NO SIGNIFICANT IMPACT

Based on information documented in the EA and other available information, the Federal Highway Administration issued a Finding of No Significant Impact for the termini modifications on July 6, 1995.


CHARLOTTESVILLE BYPASS
MODIFICATION
FIGURE 2
APPROVED CORRIDOR 10
PROPOSED MODIFICATION
N
SCALE IN FEET

I

SUMMARY OF REEVALUATION

I.1 PURPOSE OF REEVALUATION

A Reevaluation was completed for this project in March 2000 to:

- Review changes in the proposed project and its environmental impacts since completion of the original Final Environmental Impact Statement/Record of Decision and Environmental Assessment/Finding of No Significant Impact. This review was in accordance with Federal Highway Administration regulations (23 CFR 771) and Council on Environmental Quality regulations (40 CFR 1502.9).
- Determine if changes in the proposed project and its impacts that are relevant to environmental concerns were substantial enough to warrant preparation of a Supplemental Environmental Impact Statement (SEIS).
- Determine if new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts were significant enough to warrant preparation of an SEIS.

During the Route 29 Corridor Study, conducted between 1987 and 1993, a number of alternatives were evaluated to relieve traffic congestion and improve the movement of through traffic on Route 29 in Albemarle County north of the City of Charlottesville. Based on information in the Draft Environmental Impact Statement (DEIS), comments on the DEIS following its circulation, and comments received during and after the Location Public Hearing, the Commonwealth Transportation Board (CTB) on November 15, 1990 selected a combination of improvements to be implemented over a number of years. These improvements would consist of the Base Case with Three Grade-Separated Interchanges on existing Route 29 (at Hydraulic Road, Greenbrier Drive, and Rio Road), access off the Route 250 Bypass to the North Grounds of the University of Virginia, and the Alternative 10 Bypass around the west side of Charlottesville. The Federal Highway Administration (FHWA) on January 20, 1993 approved a Final Environmental Impact Statement (FEIS), which documented the decision and the reasons for it (see Summary in Appendix G). FHWA issued a Record of Decision (ROD) on April 8, 1993.

After FHWA issued the ROD, several changes were made to the selected improvements. Changes to the Bypass termini were evaluated in a separate Environmental Assessment, as discussed in Appendix H of this SEIS. Another change involved eliminating the proposed grade-separated interchanges at Hydraulic Road, Greenbrier Drive, and Rio Road. During the design of

these interchanges, a Public Information Meeting was held on October 26, 1994. Substantial citizen opposition to the interchanges was expressed at the meeting, particularly from the business community that would be most directly affected by them. Of the 4,372 citizens who submitted comments during or following the meeting, 3,270 opposed construction of any of the interchanges and 2,297 requested that the Bypass be constructed rather than the interchanges. The City of Charlottesville passed a resolution requesting that the proposed Hydraulic Road interchange be eliminated. Based on these sentiments and other considerations involving projected construction costs, available funding, and the apparent need to reconstruct a substantial portion of the Base Case improvements (then under construction) to accommodate the interchanges, the CTB terminated the design and development of plans for the interchanges by resolution on March 16, 1995. The CTB also reassigned funds from interchange studies to enhancements of the Base Case improvements and to plan development and right of way acquisition for the Bypass.

Additional refinements to the Bypass alignment and design features have been developed in close coordination with a Design Advisory Committee composed of local community representatives. Recommendations from citizens at several Citizens Information Meetings and at the Design Public Hearing, held February 25, 1997, also were considered in adjusting the design at several locations.

Begun in October 1996 and completed in March 2000, the *Reevaluation of Environmental Impacts and Previous Environmental Documents* provides a summary of previous documents prepared under the provisions of the National Environmental Policy Act (NEPA) and the implementing regulations of the Council on Environmental Quality (CEQ) and FHWA. It then describes the changes to the proposed project that have occurred since issuance of the FEIS and ROD, describes changes in the project surroundings, and describes new issues and information that have arisen since completion of the ROD. It then provides a comparative summary of the potential impacts of the Current Design and those identified during previous studies of earlier preliminary designs (see page I-12 of this appendix). A summary of previous public involvement activities also is provided. Finally, conclusions are presented regarding the adequacy of previous NEPA documentation and the need for an SEIS. Based on the Reevaluation, FHWA determined that the changes in the proposed project and the new circumstances and information described in the Reevaluation would not result in significant impacts to the human environment, either individually or cumulatively, when taken into account with the impacts identified in the original FEIS and the subsequent Finding of No Significant Impact, and that, therefore, an SEIS was not required.

The following sections summarize the information from the Reevaluation.

I.2 CHANGES TO THE PROJECT

I.2.1 Changes to the Design of the Bypass

Both the southern and northern termini of the Bypass were modified from the original Alternative 10 design. The southern terminus was redesigned so that the Bypass's interchange with the existing Route 250 Bypass would proceed northward on the east side of St. Anne's-Belfield School in order to eliminate impacts on that property and University of Virginia facilities in the

area. The Current Design also includes a connector into the North Grounds of the University of Virginia, as requested by the City, County, and University following the Location Public Hearing in June 1990. This design also was developed with input from the Canterbury Hills neighborhood, located near the proposed intersection of the Route 29 Bypass and the existing Route 250 Bypass.

The northern terminus was extended from its approved position at the Bypass's intersection with Woodburn Road to a position north of the Rivanna River, in an area that has not developed commercially. This modification was made largely to avoid the Agnor-Hurt Elementary School and commercial development near the original terminus, all of which were built after approval of the project but before the initiation of detailed design. The changes to both termini and their environmental consequences were presented in the *Final Environmental Assessment* (FEA) and *Finding of No Significant Impact* (FONSI) issued by FHWA on July 6, 1995.

The project's alignment was shifted slightly to the west in the Barracks Road Area in order to reduce the amount of roadway cut through Stillhouse Mountain, which rises more than 200 feet over surrounding lands. Changes also were made to the alignment near the Albemarle County School Complex area. The Current Design avoids playground areas and playing fields but does encroach on portions of a trail on school property and private property behind Greer Elementary School. The County designated the entire school complex property as a park, making it subject to Section 4(f) requirements. The impacts to the school complex and steps taken to mitigate them are discussed in detail in the *Section 4(f) Evaluation* (see Appendix J for a summary).

I.2.2 Design Features to Protect South Fork Rivanna River Reservoir

The Current Design incorporates features to protect the South Fork Rivanna River Reservoir. As described in the Reevaluation, these features include extensive stormwater management provisions developed in coordination with County representatives and Rivanna Water and Sewer Authority representatives.

In addition, VDOT engaged a stormwater management expert from the University of Virginia to develop additional features for incorporation into the project to further improve the pollutant removal efficiencies. A monitoring program will be established to measure pollutant concentrations at several outfall locations before, during, and after construction. This will help in determining the percentage of pollutant runoff attributable to the proposed roadway. Additional measures include incorporation of concrete curb along the entire length of fill sections of the roadway within the Reservoir watershed in order to capture 100 percent of the runoff from the roadway, rock check dams, turbidity curtains, and sumps in the stormwater ponds to capture potential spills from trucks.

I.3 CHANGES IN SURROUNDINGS

At the time of the Reevaluation, the population in Charlottesville and Albemarle County was estimated to have grown 5.5 percent since the FEIS was signed, while employment grew an estimated 9.8 percent. This continuing population and employment growth continues to stimulate associated development in and near the Route 29 corridor.

The County adopted a new Land Use Plan in June 1996 that makes specific provisions for the proposed project. It includes a separate subsection entitled "Route 29 (Western) Bypass" which discourages development that would affect the Bypass project and features future land use maps that show the alignment for the project.

I.4 CHANGES IN IMPACTS

I.4.1 Direct Impacts

Socioeconomics. The Current Design resulted in the displacement of 40 families in homes that have been purchased by VDOT. The original Alternative 10 was estimated to displace 17 homes. The increase in displacements was due to alignment changes at the termini and various design modifications, including stormwater management provisions. Some of the homes purchased under advance hardship acquisition are no longer within the proposed right of way. Only one business would be displaced, as opposed to eight business displacements under the original Alternative 10.

Impacts on community cohesion still would be negligible, and no community facilities would be displaced. VDOT is working with the SPCA to relocate its facility satisfactorily. The alignment would cross school property at the Albemarle County School Complex and would pass just north of the Agnor-Hurt Elementary School, but the Bypass would not encroach on the athletic fields or playground facilities of either school property. Moreover, impacts of the project would not disproportionately affect minority or low-income populations.

Cultural Resources. A cultural resources survey conducted for the original EIS identified two properties in the vicinity of the original Alternative 10 that the Virginia Department of Historic Resources (VDHR) determined eligible for the National Register of Historic Places (NRHP):

- Westover (VDHR #02-925) - an early twentieth-century Classical Revival-style mansion house on 200 acres. It was determined eligible for the NRHP under Criterion C as a typical example of an early twentieth-century upper-class house.
- Schlesinger Farm (a.k.a. Haffner Farm)(VDHR #02-1736) - a farmhouse and associated outbuildings on 270 acres. It was determined eligible for the NRHP under Criterion A as an example of a Depression-era farm.

VDHR (Virginia's State Historic Preservation Office), on August 4, 1992, and the federal Advisory Council on Historic Preservation, on October 1, 1992, signed a Memorandum of Agreement (MOA) regarding a finding of no adverse effect on Westover, a finding of adverse effect on the Schlesinger Farm, and stipulations for mitigating that effect.

The changes to the project would not change the determinations of effects on Westover or the Schlesinger Farm. As before, the project would have no adverse effect on Westover and an adverse, but only a visual, effect on the Schlesinger Farm. The alignment of the Current Design is farther away from Westover than the original Alternative 10 alignment and would pass near only the far northeastern corner of the property and near the southeastern portion that is visible from the existing Route 29/250 Bypass. The alignment near the Schlesinger Farm property would be similar to that in the original proposal.

Surveys conducted for the revised termini and other design adjustments identified no additional districts, buildings, structures, or objects potentially eligible for the NRHP. However, two archaeological sites (44AB428 and 44AB430) on the north side of Route 643 near the northern terminus were identified as being eligible for the NRHP, and are important chiefly for the information they may contain. VDHR and the Advisory Council on Historic Preservation both concurred with a determination of no adverse effect for the sites, provided that data recovery is conducted prior to construction. Because of the no-adverse-effect determination, an MOA is not required to document how this effect will be taken into account (e.g., data recovery, etc.).

Another archaeological site (44AB441) was identified northwest of Stillhouse Mountain in conjunction with design efforts to shift the alignment to minimize impacts at this location. VDHR determined that the site is not eligible for the NRHP.

During additional studies of design modifications at the northern terminus, another building in the vicinity of the project was determined eligible for the NRHP. Brook Hill (VDHR #02-0008), an antebellum brick dwelling, is located on the east side of Route 29 and on the north side of Route 643. It was determined eligible under Criterion C for its architectural characteristics. VDHR determined that the boundaries of the eligible resource encompass the approximately 38-acre parcel of land surrounding the house. Anticipating that the entire parcel would constitute the historic boundary of Brook Hill, VDOT modified the design of the northern interchange to avoid any encroachment on the Brook Hill property. The Current Design would not use any of the property and would not alter the characteristics, location, setting, features, or use of the property that may qualify it for inclusion in the NRHP. There would be no diminution of the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. There would be no physical destruction, damage, or alteration to the property. There would be no introduction of visual, audible, or atmospheric elements that would be out of character with the property or alter its setting. VDHR concurred on July 28, 1998 that the proposed project would not alter the features that make Brook Hill eligible for listing in the NRHP.

Section 4(f). The 1993 FEIS included a Section 4(f)/106 Evaluation and a Section 106 MOA that fully documented the potential impacts to the Westover and Schlesinger Farm historic properties. There would be no direct or constructive use of these resources or the Brook Hill historic property. Because the archaeological sites 44AB428 or 44AB430 are important chiefly for the information they may contain and do not warrant preservation in place, Section 4(f) does not apply to them, as specified in 23 CFR 771.135(g)(2). The Current Design would involve the use of land at the Albemarle County School Complex, the entirety of which is designated a park by the County, and therefore subject to Section 4(f). Details of this Section 4(f) involvement are documented in *Final Section 4(f) Evaluation Albemarle County School Properties*, which was approved by FHWA on March 13, 2000, and a summary of which can be found in Appendix J of this SEIS. Similarly, the entire parcel associated with the Agnor-Hurt Elementary School also is designated a park by the County, and it too is therefore subject to Section 4(f). The project would have no direct or constructive use of the Agnor-Hurt property, as documented in the *Final Section 4(f) Evaluation* mentioned above.

Visual. Minor shifts in horizontal and vertical alignment, especially in the vicinity of Stillhouse Mountain, have been made to minimize the visual impact of the project. Extensive landscaping also will be included in the final design of the project to enhance its visual appearance.

Air Quality. Potential air quality impacts are not expected to differ appreciably from those reported in earlier studies prepared for the FEIS and FEA. Those studies found that the highest carbon monoxide concentrations that could be expected would be well below National Ambient Air Quality Standards.

Noise. The *Final Design Noise Report* indicates that the Current Design would cause approximately 26 residential receptors to experience noise levels by the year 2022 that approach or exceed the Noise Abatement Criterion (NAC) of 67 dBA for residential areas. Approximately 33 residential receptors are expected to experience noise levels substantially higher than existing noise levels (7 of these also would approach or exceed the NAC). Thus, a total of 52 residential receptors would be subjected to noise impacts. The total number of residential receptors affected would be fewer than reported in the FEIS (62). This difference is attributable to the shifts in alignment, the utilization of terrain for screening residential areas, and the availability of more detailed design data.

Aquatic Resources and Water Quality. The principal concern with regard to water quality pertains to risks to the South Fork Rivanna River Reservoir due to sediment and other pollutants in highway runoff and to potential spills of hazardous materials from truck accidents on the Bypass. The Reservoir is one of four sources (the North Fork of the Rivanna River, the Sugar Hollow Reservoir, and the Ragged Mountain Reservoir are the others) that together supply approximately 54 percent of the current daily water demand to the estimated 76,000 consumers of water supplied by the Rivanna Sewer and Water Authority. The Reservoir was created by damming the South Fork Rivanna River approximately 2,200 feet upstream of the existing Route 29 crossing of the river. The Reservoir has a drainage area of approximately 261 square miles, encompassing much of western Albemarle County. The raw water intake and the treatment plant are located near the south end of the dam at the end of Woodburn Road.

Approximately 4.2 miles of the original Alternative 10 Bypass alignment as presented in the FEIS was within the watershed of the Reservoir. The potential impacts to the Reservoir as a result of crossing the watershed, based on preliminary design information, were documented in the FEIS and at greater length in the *Aquatic Resources and Water Quality Technical Memorandum*, which was referenced in the FEIS. Potential pollutant loadings from highway runoff were calculated using a predictive model developed by FHWA. The results indicated no significant deleterious effects on water quality from highway runoff.

The Current Design would cross less of the watershed (approximately 3.4 miles), based on measurements from USGS quadrangle maps on which the drainage divide was marked (the drainage divide roughly follows a line along the Westover historic house, Stillhouse Mountain, Barracks Road, Georgetown Road, Hydraulic Road, Rio Road, and Woodburn Road). This reduction is attributed to the shift of the southern terminus eastward from the Reservoir watershed to the Meadow Creek watershed, which drains into the South Fork Rivanna River east of Charlottesville. In the vicinity of Woodburn Road, the Current Design (which includes the relocated northern terminus) would cross roughly 400 feet more of the watershed than the original Alternative 10 alignment did. This is due to the alignment shift to avoid the new Agnor-Hurt Elementary School and playground. The alignment still would be approximately 500 feet from the Reservoir at its closest point, and several hundred feet from the steepest slopes along the banks of the Reservoir. The remainder of the alignment shift associated with the northern

terminus was located east of the Reservoir drainage divide so that runoff would be carried away from the Reservoir to drain into the South Fork Rivanna River downstream of the dam.

Because of concerns of citizens and County officials regarding potential impacts to the South Fork Rivanna River Reservoir, extensive work has been done on development of stormwater management provisions. Coordination with the Rivanna Water and Sewer Authority and the County's Watershed Management Official, as well as local citizens with expertise in water quality and stormwater management, has been ongoing. VDOT also engaged the services of a stormwater specialist from the University of Virginia to develop innovative stormwater management provisions. Among the measures to be implemented are wet-pond stormwater retention basins on portions of the project within the Reservoir watershed, instead of the customary dry ponds. The road design within the Reservoir watershed would incorporate raised curbing along fill sections to help convey runoff to retention and treatment areas. The proposed stormwater collection system would collect stormwater from an additional 10 acres beyond the project limits along Woodburn Road and route it through the stormwater management pond system. A water quality monitoring program would be conducted to collect water quality data before, during, and after construction. A full-time erosion and sediment control specialist would be employed during construction to ensure that erosion and sediment controls are implemented and maintained.

To reduce the risk of spills or accidents, VDOT has committed to installing concrete Jersey barriers along the west side of sections of the proposed Bypass that would be on fills between Squirrel Ridge and Woodburn Road. (This design feature had not been documented in the Reevaluation although VDOT had committed to it by that time.) Such a barrier will provide more positive restraint of vehicles that may stray off the road than would normal guardrail. Other protective measures include incorporation of curb and gutter in the design to collect runoff, including runoff from existing development, and sizing of stormwater ponds to intercept an entire tanker truckload of material should an accident cause such a spill. The detention ponds would provide additional time for the County to implement the strategies of its response plan before a spill reached the Reservoir. Even if the Bypass is not constructed, the threat of contamination of the Reservoir will always exist, as evidenced by the findings of early eutrophication in a 1977 Reservoir study and by more recent efforts of the Virginia Department of Environmental Quality to clean up a home heating oil release into an unnamed tributary of Ivy Creek. The Rivanna Water and Sewer Authority has acknowledged that "there now exist numerous threats to the quality of the water in the 261-square-mile drainage basin of the Reservoir. Among these are development and agricultural activities in the Reservoir's watershed, and the approximately 15-mile stretch of Interstate 64 that was constructed through the watershed in the 1960s..." The existing roads in the watershed of the Reservoir, including the two that cross the Reservoir, which provide access to residential and other development and farms in the watershed, will always leave open the potential for contamination of the Reservoir from vehicles traveling on these roads.

There are currently approximately 346 miles of public roads within the watershed. Some of these roads carry substantial volumes of traffic across the Reservoir itself or across major tributaries of the Reservoir. For example, Route 743 carries more than 8,000 vehicles per day across the Reservoir. Route 676 carries more than 3,000 vehicles per day over the Reservoir. Route 250 carries roughly 9,000 vehicles per day over Ivy Creek and Route 601 carries roughly 7,000

vehicles per day over Ivy Creek. Interstate 64 carries more than 25,000 vehicles per day over Ivy Creek and the Mechums River. Development and agricultural activities in the watershed also contribute to the risk of degrading the water quality in the Reservoir. Such activities, and not highways, already have been identified as the cause of eutrophication and loss of capacity in the Reservoir. So, although the proposed project does pose a certain incremental additional risk for contamination of the Reservoir, this risk will be reduced by incorporating stringent stormwater management and other protective measures.

The Current Design, due to the changes in termini, would cross more streams and affect more wetlands than reported in the FEIS for the original alignment of Alternative 10. The studies for the FEIS were based primarily on available mapped data [e.g., National Wetland Inventory (NWI) maps and USGS quadrangle maps], with selective field sampling to assess the impacts of all of the alternatives. The estimated wetland impact in the FEIS was 0.1 acre. The supplemental studies of the revised termini for the Final EA also relied mostly on available mapped data with selective field sampling. The additional wetland impacts resulting from the termini modifications were estimated at only 600 square feet. During preparation of the Reevaluation, a comprehensive field inventory of waters and wetlands was conducted for areas within the proposed construction limits. The inventory and the extent of wetlands delineated along the project corridor have been reviewed in the field and confirmed by the U.S. Army Corps of Engineers. As an expected consequence of this more intensive identification effort, the actual wetland impacts would be greater than those originally reported in the FEIS and FEA. This is due to the identification of resources (streams and wetlands) too small to be included on broad-scale inventory mapping such as NWI and USGS quads, a more detailed level of design data available (e.g., connecting roads and ramps and stormwater ponds), and a larger scale of resolution inherent in comprehensive field delineations.

A total of 24 stream crossings and 43 individual wetland sites were identified within the proposed construction limits. Most of the streams are small, unnamed intermittent or perennial tributaries. The largest stream (South Fork Rivanna River) and a tributary of Ivy Creek near the Albemarle County School Complex would be crossed by bridge. The others would be crossed using pipes or box culverts. The total estimated area of wetland impact is approximately 2.8 acres. Of the 43 sites affected, 12 are larger than 0.1 acre, only 2 are larger than 0.33 acre, and none is larger than 0.4 acre. Most of the wetland areas are narrow riparian fringes, small in-stream bars, or hillside seeps, none of which is unique in the project area. Due to their small size and scattered distribution, these wetlands' functions are generally limited to groundwater discharge to support low-flow conditions.

Wetland Finding. Based upon previous environmental studies, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. On August 10, 1998, the U.S. Army Corps of Engineers issued a jurisdictional determination for waters of the United States and individual wetlands within the project area. Coordination with the Corps for establishing wetland compensation areas and obtaining applicable permits for the 2.8 acres that would be affected is ongoing.

Habitat and Wildlife. There are no substantial differences in expected habitat and wildlife impacts from those reported in the FEIS or FEA.

Threatened and Endangered Species. The FEIS reported that there were no federally listed threatened or endangered species within the proposed alternative corridors. This finding was based on consultations with state and federal agencies with jurisdiction over endangered species and field work conducted during the Route 29 Corridor Study. The subsequent FEA for the termini modifications reaffirmed this conclusion based on additional agency coordination and field investigations by scientists with expertise in mussels.

In February 1997, concerned citizens in the area hired an ecologist to conduct a survey for the James spinymussel (*Pleurobema collina*), a federally listed endangered species. The ecologist surveyed a portion of Ivy Creek, which is downstream from the proposed project, and a portion of one tributary of Ivy Creek (designated as Tributary K during the stream and wetland analysis) that would be crossed by the proposed project. He searched on February 22, 1997 in Tributary K from the project crossing location to the confluence with Ivy Creek, and in Ivy Creek from the confluence to 700 meters (2,297 feet) downstream. Search efforts were limited primarily to areas considered most likely to represent suitable habitat for the James spinymussel. He found two shells of James spinymussel, one approximately 40 meters (131 feet) downstream from the confluence and one approximately 700 meters (2,297 feet) downstream from the confluence. In a second survey conducted in September and October 1997, he surveyed approximately 100 meters (328 feet) of Ivy Creek upstream of Tributary K and 1,400 meters (4,593 feet) of Ivy Creek downstream of Tributary K. He found two live specimens approximately 70 meters (230 feet) upstream of the confluence of Tributary K and Ivy Creek, two shells at unreported distances upstream of the confluence of Tributary K and Ivy Creek, one live specimen approximately 600 meters (1,969 feet) downstream of the confluence, and one shell approximately 1,000 meters (3,280 feet) downstream of the confluence.

VDOT had a survey conducted by a malacologist on July 1 and 2, 1997, to verify the reported occurrence of James spinymussel and to determine if the species or its habitat occurs within the project limits and, if so, to take appropriate actions in accordance with the Endangered Species Act to ensure that the project would not jeopardize the continued existence of the species. Ivy Creek was surveyed from approximately 100 meters (328 feet) upstream to approximately 700 meters (2,297 feet) downstream of Tributary K. Tributary K and 13 other tributaries also were surveyed. The survey found one fresh dead specimen of James spinymussel in Ivy Creek approximately 175 to 200 meters (574 to 656 feet) downstream from Tributary K.

The two investigators differed in their opinions about the potential effects of the proposed project on the species. One contended that any activities that would increase the silt load into Ivy Creek would negatively affect the remaining populations of spinymussel there and recommended consultation with the U.S. Fish and Wildlife Service (USFWS). The other contended that the proposed project would have no significant adverse effect on mussel populations in Ivy Creek.

Because of these conflicting opinions, on January 5, 1998, FHWA requested input from USFWS regarding the need for formal consultation. FHWA met with a USFWS representative on March 27, 1998 to discuss data collected and additional consultations needed. On April 1, 1998, USFWS notified FHWA that formal consultation would be required and that a Biological Assessment should be prepared. FHWA submitted the Biological Assessment and requested formal consultation on April 10, 1998.

The Biological Assessment concluded that the project would not have a significant adverse effect on the mussel populations of concern and would not pose a significant threat of extinction to the James spinymussel, based on the following:

1. The 14 surveyed tributaries in the Ivy Creek drainage area that would be crossed by the project had no mussels and were unsuitable for mussels because of small size and insufficient flow.
2. Tributary K contained no mollusks and there were obvious sediment and nutrient inputs into the lower reach resulting from livestock activity adjacent to and in the stream.
3. Although live individuals were found in Ivy Creek, the proposed project involves no work in Ivy Creek and the nearest site of roadwork on the project would be more than 1,000 feet from Ivy Creek.
4. Few mussels, no snails, and evidence of allochthonous silt in Ivy Creek are indicative of some ongoing environmental degradation in the watershed.
5. There are documented occurrences of 11 other populations of James spinymussel outside the Ivy Creek watershed.
6. Because the project would have no intermediate interchanges between the termini, the project is not likely to be a catalyst for secondary development within the Ivy Creek watershed.
7. Extensive stormwater management provisions are incorporated into the project design to reduce the risks of immediate and long-term impacts from highway runoff.
8. Extensive erosion and sediment control measures will be implemented and maintained before, during, and after construction.

USFWS conducted a field inspection of the project site and adjacent areas with VDOT representatives on April 21, 1998. On June 5, 1998, USFWS issued its Biological Opinion that the project is not likely to jeopardize the continued existence of the James spinymussel and is not likely to destroy or adversely modify its critical habitat because no critical habitat exists for this species. USFWS imposed several conditions that must be implemented during project construction. They include time-of-year restrictions on construction and erosion and sedimentation control measures.

No other new information on threatened or endangered species has been identified.

Agricultural and Forestal Resources. The current alignment minimizes farmland impacts and would cross primarily over residential or forested land. The proposed project would encroach on a small disjunct fragment of the Ivy Creek Agricultural and Forestal District. This encroachment would be less than an acre and would have no effect on the larger overall district that encompasses more than 522 acres. The remainder of the district lies well to the north and west of the project in the vicinity of the South Fork Rivanna River Reservoir. To minimize impacts to the property within the district, a bridge crossing of Tributary K would be used, which would reduce the width of the cross section by reducing the amount of earth fill required to carry the roadway across the stream. The Section 4(f) Evaluation provides additional information on design options at this location as a result of Section 4(f) use of the adjacent Albemarle County School Complex property.

I.4.2 Indirect and Cumulative Impacts

Although it has been suggested that the project would induce substantial growth in the area, especially around the northern and southern termini, development has been occurring and is expected to continue with or without the project. Because this will be a limited-access highway with no intermediate interchanges, there will be no new access to properties within the watershed that might induce development of those properties, further degrading the watershed. Both termini are located outside the watershed and within designated growth areas of Albemarle County, and the County's Comprehensive Plan and Land Use Plan allow for considerable growth in the project area. Rather than indirectly sparking unwanted development, the project is responsive to the transportation needs identified in the Comprehensive Plan.

I.5 PUBLIC INVOLVEMENT

VDOT has continued to seek substantial public input throughout the project development process, through Citizen Information Meetings, formal public hearings, close coordination with a Joint Transportation Committee and a Design Advisory Committee, and meetings with individual landowners and community groups. Various interest groups also have been active during development of the project. Among these are the Charlottesville/Albemarle Transportation Coalition (CATCO), which has been particularly active in opposing the Bypass, and the North Charlottesville Business Council, which has actively supported the project.

Because the Reevaluation was an internal FHWA decision document, no additional public involvement was offered during its development. However, the document summarizes the 3 Citizen Information Meetings and the formal Location Public Hearing for the Route 29 Corridor Study, the Location Public Hearing for the termini modifications, the Citizen Information Meeting for the three grade-separated interchanges on existing Route 29, the 2 Citizen Information Meetings and the formal Design Public Hearing during the Bypass design, 10 meetings with the Joint Transportation Committee, 22 meetings with local interest groups, and 24 meetings with the Design Advisory Committee.

I.6 SUMMARY AND CONCLUSIONS

Based on a review of previous environmental documents, supporting information, changes in project design, changes in project surroundings, and new issues and circumstances bearing on environmental concerns, the Reevaluation concluded that no SEIS is necessary. It further concluded that the FEIS fully and adequately documented the project and its consequences, and that the FEA and FONSI adequately documented the changes in environmental impacts resulting from the modifications to the northern and southern termini. The Section 4(f) Evaluation discussed the changes that resulted from the Albemarle County School Complex's designation as a Section 4(f) resource. Although the elimination of the three grade-separated interchanges along the Bypass represents a change in the selected alternative, that change will not result in any significant environmental impacts that were not identified in the FEIS. Moreover, any further modifications to the design of the project have been aimed at reducing impacts, providing better transportation service, and accommodating the suggestions of citizens and local officials. An SEIS therefore was determined not to be warranted. FHWA issued a revised ROD on March 13, 2000.

SUMMARY OF IMPACTS

Impact Category	Alternative 10 (FEIS)	Termini Revisions (FEA)	Current Design
Right of Way Required (acres)	290	95	329
Displacements			
Families	17	5	40 (all acquired)
Businesses	8	1	1
Non-Profit Organizations	2	1	1
Cultural Resources			
Westover	No Adverse Effect	No Adverse Effect	No Adverse Effect
Schlesinger Farm	Adverse Effect (visual only)	NA	Adverse Effect (visual only)
Brook Hill	NA	NA	No Effect
Archaeological Sites	0	No Adverse Effect	No Adverse Effect
Section 4(f) Involvements			
Parks/Recreation Areas	0	0	1*
Historic Sites	0	0	0
Noise Receptors Affected (Residential sites, school playgrounds)	62	24	55
Aquatic Resources			
Number of Stream Crossings	13	Not Quantified	24
Length Across Reservoir Watershed (miles)	4.2	Not Quantified	3.3
Wetlands (acres)	0.1	0.01	2.8
Floodplains (length of crossing in miles)	0		0.11

* See Section 4(f) Evaluation for full discussion of impacts to the Albemarle County School Complex, avoidance alternatives, and measures to minimize harm.

J

SUMMARY OF SECTION 4(F) EVALUATION

The *Final Section 4(f) Evaluation: Albemarle County School Properties* examined the project's impact on the Albemarle County School Complex located near the approved Alternative 10 alignment of the Route 29 Bypass. The complex includes Albemarle High School, Jack Jouett Middle School, Mary C. Greer Elementary School, and the Ivy Creek School, as well as offices, a vehicle maintenance facility, a fueling facility, and a driver training course.

The 1993 FEIS completed for the project contained Section 4(f) evaluations for three public parks [McIntire Park, Rivanna Park (now called Darden Towe Park), and Pen Park] and two historic properties eligible for listing on the National Register of Historic Places (Schlesinger Farm and The Barracks Historic District). In 1998, information was received regarding recreational trails on the Albemarle County School Complex, and it was determined that the trails represented a public recreation resource and the project would displace a portion of these trails, thereby invoking Section 4(f) of the 1966 U.S. Department of Transportation Act. The new Section 4(f) involvement was evaluated, and a *Draft Section 4(f) Evaluation* was circulated to all who received copies of the original FEIS. Comments received on the *Draft Section 4(f) Evaluation* indicated that the whole of the school complex parcel has been designated by the County as a District Park and, as such, is significant for public recreation. Therefore, it was determined that the Complex would be considered in its entirety as a Section 4(f) resource. In addition, it was learned that the entire Agnor-Hurt Elementary School parcel has been designated by the County as a Community Park and therefore also should be treated as a Section 4(f) property in its entirety. Previously, only the recreational facilities on the school properties had been considered subject to Section 4(f), in accordance with FHWA's Section 4(f) Policy Paper. Although the project will not use, either directly or constructively, land from the Agnor-Hurt Elementary School property, it also is discussed in the Final Section 4(f) Evaluation.

J.1 DESCRIPTIONS OF SECTION 4(F) PROPERTIES

The Albemarle County School Complex, on 218 acres of land, is owned by the Albemarle County School Board and is designated as a District Park in the *Albemarle County Community Facilities Plan, 1990-2000*. Facilities include 6 tennis courts (4 lighted), a 440-yard running track, multi-purpose field and hard court areas, play areas, one lighted baseball field, two softball fields, and the trail systems described below. Students at the schools on the property use the

facilities during school hours. The facilities are available to youth sports leagues and the public after 6 pm on weekdays and from 8 am to dark on weekends.

One trail system is located behind Jack Jouett Middle School and Albemarle High School. It includes about 2.09 miles of unpaved paths roughly 3 to 8 feet wide that are west and south of the middle school, and south of the high school. The system consisted only of crude paths until 1984. The trails underwent various improvements from 1984 to 1990 by the high school's cross-country team, the Monticello Area Community Action Agency, the Boy Scouts, and various other service organizations. The trails are maintained by the cross-country team and are used by other teams for training, as well as earth science classes at the adjacent schools. There are no facilities associated with the trails other than two wooden foot bridges crossing streams, and they are not listed in the Comprehensive Plan among recreational facilities at schools or in the county's Open Space Plan. As with other facilities on the Complex, the trails are open to the public after 6 pm on weekdays and from 8 am to dark on weekends. County officials estimate that use ranges from 20 to 35 persons per day, with fewer users during the summer and winter months.

A second trail system located behind Greer Elementary School consists of approximately 1 mile of unpaved paths roughly 3 feet wide, located west and north of the school. Roughly 40 percent of these trails are located on the school complex, with the rest of the system located on adjacent private property. These trails are used primarily by earth sciences students and the public. No facilities are present other than several posts identifying tree species.

Agnor-Hurt Elementary School is located on approximately 19.55 acres between Woodburn Road (Route 659) and Berkmar Drive. The Albemarle County School Board acquired the property in October 1990 and the school was occupied in 1992. The school play areas, baseball/softball field, basketball courts, and soccer field serve as a community park after 6 pm (after school hours) on school days and from 8 am until dark on weekends.

J.2 IMPACTS ON SECTION 4(F) PROPERTIES

J.2.1 Direct Use

The Current Design, after incorporating impact minimization measures, requires the use of 12.43 acres (about 5.7%) of the total Albemarle County School Complex acreage and would not encroach on any of the athletic fields, tennis courts, hard court areas, track, playgrounds, or buildings. The project would avoid the trail west of the middle school soccer field and would displace approximately 771 linear feet of the trail near the elementary school, about 38% of that trail system, and about 6% of all the trail systems on the School Complex. The displaced portions of trail would be reestablished outside the project right of way, but use of these portions likely would be interrupted during construction.

J.2.2 Noise Levels

Year 2022 worst-case noise levels were computed for various locations using the FHWA-approved STAMINA/OPTIMA computer noise model. The model revealed that the northernmost edge of the athletic fields at Greer Elementary School would experience a peak-

hour noise level 1 dBA over the FHWA's noise abatement criterion (NAC) of 67 dBA. Portions of the property closer to the school would experience levels well below the NAC but substantially (>10 dBA) higher than current levels.

Noise levels at the northernmost edge of the Jack Jouett Middle School fields would be 67 dBA, while noise at field areas closer to the school would be well below the NAC and not substantially higher than current levels. No high school facilities would experience noise levels approaching the NAC or substantially higher than current levels.

The peak-hour noise level on the portion of trail nearest the roadway would be 70 dBA, 22 dBA higher than the current noise level of 48 dBA and above the NAC. Approximately 27 percent of the middle school trails and virtually all of the trail system near the elementary school would experience peak-hour noise impacts in the year 2022. These impacts are probably overstated, however, because the noise levels were calculated using peak-hour traffic volumes even though the public uses the facility during off-peak hours.

J.2.3 Air Quality

Air quality analyses found that carbon monoxide concentrations on the School Complex property near the proposed Bypass site would be well below the National Ambient Air Quality Standards and only 0.1 part per million or less above background levels. The project therefore would have a negligible effect on air quality at the School Complex.

J.2.4 Visual Impacts

Users of the middle school trail would see the roadway bridges crossing the stream valley from certain areas, instead of the current view of the stream valley and medium-age mature hardwoods. Users of the southern and eastern portions of the trail, however, would not see the Bypass because of intervening terrain and vegetation. Although these trails do provide a pleasant setting, only a portion of which would be adversely affected by the project, they are not the only recreational opportunity of this type available to residents in the project area. Nearby trails in Albemarle County can provide users with the quiet wooded setting they currently enjoy, and without the time-of-day restrictions they face on the School Complex trails.

J.2.5 Impacts to the Agnor-Hurt Elementary School

The *Final Section 4(f) Evaluation* includes an analysis of impacts at the Agnor-Hurt Elementary School, even though the project would not use any of its property. Noise levels at the baseball field would be substantially higher than current levels but would not approach the NAC. The project would have a negligible effect on air quality and a minimal visual effect. The proximity impacts of the project would not impair the recreational and other uses of the property and, therefore, there would be no constructive use.

J.3 AVOIDANCE ALTERNATIVES

J.3.1 New Environmental Constraints

The 1993 FEIS discussed environmental constraints in the project area, such as parks and recreation areas, historic properties, agricultural and forestal districts, and terrain limitations. In 1997, an additional constraint was documented: newly recorded populations of the James spinymussel (*Pleurobema collina*), a federally listed endangered species. The U.S. Fish and Wildlife Service (USFWS) concluded that the project is not likely to jeopardize the continued existence of the James spinymussel and is not likely to destroy or adversely modify its critical habitat. USFWS imposed several conditions that must be met during project construction, such as time-of-year restrictions and erosion and sedimentation control measures.

J.3.2 Previous Alternatives from FEIS

Hundreds of possible alternatives for the project were gradually narrowed down to a list of eight Candidate Build Alternatives to be considered in detail in the DEIS. These alternatives were endorsed by County and City officials and reflected agency and citizen input. They included seven bypass alternatives on new alignments and an Expressway Alternative along existing Route 29. In addition, a Base Case (or No-Build) Alternative, a Base Case with Grade-Separated Interchanges Alternative, a Mass Transit Alternative, and a Transportation System Management Alternative were considered. All but Bypass Alternative 10, from which the Current Design was developed, would avoid use of land from the Albemarle County School Complex. However, Alternative 10 represented the best balance of transportation requirements, environmental impacts, and citizen input, and it was the only alternative that would meet the project needs without Section 4(f) impacts (based on the information available at the time). The *Final Section 4(f) Evaluation* reiterates the FEIS conclusion that none of the other Candidate Build Alternatives are feasible and prudent. The shortcomings of the other Candidate Build Alternatives, as well as the other Section 4(f) involvements they would have, are discussed in detail in the FEIS and in the *Final Section 4(f) Evaluation*.

J.3.3 Other Location Alternatives

The *Final Section 4(f) Evaluation* discusses the examination of other possible alignments for the Bypass and concludes that the alternatives presented in the FEIS represent the range of reasonable alternatives. This conclusion was based on evidence that other alternatives located east or west of Route 29 would have even greater impacts on the human and natural environments because of the numerous residential developments, parks and recreation areas, historic properties, natural resources, and other constraints. To the east, any other alternative between existing Route 29 and Alternatives 7 and 7A would pass through the most densely developed part of Albemarle County, causing considerable community disruption. Any alternative east of Alternative 6B would divert even less traffic than Alternative 6B and would get involved in the rugged terrain of the Southwest Mountains as well as the large Southwest Mountains Rural Historic District and agricultural and forestal districts. To the west, any alternative between existing Route 29 and the Current Design also would pass through a densely

developed part of Albemarle County, causing considerable community disruption. Any alternative west of Alternative 12 would not adequately meet the project needs and would traverse a large portion of the Reservoir watershed as well as more pristine rural areas of the County. Any alternative between Alternative 12 and the Current Design also would involve greater impacts to the Reservoir watershed (including crossing the Reservoir), as well as considerable impacts to several residential subdivisions, agricultural and forestal districts, and historic properties.

J.3.4 Modifications to Current Design

The *Final Section 4(f) Evaluation* discusses the possibility of shifting the Alternative 10 alignment to the east or west enough to eliminate any direct or constructive use of the School Complex property. It notes that a shift to the east would split the Montvue and Terrell subdivisions, encroach on dense residential and commercial development east of Hydraulic Road, require two bridge crossings of Hydraulic Road, and displace the Roslyn Heights subdivision (along with more than 35 additional residences and at least 5 businesses). A shift to the west would reduce noise impacts on the school property but would not eliminate them, and the project would therefore still constitute a constructive use. This modification also would bring the Bypass closer to Ivy Creek (James spinymussel habitat), require encroachment on a larger portion of the Ivy Creek Agricultural and Forestal District, and displacement of eight homes, and would negatively affect community cohesion in the Ivy Ridge subdivision.

A shift far enough to the west to eliminate both direct and constructive use of all of the School Complex property would result in a Section 4(f) use of approximately 6.7 acres of the Schlesinger Farm historic property, which would be considered a more severe Section 4(f) use than the use of the School Complex property under the Current Design. This alignment shift also would require two crossings of Ivy Creek at the location of recorded occurrences of the James spinymussel and would negatively affect community cohesion in the Ivy Ridge and Roslyn Ridge subdivisions.

J.4 MEASURES TO MINIMIZE HARM

Additional mitigation measures have been developed to minimize the impacts of the project on the Section 4(f) school property:

- Shifting a small portion of the Bypass slightly to the west to avoid the trail system behind the Jack Jouett Middle School;
- Reducing the cross section of the roadway by narrowing the width of the median and crossing the stream on bridges rather than earthen fill;
- Lowering the roadway profile to reduce visibility and noise levels;
- Making design changes that would reduce the total acreage of direct use from 15.17 to 12.43 acres;
- Limiting right of way access to pedestrians with fencing, as suggested by school officials;
- Revegetating cut and fill slopes with indigenous trees; and,

- Fully compensating the County for property required for the right of way.

J.5 COORDINATION

After the identification of the trails as a Section 4(f) resource, County officials were consulted as part of the development of the *Draft Section 4(f) Evaluation*. That document was circulated back to these officials, and additional comments were received from the County Attorney, the County Planning Department, and the County Parks and Recreation Department. Their comments were incorporated into the *Final Section 4(f) Evaluation*.

Extensive coordination with local officials has been ongoing throughout the 14-year planning and design effort on the Route 29 Bypass project. During the Route 29 Corridor Study period, there were regular public meetings of a Joint Task Force that included representatives of the Board of Supervisors, the County Executive, the County Planning Commission, the County Planning Department, and the County's representatives to the Metropolitan Planning Organization (MPO). Members of the public, the Piedmont Environmental Council, community associations, and local print and broadcast media regularly attended these meetings. During the design phase, regularly scheduled Design Advisory Committee meetings were held, with members representing the County Planning Department, the County Planning Commission, the County's representatives to the MPO, and citizens from neighborhoods along the alignment. VDOT also received a large volume of written correspondence pertaining to the project.

Public involvement outside of Task Force and Design Advisory Committee meetings included citizen information meetings, presentations to special interest groups, newsletters, and telephone hotlines. Approximately 1,100 names were on the mailing list for newsletters during the Route 29 Corridor Study, and approximately 17,000 names were on the list for newsletters during the design phase. The *Final Section 4(f) Evaluation* includes a detailed history of public and County involvement in the project.

K

CORRESPONDENCE AND COMMENTS

K.1 AGENCY AND ORGANIZATION CORRESPONDENCE

The following pages contain copies of correspondence with agencies and organizations that provided input during the studies conducted for this SEIS. The following letters are included:

Date	Description of Correspondence	Page
9/26/01	Letter from Mark Wittkofski of Virginia Department of Transportation (VDOT) Environmental Division to Donald S. Welsh, U.S. Environmental Protection Agency (EPA) Region 3 Administrator.	K-2
9/26/01	Letter from Mark Wittkofski of VDOT Environmental Division to Dennis Treacy, Director of the Virginia Department of Environmental Quality (DEQ).	K-3
9/26/01	Letter from Mark Wittkofski of VDOT Environmental Division to Nancy K. O'Brien, Executive Director, Thomas Jefferson Planning District Commission.	K-4
9/26/01	Letter from Mark Wittkofski of VDOT Environmental Division to Cole Hendrix, Interim Executive Director, Rivanna Water and Sewer Authority.	K-5
9/26/01	Letter from Mark Wittkofski of VDOT Environmental Division to Robert W. Tucker, Jr., Albemarle County Executive.	K-6
12/2/01	Letter from Mark Wittkofski of VDOT Environmental Division to Wayne Cilimberg, Albemarle County Planning Director.	K-7
10/5/01	Letter from Carolyn Browder, Environmental Specialist for Virginia DEQ, to Mark Wittkofski of VDOT's Environmental Division.	K-7
11/5/01	Letter from Greg Kamptner, Assistant Albemarle County Attorney, to Mark Wittkofski of VDOT Environmental Division.	K-8
12/3/01	Letter from Sally Thomas, Chairman Albemarle County Board of Supervisors to Jeffrey C. Southard, VDOT Assistant Commissioner.	K-9
12/19/01	Letter from Jeffrey C. Southard, VDOT Assistant Commissioner to Sally Thomas, Chairman Albemarle County Board of Supervisors.	K-10
12/11/01	Letter from Hannah Twaddell, Assistant Director of Charlottesville – Albemarle Metropolitan Planning Organization, to Mark Wittkofski of VDOT Environmental Division.	K-12
10/12/01	Letter from Deborah M. Murray of Southern Environmental Law Center to Jeffrey C. Southard, VDOT Assistant Commissioner.	K-13
11/2/01	Letter from Deborah M. Murray of Southern Environmental Law Center to Jeffrey C. Southard, VDOT Assistant Commissioner.	K-15
11/15/01	Letter from Deborah M. Murray of Southern Environmental Law Center to Jeffrey C. Southard, VDOT Assistant Commissioner.	K-16
11/1/01	Letter from Tom Schueler to Deborah Murray of Southern Environmental Law Center.	K-19
11/21/01	Letter from Mark Wittkofski of VDOT Environmental Division to Deborah M. Murray of Southern Environmental Law Center.	K-25
12/12/01	Letter from Jacqueline Keeney of VDOT to Charles Martin of Albemarle Board of Supervisors.	K-25
12/12/01	Letter from Jacqueline Keeney of VDOT to Mayor Blake Caravati of Charlottesville.	K-26

COMMONWEALTH *of* VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-3000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

September 26, 2001

Mr. Donald S. Welsh
Regional Administrator
U.S. Environmental Protection Agency, Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

SUBJECT: Route 29 Bypass
Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement

Dear Mr. Welsh:

Your assistance is requested in developing a Supplemental Environmental Impact Statement for the Route 29 Bypass project, which is located as shown on the attached graphics. The Virginia Department of Transportation and the Federal Highway Administration are preparing the document to more thoroughly discuss the direct, indirect, and cumulative effects of the proposed bypass on the South Fork Rivanna River Reservoir and its watershed, and on archaeological resources at the project's northern terminus. Among the items to be discussed will be sedimentation, contaminants in highway runoff, potential for hazardous material spills, stormwater management, and erosion and sediment control provisions. If you would provide the following information, it would be a great help in properly discussing the project's effects on the Reservoir and watershed:

- Federal water quality standards and drinking water standards.
- Federal standards, regulations, and guidelines for analyzing effects on drinking water reservoirs and watersheds.
- Any literature sources or samples of reservoir and watershed impact analyses that you feel would be applicable to this study.
- Any particular problems or especially sensitive areas in this watershed.
- Any other information you feel would be helpful in assessing the effects of the project on the Reservoir and its watershed.

We also will be coordinating directly with Virginia Department of Environmental Quality officials and with Albemarle County and other local officials regarding Reservoir and watershed issues. In addition, staff from our consultant, Parsons Transportation Group Inc., and its affiliate, Parsons Engineering Science, may be informally contacting EPA staff during the course of the study to collect information.

WE KEEP VIRGINIA MOVING

Thank you for your assistance. If you have any questions about this information request or the process for developing the Supplemental Environmental Impact Statement, please contact me at 804-371-6867. Your early response would be appreciated so that the document can be completed expeditiously.

Sincerely,

J. Mark Wittkofski
Environmental Specialist II

cc: Edward Sundra - Federal Highway Administration
Stuart Tyler - Parsons Transportation Group Inc.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

September 26, 2001

Mr. Dennis Treacy, Director
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23219

SUBJECT: Route 29 Bypass
Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement

Dear Mr. Treacy:

Your assistance is requested in developing a Supplemental Environmental Impact Statement for the Route 29 Bypass project, which is located as shown on the attached graphics. The Virginia Department of Transportation and the Federal Highway Administration are preparing the document to more thoroughly discuss the direct, indirect, and cumulative effects of the proposed bypass on the South Fork Rivanna River Reservoir and its watershed, and on archaeological resources at the project's northern terminus. Among the items to be discussed will be sedimentation, contaminants in highway runoff, potential for hazardous material spills, stormwater management, and erosion and sediment control provisions. If you would provide the following information, it would be a great help in properly discussing the project's effects on the Reservoir and watershed:

- State water quality standards and drinking water standards.
- State standards, regulations, and guidelines for analyzing effects on drinking water reservoirs and watersheds.
- Any literature sources or samples of reservoir and watershed impact analyses that you feel would be applicable to this study.
- Any particular problems or especially sensitive areas in this watershed.
- Locations and descriptions of point-source dischargers within the watershed.
- Any information you may have on nonpoint-source discharges within the watershed.
- Any information you may have on groundwater pollution within the watershed.
- Any information you may have on hazardous material spills and remediation efforts within the watershed.
- Any information you may have on solid or hazardous waste generators, storers, handlers, or disposers within the watershed.
- Any other information you feel would be helpful in assessing the effects of the project on the Reservoir and its watershed.

We also will be coordinating directly with Albemarle County and other local officials regarding Reservoir and watershed issues. In addition, staff from our consultant, Parsons Transportation Group Inc., and its affiliate, Parsons Engineering Science, may be informally contacting DEQ staff during the course of the study to collect information.

Thank you for your assistance. If you have any questions about this information request or the process for developing the Supplemental Environmental Impact Statement, please contact me at 804-371-6867. Your early response would be appreciated so that the document can be completed expeditiously.

Sincerely,

J. Mark Wittkofski
Environmental Specialist II

cc: Edward Sundra - Federal Highway Administration
Stuart Tyler - Parsons Transportation Group Inc.

WE KEEP VIRGINIA MOVING

COMMONWEALTH *of* VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-3000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

September 26, 2001

Ms. Nancy K. O'Brien
Executive Director
Thomas Jefferson Planning District Commission
300 East Main Street
Charlottesville, VA 22902

SUBJECT: Route 29 Bypass
Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement

Dear Ms. O'Brien:

Your assistance is requested in developing a Supplemental Environmental Impact Statement for the Route 29 Bypass project. The Virginia Department of Transportation and the Federal Highway Administration are preparing the document to more thoroughly discuss the direct, indirect, and cumulative effects of the proposed bypass on the South Fork Rivanna River Reservoir and its watershed, and on archaeological resources at the project's northern terminus. If you would provide the following information, it would be a great help in properly discussing the project's effects on the Reservoir and watershed:

- Complete copy of the Black and Veatch study recently prepared for the MPO, along with supporting background data and assumptions as appropriate.
- Any other information you feel would be helpful in assessing the effects of the project on the Reservoir and its watershed.
- Any other information you feel would be helpful in identifying and evaluating stormwater management, erosion and sediment control, spill containment, or other measures not presently contained in the project plans that might help mitigate adverse effects on the Reservoir and watershed.

We also will be coordinating directly with Albemarle County and the Rivanna Water and Sewer Authority regarding planning, policies, and operations related to the Reservoir and the watershed. In addition, staff from our consultant, Parsons Transportation Group Inc., and its affiliate, Parsons Engineering Science, may be informally contacting PDC staff during the course of the study to collect information. Also, we would like permission to contact Black and Veatch directly to discuss its technical data, assumptions, and methodology as the need arises, and we would appreciate your providing a contact at that firm.

WE KEEP VIRGINIA MOVING

Thank you for your assistance. If you have any questions about this information request or the process for developing the Supplemental Environmental Impact Statement, please call me at 804-371-6867. Your early response would be appreciated so that the document can be completed expeditiously.

Sincerely,

J. Mark Wittkofski
Environmental Specialist II

cc: Edward Sundra - Federal Highway Administration
Stuart Tyler - Parsons Transportation Group Inc.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

September 26, 2001

Mr. Cole Hendrix
Interim Executive Director
Rivanna Water and Sewer Authority
200 Franklin Avenue
Charlottesville, VA 22902

SUBJECT: Route 29 Bypass
Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement

Dear Mr. Hendrix:

Your assistance is requested in developing a Supplemental Environmental Impact Statement for the Route 29 Bypass project. The Virginia Department of Transportation and the Federal Highway Administration are preparing the document to more thoroughly discuss the direct, indirect, and cumulative effects of the proposed bypass on the South Fork Rivanna River Reservoir and its watershed, and on archaeological resources at the project's northern terminus. If you would provide the following information, it would be a great help in properly discussing the project's effects on the Reservoir and watershed:

- Any water quality sampling data the Authority may have collected for the Reservoir or tributary streams within the watershed.
- Any groundwater data the Authority may have collected within the watershed.
- Maps and written descriptions of your treatment and distribution facilities and operations.
- Data on quality of water entering and exiting the treatment plant at the Reservoir.
- Frequency and duration of water intake at the treatment plant.
- Capabilities and procedures for using alternate sources in the event of a treatment plant shutdown.
- Water consumption quantities, patterns, trends, and projections.
- Policies related to water discharges from the Reservoir.
- Policies and procedures related to water pricing.
- Copy of the July 1977 Camp Dresser and McKee report on alternative water sources.
- Copy of the June 1977 Betz Environmental Engineers report on the Reservoir.
- Copy of the May 1979 final report on the Lake Restoration Study for the Reservoir
- Copy of 1982 208 Watershed Management Study of the South Rivanna Reservoir
- Copy of 1994 Black and Veatch bathymetric survey and any subsequent surveys.
- Hazardous material storage and management plans and procedures.
- Copy of reports and data compiled by VHB in its alternative water source studies.
- Any other information you feel would be helpful in assessing the effects of the project on the Reservoir and its watershed.

We also will be coordinating directly with Albemarle County regarding planning and policies related to the watershed, and also with the Metropolitan Planning Organization regarding the recent studies completed by Black and Veatch. In addition, staff from our consultant, Parsons Transportation Group Inc., and its affiliate, Parsons Engineering Science, may be informally contacting Authority staff during the course of the study to collect information.

Thank you for your assistance. If you have any questions about this information request or the process for developing the Supplemental Environmental Impact Statement, please contact me at 804-371-6867. Your early response would be appreciated so that the document can be completed expeditiously.

Sincerely,

J. Mark Wittkofski
Environmental Specialist II

cc: Edward Sundra - Federal Highway Administration
Stuart Tyler - Parsons Transportation Group Inc.

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COMMONWEALTH *of* VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

September 26, 2001

Robert W. Tucker, Jr.
County Executive
401 McIntire Road
Charlottesville, Virginia 22902

SUBJECT: Route 29 Bypass
Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement

Dear Mr. Tucker:

Your assistance is requested in developing a Supplemental Environmental Impact Statement for the Route 29 Bypass project. The Virginia Department of Transportation and the Federal Highway Administration are preparing the document to more thoroughly discuss the direct, indirect, and cumulative effects of the proposed bypass on the South Fork Rivanna River Reservoir and its watershed, and on archaeological resources at the project's northern terminus. If you would provide the following information, it would be a great help in properly discussing the project's effects on the Reservoir and watershed:

- History of efforts by the County to reduce development in the watershed and preserve water quality in the Reservoir.
- Copy of the Watershed Management Plan.
- Copies of County ordinances pertaining to development controls and standards for properties within the watershed, and requirements for stormwater runoff and erosion and sediment controls.
- A complete copy of the current Comprehensive Plan and Land Use Plan.
- Copies of zoning maps for the watershed and zoning ordinances.
- Locations and descriptions of existing and planned public facilities (schools, etc.) within the watershed.
- Any available data on quantities and trends of development activity within the watershed.
- Any water quality sampling data the County may have collected for the Reservoir or tributary streams within the watershed.
- Any economic development policies pertaining to types, locations, and water consumption and discharge needs of prospective businesses in the county, particularly within the watershed.
- County planning efforts with respect to future water needs.
- Hazardous material response organizations, plans, and procedures.
- Any other information you feel would be helpful in assessing the effects of the project on the Reservoir and its watershed.

We also will be coordinating directly with the Rivanna Water and Sewer Authority with specific questions about water supplies and facilities and also with the Metropolitan Planning Organization regarding the recent studies completed by Black and Veatch. In addition, staff from our consultant, Parsons Transportation Group Inc., and its affiliate, Parsons Engineering Science, may be informally contacting county staff during the course of the study to collect information.

Thank you for your assistance. If you have any questions about this information request or the process for developing the Supplemental Environmental Impact Statement, please contact me at 804-371-6867. Your early response would be appreciated so that the document can be completed expeditiously.

Sincerely,

J. Mark Wittkofski
Environmental Specialist II

cc: Edward Sundra - Federal Highway Administration
Stuart Tyler - Parsons Transportation Group Inc.

WE KEEP VIRGINIA MOVING

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

December 2, 2001

Mr. Wayne Cilimberg
Director of Planning & Community Development
Albemarle County
401 McIntire Road
Charlottesville, Virginia 22902

SUBJECT: Route 29 Bypass
Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement / Land Use

Dear Mr. Cilimberg:

As you know, we are developing a Supplemental Environmental Impact Statement for the subject project to discuss effects on the South Fork Rivanna River Reservoir and its watershed. One of the questions that has come up has to do with the potential for additional development that the project might induce within the watershed, and we would appreciate your help in addressing this issue.

Among the information previously provided by the County is the Comprehensive Plan and its accompanying Land Use Plan. In reviewing these documents, it appears that the proposed bypass has been fully accounted for in the County's proposed future land use patterns. We would appreciate any information you could provide on how the future land use patterns might be different if the bypass is not built.

Please call me at 804-371-6867 if you have any questions or need additional information regarding this request.

Sincerely,

Mark Wittkofski
Environmental Specialist II

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COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Dennis H. Treacy
Director

(804) 698-4000
1-800-592-5482

October 5, 2001

Mr. Mark Wittkofski
Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219

RE: Route 29 Bypass Project, Albemarle County, Virginia
VDOT Project No. 6029-002-F22, PE101; RUVA-002-001, PE101
Supplemental Environmental Impact Statement

Dear Mr. Wittkofski:

I have reviewed your request for scoping comments regarding the Department of Transportation's proposed Route 29 Bypass Project in Albemarle County, Virginia.

As discussed in the Environmental Impact Statement for this project and upon review of the National Wetlands Inventory map, there are wetlands identified at the project site. An onsite delineation should be conducted prior to project construction to determine the absence or location, extent, and type of wetland present. The proposed activities will cross several streams within the project area. However, VDOT should avoid and minimize impacts to surface waters to the greatest extent practicable. Compensation for unavoidable impacts will be required.

In accordance with the Virginia Water Quality Standards, the project area is classified as Class III waters with public water supply (PWS) and nutrient enriched waters (NEW-3) special standards (see 9 VAC 25-260-140 B and 9 VAC 25-260-350, respectively).

We appreciate the opportunity to comment on this project. If we can be of any further assistance, please feel free to contact me at (804) 698-4420.

Sincerely,

Carolyn Browder
Environmental Specialist

cc: File

An Agency of the Natural Resources Secretariat

LARRY W. DAVIS
COUNTY ATTORNEY

PHONE (434) 972-4067
FAX (434) 972-4068

COUNTY OF ALBEMARLE
Office of County Attorney
401 McIntire Road
Charlottesville, Virginia 22902-4596

MARK A. TRANK
DEPUTY COUNTY ATTORNEY

GREG KAMPTNER
ANDREW H. HERRICK
ASSISTANT COUNTY ATTORNEYS

November 5, 2001

J. Mark Wittkofski
Environmental Specialist II
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219-2000

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ENVIRONMENTAL DIV.

Re: Route 29 Bypass
Project: 6029-022-F22, PE 101; RUVA-002-001, PE 101
Albemarle County
Supplemental Environmental Impact Statement

Dear Mr. Wittkofski:

Enclosed you will find the information requested in your letter dated September 26, 2001. The item numbers below correspond in order to the bullets in your letter:

1. A history of the County's efforts to reduce development in the watershed and to preserve the water quality of the South Fork Rivanna Reservoir. This history is contained in an excerpt from the draft report titled "South Fork Rivanna Reservoir – Reflecting on 35 Years Anticipating 50 Years," dated October 10, 2001. The final report should be available by the end of this year.

2. The "South Rivanna Watershed Management Plan, Volume 1 – Executive Summary," dated August 1979. Volume 1 summarizes the information and conclusions of Volume 2, which is a 182 page technical report. Volume 2 is available in the Engineering Department for inspection. We have not included it in this submittal because of its length and because its format does not lend itself to quick or easy reproduction. If you would like a copy of Volume 2, please let us know.

3. The County regulations pertaining to development controls and standards for properties within the watershed: Albemarle County Code §§ 14-519 and 520, which are both part of the County's Subdivision Ordinance, and Albemarle County Zoning Ordinance §§ 4.2.1, 10.1 and 32.7.4. The County's regulations pertaining to erosion and sediment control, stormwater runoff, and stream buffer management are contained in Albemarle County Code Chapter 17, the County's Water Protection Ordinance.

4. The Albemarle County Comprehensive Plan, including the County's Land Use Plan.

5. Zoning maps showing the South Fork Rivanna River watershed.

6. Maps identifying the location and nature of existing public facilities within the South Fork Rivanna River watershed. There are currently no additional public facilities planned within the watershed.

7. The County's Development Activity Report (2000), which contains data on the quantities and trends of development activity within the South Fork Rivanna River watershed. The watershed includes lands within both Rural Area 1 and Rural Area 3 on the map included with the Development Activity Report. Also included are printouts from two queries of the Engineering Development database titled "SFRR Watershed Files 1" and "SFRR Watershed Files 2." These printouts represent a list of the development projects the Engineering Department has in its records that are within the South Fork Rivanna River watershed. These printouts provide a good representation of the development that has occurred in the watershed but, according to the Engineering Department, the list may not be all-inclusive.

8. Stephen Bowler, the County's Watershed Manager, provided water quality sampling data collected for the reservoir and tributary streams within the watershed to the Rivanna Water and Sewer Authority ("RWSA") on October 25, 2001. Because the RWSA will be providing this data to you, we will not duplicate the information here.

9. You requested information pertaining to the County's economic development policies pertaining to the types, locations, and water consumption and discharge needs of prospective businesses in the County, particularly within the South Fork Rivanna River watershed. The County's Director of Planning and Community Development informs me that the County's economic development policy does not deal with these issues for prospective businesses. However, the County' Comprehensive Plan discourages prospective business within the watershed, except within the area served by the Lickinghole stormwater facility near Crozet.

10. The draft report titled "South Fork Rivanna Reservoir – Reflecting on 35 Years Anticipating 50 Years," dated October 10, 2001, and identified in 1, above, provides information regarding the planning efforts to protect and sustain the South Fork Rivanna Reservoir for future water needs. The final report will include strategies and recommendations for updating the South Fork Rivanna Watershed Management Plan identified in 2, above.

11. Annex P: Hazardous Materials Incidents, from the County's Emergency Operations Plan, and an October 11, 2001 memorandum from Stephen Bowler, delineate the plans and procedures for responding to hazardous materials incidents that threaten the water supply.

The County is undertaking a review of the appropriate process for the SEIS, and has concerns about whether there is adequate public input being provided and current data being utilized. We will be forwarding our comments on these issues shortly.

If you have any questions, or if the Department desires any additional information, please contact us.

Very truly yours,

Greg Kamptner
Assistant County Attorney
County of Albemarle

COUNTY OF ALBEMARLE
Office of Board of Supervisors
401 McIntire Road
Charlottesville, Virginia 22902-4596
(804) 296-5843 FAX (804) 296-5800

David P. Bowerman
Rio
Lindsay G. Dorrier, Jr.
Scottsville
Charlotte Y. Humphris
Jack Jouett
Charles S. Martin
Rivanna
Walter F. Perkins
White Hall
Sally H. Thomas
Samuel Miller

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ENVIRONMENTAL DIV.

December 3, 2001

Jeffrey C. Southard
Assistant Commissioner for Environment, Transportation,
Planning and Regulatory Affairs
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219

Re: Route 29 Bypass; Project: 6029-022-F22, PE 101; RUVA-002-001, PE 101; Albemarle County; Supplemental Environmental Impact Statement

Dear Mr. Southard:

On behalf of the County of Albemarle, I request that the Virginia Department of Transportation hold public hearings at critical times, specified below, when preparing the Supplemental Environmental Impact Statement for this project in accord with 40 C.F.R. 1506.6(c) and 40 C.F.R. § 1502.9(c)(4) (SEIS is to be prepared, circulated and filed in same fashion as draft and final EIS). The County of Albemarle is concerned about the significant environmental risks posed by the proposed Route 29 Bypass alignment which will traverse the South Fork Rivanna River Reservoir watershed in close proximity to the Reservoir. This reservoir is the primary source of the area's public water supply and is a critical resource to the citizens of Albemarle.

As you are well aware, the history of the proposed Bypass has generated significant local interest and environmental controversy. The primary purpose of the SEIS is to address the proposed Bypass's impact on the Reservoir. If the safety of the public water supply is seriously threatened, this project could unravel decades of local efforts to preserve and protect this irreplaceable resource. The impact of this proposed Bypass is far too important to this area for the localities and the public to not be fully involved in the process.

The County specifically requests that public hearings be conducted before the draft SEIS is prepared and after the draft SEIS is prepared. Full public hearings at these stages of environmental review will allow the localities and the public to have meaningful input at critical stages of the process and to stay fully informed of the progress of the environmental review. In our experience, the public information meeting format often used by VDOT is not as effective as a public hearing and we strongly urge you to utilize public hearings. The County believes that a public hearing during the scoping stage of the SEIS will allow the public to comment on the

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comprehensiveness of the review, allow the localities and the public to express their concerns about the potential risks the proposed Bypass poses to the Reservoir, and would allow alternatives and mitigation measures to be raised and considered. A public hearing after the draft SEIS is prepared will facilitate a complete dialogue of the factual bases, assumptions, analysis and conclusions contained in the draft, and will inevitably result in a better final SEIS that will truly serve as an informational document. The County believes that the Department should give at least 60 days of notice prior to the hearing on the draft SEIS so that meaningful comments can be obtained and also solicit written comments. The issues that will be addressed during the environmental review, particularly the potential threat to the public water supply, are complex, and justify the Department proceeding deliberately, rather than hastily.

The County strongly believes that an SEIS can serve as an informational document only if it has a strong factual basis. With that in mind, the Department must include as part of its environmental review an updated analysis of the existing and projected traffic on Route 29 and the proposed Bypass. We are concerned because the traffic data used in the prior reviews is now dated and is unlikely to accurately reflect present and future conditions. Absent a new traffic analysis, the environmental risks arising from the proposed Bypass cannot be properly examined and understood in the SEIS. The SEIS also must fully address the questions raised about the Black & Veatch study by Tom Schueler. We implore VDOT to be certain that all formulas (*e.g.*, the RUSLE) are properly applied, and all assumptions are appropriate, correctly stated and realistic. For example, the draft Black & Veatch study failed to include a single storm event sedimentation analysis during construction, and a single storm event analysis of runoff after construction. Single storm events pose a serious threat to the reservoir, and must be fully analyzed. As stated above, it is critical that the environmental risks be adequately mitigated or avoided and therefore it is imperative that the SEIS is based on the most reliable information that can be obtained. Lastly, the SEIS must seriously consider the option that the proposed Bypass should not be located adjacent to the Reservoir. As Mr. Schueler states on page 8 of his November 1, 2001 report: "Several water supply systems, such as New York and Boston, have reviewed the risks and evaluated current treatment technology, and concluded that new or expanded highways should not be located adjacent to a water supply reservoir (see Kitchell, 2001)."

The County looks forward to working with the Department throughout this process to assure that the environmental issues are addressed.

Very truly yours,

Sally Thomas

Sally Thomas, Chair
Albemarle County Board of Supervisors

cc: Mark Wittkofski, Virginia Department of Transportation
Patsy Napier, Virginia Department of Transportation

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COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

JEFFREY C. SOUTHARD
ASSISTANT COMMISSIONER
ENVIRONMENT TRANSPORTATION PLANNING
& REGULATORY AFFAIRS

December 19, 2001

Ms. Sally Thomas, Chair
Albemarle County Board of Supervisors
401 McIntire Road
Charlottesville, VA 22902-4596

Re: Route 29 Bypass, Charlottesville and Albemarle County
Project: 6029-022-F22,PE101; RUVA-002-001,PE101

Dear Ms. Thomas,

Thank you for your letter of December 3, 2001 concerning the Supplemental Environmental Impact Statement (SEIS) that is being prepared for the Route 29 Bypass as ordered by the U.S. District Court. The Department is working closely with the Federal Highway Administration (FHWA) to thoroughly examine the impacts associated with the selected bypass alternative (Alternative 10) of the final EIS and the subsequent changes to the termini adjacent to the South Fork Rivanna River Reservoir.

The Department and the FHWA are adhering to the regulations as promulgated by the U.S. Department of Transportation for carrying out the responsibilities of the National Environmental Policy Act of 1969 as amended (NEPA). These regulations (23 CFR Part 771) provide the guidance, policies, and procedures for implementing NEPA and the regulations of the Council of Environmental Quality (40 CFR Parts 1500-1508). The regulations pertaining to the development for an SEIS (23 CFR 771.130) are silent on any requirements for public hearings. Further, the guidance for Environmental Impact Statements requires only one public hearing to be held after the Draft EIS is approved. Thus, in this situation, there is no requirement for holding a public hearing before an SEIS is prepared. Nonetheless, the Department and FHWA agreed to hold an additional public hearing following the approval of the draft SEIS by FHWA. The draft SEIS will be available for public review and comment prior to, during, and following the public hearing. We expect to hold that hearing in late winter or early spring of 2002.

The Draft SEIS will be available to the public at least 30 days prior and 15 days following the public hearing as required by FHWA and Department public involvement procedures. As you know, the Department has provided early and continuing opportunities for public involvement throughout the development of this project. The scoping process began in the 1980s and is ongoing. Even after the Record of Decision

was issued, the Department continued to listen to the concerns of the Design Advisory Committee, conducted a study on the endangered James spinymussel, and prepared a Section 4(f) evaluation on the Albemarle County School Properties recreation trails. We have not stopped accepting meaningful input nor have we dismissed reasonable recommendations for mitigation.

We agree with you that the public has been very interested in this project. Many opinions from the public have evolved as have the numerous design changes that have been incorporated into the project (many in response to those opinions). As a result of the many public hearings, informational meetings, and design advisory committee meetings, I think you can agree with me that the local public already has a substantial understanding of the Route 29 Bypass project in Charlottesville and Albemarle County. Further, we have a record of the substantive comments submitted by the public with respect to the issues being covered in the SEIS, and we are reviewing those comments again as we prepare the SEIS. In addition, the FHWA has provided to the Federal Register a public Notice of Intent to prepare the SEIS. The Department sent letters to all agencies, local governments, organizations, and citizens who provided substantial comments on this project apprising them of the scope of the SEIS and soliciting any further input they may have. Considering the limited scope of this current study, the steps we have provided for additional public input, and the requirements of 23 CFR 771, we believe that a single public hearing will be sufficient for this study.

We agree with you that the SEIS should serve as an informational document with a strong factual basis, and I assure you we are proceeding in a deliberate and precise manner. In addition to the prior studies conducted for the EIS, we have requested copies of reports developed for the Rivanna River Water and Sewer Authority, the Thomas Jefferson Planning District Commission, the Metropolitan Planning Organization (MPO), the localities, the University of Virginia, and other agencies. Our consultants did analyze those reports and will use pertinent information in the preparation of the SEIS. We hope you will concur that this document is extremely thorough and factual.

After consultation with FHWA, the Department has decided not to conduct a new traffic study. The U.S. District Court issued its opinion that the SEIS focus on the impacts to water quality and archaeological resources. Our engineering consultant, Parsons Brinckerhoff conducted a thorough traffic study in 1997 that is current and reliable with regard to the additional analyses ordered by the judge.

We, too, have questions about the Black & Veatch report that was procured by the MPO, and wonder why it was accepted given that the storm water engineering by Dr. Shaw Yu at the University of Virginia was incomplete and in view of the apparent flaws

Ms. Sally Thomas, Chair
December 19, 2001
Page Three

you noted. Together with the critical review conducted by Mr. Schueler at the behest of the Southern Environmental Law Center, our consultant is examining each of these studies, as well as the dynamic research that has been conducted by Dr. Yu and will provide a more in depth analysis of the pros and cons of each within the SEIS.

We are confident that you will find the SEIS to be a thorough, factual, and informative document. As always, we look forward to a continuing and productive dialogue with you and other interested citizens in the Charlottesville and Albemarle County area concerning this bypass project. Thank you for your input.

Sincerely yours,

Jeffrey C. Southard

bcc: Mr. Don Askew
Mr. Mark Wittkofski
Mr. Bob Tucker
Ms. Patsy Napier
Mr. Stuart Tyler
Mr. Ed Sundra
Mr. Ricky Woody

Charlottesville-Albemarle Metropolitan Planning Organization
of the Thomas Jefferson Planning District Commission
POB 1505, 300 E. Main St, Charlottesville, VA 22902 www.tjpdc.org
434-979-7310 phone; 434-979-1597 fax; tjpd@tjpdc.org email

TO: Mark Wittkofski, Environmental Specialist II, VDOT
1401 East Broad Street, Richmond, VA 23219-2000
FROM: Hannah Twaddell, Assistant Director
DATE: December 11, 2001
RE: Information for Route 29 Bypass Supplemental EIS
Albemarle County, Project: 6029-002-F22, PE 101; RUVA-002-001, PE 101

On behalf of the Charlottesville-Albemarle MPO, in response to your request for assistance in developing a Supplemental Environmental Impact Statement for the Route 29 Bypass project, we are enclosing the information that you requested. Specifically, we are sending to you:

- Analysis of Water Quality and Quantity Impacts of Proposed Route 29 Bypass (Black and Veatch study completed in April 2001 for the TJPDC/Charlottesville-Albemarle MPO with funding from the Rivanna Water and Sewer Authority). The appendix of the report includes questions and responses from various meetings and discussions of the study. In addition, a letter from Robert R. Humphris to the MPO dated February 12, 2001 and a memo from Stephen Bowler to Mr. Humphris dated February 6, 2001, are packaged with the report. Please see the remarks below for important information on the use of this report.
- The notebook and minutes from the February 1999 meeting of the City Council, Albemarle Board of Supervisors and Rivanna Water and Sewer Authority which resulted in the agreement to conduct the Black and Veatch study; and
- The MPO Transportation Improvement Program (TIP) resolution which identifies water impacts among other issues to be addressed in order for this project to gain construction funding approval from the MPO.
- Letters to the editors of the Charlotesville Daily Progress (June 4, 2001) and the Richmond Times-Dispatch (June 23, 2001), stating concerns about the bypass project. These were provided by Charlotte Humphris of the MPO Policy Board.

We recommend you also gather information regarding planning, policies and operations related to the Reservoir and the watershed from the County of Albemarle City of Charlottesville, and Rivanna Water and Sewer Authority.

Staff contacts at our agency beside myself include Ryan Mickles, Transportation Planner, and William Wanner, Assistant Director. We can all be reached at 434-979-7310, or by email at htwaddell@tjpdc.org, rmickles@tjpdc.org, or wwanner@tjpdc.org. Please be advised that the TJPDC is in the process of hiring a new director upon the retirement of Nancy O'Brien effective November 30, 2001. I will serve as Acting Director in December and possibly into January.

You are welcome to discuss the study methodology with the Black and Veatch consultants. The project manager is Doug Brinkman, who can be reached by phone at 301-921-3887 or email at BrinkmanDG@bv.com.

We hope this information will be useful. In turn, we have several comments and requests to make of VDOT since the proposed bypass will have such an important impact on both our transportation system and our water resource system.

Request for a VDOT Representative to Discuss the Study with the MPO: We ask VDOT to send a representative to the MPO to speak with us about the process that will be followed. Questions that have been raised to date include the following; What will be the scope of the issues covered? How is VDOT intending to address them? What "indirect" effects of the project are going to be examined? Will these indirect effects include population growth impacts? Will all the local, state, and federal agencies contacted during the intital EIS be contacted again for their input during this process?

The MPO Policy Board meets the second Monday of the month in Charlottesville at 4:00 p.m. Please contact me to discuss the possibility of a VDOT representative attending the January 14 or February 11 meeting.

Need for an Early Public Information Meeting and Hearing: A crucial need will be for VDOT to hold a public meeting and hearing early in the process of developing the supplemental EIS. The meeting should describe the process and scope, but also get ideas from the public. It should promote a discussion instead of simply providing a poster-board, walk-about type of briefing. The controversy and importance of this proposal raises it to the status of deserving full public disclosure as soon as possible. We are aware VDOT will need to hold a hearing on the draft final document, but we urge the agency to be more proactive and involve the public earlier. Having a public hearing only after the process has been nearly completed would cheat the public of its chance to have input on a very important issue.

This request fits the process VDOT/FHWA followed when it held a number of "scooping" hearings in affected jurisdictions in the early stage of planning the proposed Western Transportation Corridor. We are aware that VDOT/FHWA are not required to have a public hearing, but just as was done in Northern Virginia, presumably in deference to the controversy and heightened public scrutiny surrounding the proposed WTC, we believe that this project deserves a similar level of opportunity for public awareness.

Notes regarding VDOT's use of the Black and Veatch Study. The Study should not be used or quoted without a notation that Black and Veatch was not asked to do an Environmental Impact Study, and it should not become a substitute for such a Study. A locally developed risk analysis and study of cost implications of a project proposed by a state agency is not the same as an analysis of the project's impact on the environment and population growth. Black and Veatch's study could not look at alternatives as an EIS must do.

In addition, Black and Veatch was limited by budget and availability of the data when making traffic assumptions, which are assumptions that VDOT is able to update. For example, assumptions about projected truck traffic on the bypass need to be brought up to date, taking into account the plans for the I-81 corridor and the statewide Route 29 corridor studies that have been done since the original EIS for this project was completed. Updated local land use plans should also be accounted for in examining traffic and growth projections.

It is also important to note that Black and Veatch was not able to address every question raised about the impacts of the project on sedimentation, such as an analysis of the effects of single storm events during construction and of single storm event on runoff after construction. These issues should be examined in the supplemental EIS. Two examples are noted as follows, both raised by local resident Robert Humphris in his February 12, 2001 letter to the MPO enclosed with the study:

- During the 10-year period 1987-97, this community experienced five two-year storms of about 4 inches in one 24 hour period; one ten-year storm of about 6 inches in a 24-hour period; and one one-hundred year storm of about 9 inches in one 24-hour period (data from the state Climatology Office). Analysis of single storm events such as these, or worse scenarios such as a hurricane, must be included in the supplemental EIS because of their serious threat to the reservoir, during and after construction. Simply using averaging as done by B & V does not provide accurate results.

- The RUSLE equation used by Black and Veatch needs to be examined regarding the accuracy of its assumed values for steepness factors. For example, the assumed angles of steepness from the bypass to local tributaries appear to be low in some areas.

We appreciate the opportunity to be involved in examining these critical issues with VDOT and look forward to meeting and talking with you and other VDOT representatives during the coming months.

Southern Environmental Law Center

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12 October 2001

Jeffrey C. Southard
Assistant Commissioner for Environment, Transportation
Planning and Regulatory Affairs
Virginia Department of Transportation
1401 E. Broad Street
Richmond, VA 23219

Re: Public Participation in the Preparation of the Supplemental Environmental Impact Statement on Impacts of the Proposed Route 29 Bypass (6029-002-122, PE 100)

Dear Mr. Southard:

I wanted to follow up on our telephone conversation last week to give you our preliminary views on what we think the public participation process should entail for the court-ordered Supplemental Environmental Impact Statement ("SEIS") on the impacts of the proposed Route 29 bypass on the South Fork Rivanna Reservoir ("SFRR") and on archaeological and cultural resources. We plan to give our views on the substance of the SEIS itself in a subsequent letter. As one important example, we believe that VDOT must include in the SEIS an updated assessment of existing traffic and traffic projections. This information is critical to any informed analysis of the risks posed by the bypass. As you know, the local government commissioned a study of the impacts of the bypass on the reservoir (the Black & Veatch Report), which necessarily relied upon earlier traffic figures. Thus, while the Black & Veatch Report may be an appropriate starting point for further evaluation, the SEIS must go well beyond this analysis.

Turning to the issue of public participation in the SEIS, as you know, the basic premise of the National Environmental Policy Act is to make sure that agencies weigh the potential consequences of major decisions that may affect the environment, and afford the public the opportunity to participate in the decisionmaking process. This premise is also paramount in instances in which a supplemental EIS must be prepared.

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40 C.F.R. §771.130(d)(a supplement to an EIS is to be developed using the same process and format as an original EIS). To this end, NEPA requires that information be made available to "public officials and citizens before decisions are made and before actions are taken." 40 C.F.R. § 1500.1(b). Federal regulations spell out the necessity of soliciting public comment and responding to it in preparing an EIS. See 40 C.F.R. §771.111, §771.123.

In addition, the CEQ NEPA regulations specify that when a proposed action is controversial, or when there is substantial interest in a public hearing, such hearings are appropriate during the scoping phase. The proposed bypass is clearly a controversial project that has generated a tremendous amount of public opposition and concern. Thus VDOT must make every effort to ensure full public participation in the SEIS process.

As you are aware, the community is especially concerned about the potential for impacts on the Reservoir, the main source of drinking water for over 80,000 people in Charlottesville and Albemarle County. There is a long history of local efforts to protect the Reservoir and its watershed from adverse impacts. Among other things, since the 1970s, when the Reservoir suffered from severe eutrophication as a result of excessive runoff of pollutants, a primary focus of the County's land use policy has been on the need to protect the watershed. The proposed bypass would traverse the reservoir's watershed and would threaten to undermine the long-standing local efforts to improve and maintain the health of the reservoir.

We believe that, at the outset of this process, either a public hearing or a combined public hearing/public information meeting should be conducted. This would allow the public to comment on the comprehensiveness of the proposed SEIS regarding the impacts on the reservoir and on archaeological and cultural resources. A public hearing would also allow citizens to state their concerns about the possible risks of the bypass and to comment upon suggested alternatives that would serve the stated needs and purposes of the project, but pose less of a risk to the reservoir and archaeological resources.

While the broad outline of what VDOT must do under the court-imposed SEIS is clear in terms of the issues that must be examined, the scope of that analysis, and the alternatives proposed, should be the subject of the public hearing and information meeting. A public hearing would better allow for the

open exchange of ideas and information. Conducting only a public information meeting, by contract, would not serve this purpose. A public information meeting typically only features VDOT staff or consultants on hand to answer questions and display maps, etc.; it does not allow citizens to hear either what other members of the public are saying or the answers to questions that others may have asked. In addition, this type of presentation can lead people to think a project is inevitable, when in fact alternatives must be explored and a comparison made of the risks and benefits. We believe that there should also be at least 30 days' notice before the hearing to ensure adequate public participation.

Further, we believe that a public hearing should be conducted, allowing for oral and written comments, once the draft supplemental EIS has been prepared. For the reasons stated above, we believe that this format is superior to a public information meeting. Given the complexity and technical nature of the issues involved, we think that at least 60 days advance notice should be given before the hearing on the draft SEIS.

We look forward to discussing with you further VDOT's plans for ensuring adequate public participation, including the dates for public hearings, provision of a schedule of projected dates in the SEIS process, and the agency's schedule for accepting and responding to public comment. We also look forward to working with you to ensure meaningful public input and a SEIS that is comprehensive as possible.

Sincerely yours,

Deborah Murray

Deborah M. Murray
Senior Attorney

DMM/cs
cc: Chris Miller, Piedmont Environmental Council
Jolly de Give, Piedmont Environmental Council
Babette Thorpe, Piedmont Environmental Council
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2 November 2001

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Virginia Department of Transportation
1401 E. Broad Street
Richmond, VA 23219

Re: Public Participation in the Preparation of the Supplemental Environmental Impact Statement on Impacts of the Proposed Route 29 Bypass (6029-002-122, PE 100)

Dear Jeff:

I apologize for unwittingly catching you at a bad time the other day, but I do appreciate your taking the time to discuss with me the public participation issues regarding the preparation of the supplemental Environmental Impact Statement. You mentioned that your staff would be providing you with recommendations regarding the process this week. I would like to meet with you thereafter, if possible, to discuss their recommendations and your views. I would also appreciate getting an update of where you are in the process and the range of issues that VDOT and the consultants are planning to examine. I want to emphasize that I continue to believe that it is critical to have, as soon as possible, some type of public hearing to make the public aware of the issues that VDOT is examining and to allow the public to hear and comment on those matters.

As I mentioned in our earlier letter and in our telephone conversations, we also believe that there are a number of issues with respect to the impacts on the reservoir that have thus far not been adequately addressed either by VDOT or the Black & Veatch study. We have asked a consultant to take a look at the Black & Veatch report, and VDOT's public assertions thus far regarding possible mitigation measures. Our consultant has identified numerous flaws and limitations in both the Black & Veatch report, and the VDOT preliminary proposals. Set forth below are some of the highlights from the consultant's critique, and we will provide you with a copy of the consultant's report when it is finalized.

At the outset, we would emphasize that a decision to locate a highway so close to a drinking water intake presents serious potential risks to public health and safety. Several water supply systems such as New York and Boston have reviewed the risks and evaluated current treatment technologies and concluded that new or expanded highways should not be located adjacent to a water supply reservoir. This option clearly must be seriously examined in the supplemental EIS.

1. Our consultant believes that the Black & Veatch study seriously underestimates the potential pollutant loadings from highway stormwater from the project because the study relies on flawed assumptions and a limited desk top analysis.

2. At a minimum, a supplemental EIS should compute pollutant loads using hydrologic simulation models that can accurately account for the current and future land use distribution in the watershed; including source loading and management model (SLAMM) or hydrologic simulation program fortran (HSPF). This modeling effort should be peer-reviewed by outside modeling experts.

3. The watershed model should explicitly simulate the pollutants of greatest risk to drinking water, including TP, turbidity, PAH, TOC, chloride, soluble metals, MBTE and others. Nearly all of the pollutants in this list are extremely difficult to treat with conventional stormwater treatment practices.

4. The watershed model should be coupled with a reservoir model to evaluate the fate and dispersal of pollutants once they reach the reservoir. An accurate and scientific assessment of pollutant loadings can be done only by using a watershed and reservation simulation model to accurately track the sources, pathways, and risks of various pollutants to the reservoir.

5. The proposed stormwater treatment system cannot reliably provide a 70% annual removal rate for sediment or other stormwater pollutants, as suggested. An assumed sediment efficiency of 50% for appropriately sized wet ponds could be realistic, but that would not translate into an equivalent removal capability for other pollutants in stormwater runoff. Most other pollutants have average removal rates much lower than 50%. Further, the supplemental treatment methods (oil/grit separators, sump pits, etc.) would provide no additional treatment improvement and would not boost the sediment removal rate. Instead, the EIS should investigate and provide detailed performance requirements for a stormwater treatment system that could meet specific numerical targets for long-term pollutant removal to safeguard the water supply.

6. The proposed stormwater treatment system is also flawed because it has no redundancy in its design in case the ponds fail to work because of sediment accumulation, sediment release, lack of maintenance or other factors. Further, the duel use of the stormwater for spill containment and/or control is not appropriate. From an engineering standpoint, a spill containment system should be completely separate from the stormwater treatment system.

7. The EIS should contain an extensive analysis on the effect of highway induced growth on watershed development patterns, using watershed impervious cover as the major indicator of water quality change.

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8. The analysis of the effect of highway spills is very limited. It does not indicate what fraction of accidents or spills would occur during wet weather conditions when the effectiveness of the containment system would be greatly reduced. Moreover, the spill analysis should be based on extreme conditions and not average conditions. The EIS should include a more extensive spill analysis model that considers both wet weather conditions and extreme events. The EIS should present a more extensive modeling analysis to assess whether the design of the spill containment system would actually work under a range of real world conditions.

We believe that these issues should be thoroughly addressed in the supplemental EIS. In addition, as we stated in our earlier letter, we believe that VDOT must include in the supplemental EIS an updated assessment of existing traffic and traffic projections. This information is critical to any informed analysis of the risks proposed by the bypass.

Thank you for your consideration of these views.

Sincerely yours,

Deborah Murray

Deborah M. Murray
Senior Attorney

DMM/cs
cc: Chris Miller, Piedmont Environmental Council
Jolly de Give, Piedmont Environmental Council
Babette Thorpe, Piedmont Environmental Council
Jay Kardan, Sierra Club
Mark Wittkofski, Va. Dept. of Transportation
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Mark file: 29 bypass Copy to: Rt 29 Bypass Team

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RECEIVED NOV 21 2001 ENVIRONMENTAL DIV.

15 November 2001

Original materials see consultants report. Mark - please see that consultants review

J

Jeffrey C. Southard
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1401 E. Broad Street
Richmond, VA 23219

Re: Comments on Study of the Impacts of the Proposed Rt. 29 Bypass on the South Fork Rivanna Reservoir

Dear Jeff:

Thank you very much for meeting with me on Tuesday. I appreciate your openness and willingness to consider our viewpoint. As I mentioned, I will be getting back to you on the issue of alternatives at some point after the Thanksgiving holiday.

In the meantime, I am enclosing the report of Mr. Thomas R. Schueler, commenting on the existing studies of the impacts of the proposed Rt. 29 bypass on the South Fork Rivanna Reservoir. Mr. Schueler is the Executive Director of the Center for Watershed Protection and is an expert in practical aspects of urban stormwater runoff control, design of stormwater ponds, erosion and sediment control, and comprehensive watershed restoration. Mr. Schueler has reviewed the Black & Veatch study, as well as the VDOT/FHWA 1995 Environmental Assessment, the 1993 Final Environmental Impact Statement, and the March 2000 "Reevaluation of Environmental Impacts and Previous Environmental Documents."

In my letter dated 2 November 2001, I provided you with the highlights of Mr. Schueler's report. This letter further elaborates on Mr. Schueler's findings. At the outset, I would emphasize Mr. Schueler's statement in the report that several water supply systems, such as New York and Boston, have reviewed the risks with respect to current treatment technologies, and have concluded that new or expanded highways should not be

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located adjacent to a public water supply reservoir. **Schueler Report at 8.** This option clearly must be seriously examined in the supplemental EIS. VDOT's decision to locate a highway so close to the drinking water intake presents serious potential risks to public health and safety.

Excerpts of Mr. Schueler's major findings are as follows:

1. The Supplemental EIS should contain an extensive analysis of the effect of highway induced growth on watershed development patterns. The various documents are completely silent on this issue of the extent to which the highway bypass and its termini would influence the location and density of future watershed development patterns. This is a very real shortcoming. Such an analysis is particularly important given that the primary strategy that the County has to protect drinking water quality is land use control. **Schueler Report at 5-6.**

The County has downzoned significant areas of the 258 square mile watershed to protect the rural and forested character of the watershed and thereby protect the quality of the drinking water. Protection of the rural and forested character of these areas translates to limitations on impervious cover. Impervious cover currently is about 5% to 10% in the watershed, which is very close to the threshold for maintaining the purity of drinking water. Even a small increase in the total watershed impervious cover can have a potentially major impact on the ability to provide a pure drinking water supply. Other states, such as Maryland, Vermont and Oregon now routinely calculate the additional pollutant loadings due to increased watershed development caused by highway projects. **Schueler Report at 5-6.**

2. The Black & Veatch study seriously underestimates the potential pollutant loadings from highway stormwater from the bypass as a result of numerous flawed assumptions and the limited desk top analysis that was used. The documents indicate that only minimal effort to date has been made to evaluate the potential risk of highway stormwater pollution so close to a drinking water intake. Simply put, the basic conclusion of the flawed Black & Veatch analysis was that, given the large size of the watershed and the small size of the project, the pollutant loads to be generated by the project, were simply a drop in the bucket. This conclusion is not supportable. **Schueler Report at 1.**

3. The highway load analysis that Black & Veatch used only computed pollutant loading from the 45 acres of the project considered impervious; pollutant loading from the remaining 143 acres of right of way associated with the project was assumed to be zero, which clearly is incorrect. **Schueler Report at 1.**

4. The pollutant load analysis for stormwater runoff from the bypass is extremely limited with respect to the highway pollutants of greatest concern to the water supply use. These pollutants include soluble metals (Cu, Pb, Zn), the family of PAHs compounds, MTBE, chloride, turbidity, pesticides and total organic carbon. Nearly all of the pollutants in this list are extremely difficult to treat with conventional stormwater treatment practices. **Schueler Report at 1-2.**

5. Another serious flaw is that the total load of pollutants from watershed runoff appears inflated. For example, the watershed loading is assumed to be essentially the same as that from highway runoff even though the watershed is 73% forested. **Schueler Report at 2.** The Black & Veatch report further inflates watershed loadings vis a vis potential loadings from the bypass by using a delivery ratio that implies that only 30% of the highway runoff loads would reach the reservoir, while assuming that 100% of the loads produced in the watershed would reach the reservoir. In fact, one would expect that watershed loads would have a lower delivery ratio given that they must travel a much greater distance to get to the reservoir and then to the intake itself. By contrast, pollutant loads produced by highway runoff would be located extremely close to both the reservoir and intake, potentially making the delivery ratio much greater. **Schueler Report at 2.**

6. In summary, the combined effect of the above flawed assumptions is to dramatically minimize pollutant loadings from the highway project while at the same time dramatically maximizing the pollutant loadings from the watershed. **Schueler Report at 2.** The desktop pollutant loading analysis contained in the Black & Veatch report is inadequate, and is misleading with respect to the potential threat to the drinking water supply. The risks can only be scientifically analyzed by using a watershed and reservoir simulation model to accurately track the sources, pathways, and risks of various pollutants to the reservoir. **Schueler Report at 2-3.**

7. The proposed stormwater treatment system is inadequate; it cannot reliably provide the claimed annual

removal rate for sediment or other stormwater pollutants. The proposed stormwater system would appear to rely on the use of wet ponds to treat runoff at each of the 16 pour-over points to the watershed. **Schueler Report at 3.** Given the extremely small size of the ponds, it would be difficult, if not impossible, to achieve the desired sediment removal rates. **Schueler Report at 4.** In fact, the suggested criteria for the ponds would result in the untreated bypass of about 30% of the annual runoff volume to the ponds. It is important to note that the small treatment volume of such ponds would not be acceptable if a private developer were to submit such a proposal to Albemarle County, given the watershed protection and stormwater ordinance adopted in 1998. **Schueler Report at 4.**

8. The Black & Veatch report also makes the unsupportable assumption that the treatment system could achieve the equivalent removal rate for all other pollutants in stormwater runoff as that achievable for sediment removal. Sediment is the easiest pollutant to remove from urban stormwater, however, and most other pollutants have average removal rates much lower than 50%. **Schueler Report at 4.** The repeated assertion in the Black & Veatch report that the stormwater treatment system can achieve between a 50% to 70% removal rate for all stormwater pollutants cannot be justified whatsoever. **Schueler Report at 4-5.** The supplemental treatment methods suggested (oil/grit separators, sump pits, etc.) would not provide any additional treatment.

9. The proposed stormwater treatment system is also flawed because it has no redundancy in its design in case the ponds fail to work because of sediment accumulation, sediment release, lack of maintenance or other factors. Further, the duel use of the stormwater for spill containment and/or control is not appropriate. From an engineering standpoint, a spill containment system should be completely separate from the stormwater treatment system. **Schueler Report at 5.**

10. In sum, the proposed treatment system for stormwater is inadequate and should be scrapped. The supplemental EIS instead should provide detailed performance requirements for a stormwater treatment system that could meet specific numerical targets for long-term pollutant removal, with documentation that the measures proposed would meet these targets. **Schueler Report at 9.**

11. Further, the analysis of the effect of highway spills is limited. Among other things, the Black & Veatch report

incorrectly assumes that other existing roads within eight hours of the intake collectively would have a 2.2% annual risk of shut down. However, each potential source of spills is independent and additive as more lane miles are added in the watershed. **Schueler Report at 6.** Another shortcoming is that the report does not indicate what fraction of spills would occur during wet weather conditions when the effectiveness of the containment system would be greatly reduced. A spill analysis should also explicitly consider the collective quantity of all fuel and other automotive products that would be spilled. Further, the spill analysis should be based on extreme and not average conditions. The Black & Veatch report also assumes a 70% efficiency for the spill containment system that is unsubstantiated. No engineering models are provided to show that the spill containment system can meet this treatment threshold. **Schueler Report at 6-7.**

12. The Supplemental EIS should include a more extensive spill analysis model that considers both wet weather conditions and extreme events. The Supplemental EIS should also include a more extensive modeling analysis to demonstrate that any design of the spill containment system would actually work under a range of real world conditions. **Schueler Report at 9.**

13. With respect to the proposed Erosion and Sediment Control Plan, the Black & Veatch report outlines the "standard," "enhanced" and "maximum" measures to prevent soil erosion during construction. The estimated sediment removal rates for both the standard erosion and sediment control measures as well as the enhanced measures, however, are questionable. **Schueler Report at 7.**

14. Further, the primary impact of construction on the water intake of the reservoir would be plumes of turbidity that could interfere with drinking water treatment. Water utilities must reduce turbidity levels to less than one nephelometric turbidity units (NTU) in the finished water; yet construction sites typically can produce turbidity levels that range from 300 NTUs to 2,000 NTUs. Consequently, a major shortcoming that the supplemental EIS should explicitly address is how the highway project will influence turbidity levels in the reservoir. This analysis will require development of a simulation model that can simulate the movement of turbidity plumes through the reservoir. **Schueler Report at 7.**

15. In sum, none of the reviewed documents has adequately reviewed the risks, evaluated the treatment technologies or examined alternatives. **Schueler Report at 8.**

16. The Supplemental EIS should compute pollutant loads using hydrologic simulation models that can accurately account for the current and future land use distribution in the watershed, including source loading and management model (SLAMM) or hydrologic simulation program fortran (HSPF). This modeling effort should be peer-reviewed by outside modeling experts. **Schueler Report at 8.**

17. The watershed model also should explicitly simulate the pollutants of greatest risk to drinking water, including, among others, turbidity, PAH, TOC, chloride, soluble metals, MBTE and others. Nearly all of the pollutants in this list are extremely difficult to treat with conventional stormwater treatment practices. **Schueler Report at 8.**

18. The watershed model should be coupled with a reservoir model to evaluate the fate and dispersal of pollutants once they reach the reservoir. **Schueler Report at 8.**

To accurately evaluate the impacts of bypass on the reservoir, the supplemental EIS should address all of the issues set forth in Mr. Schueler's letter. We believe that, when a full and objective evaluation is made, the only rational decision will be to not build this bypass. We look forward to working with you on these issues. Thank you very much for your consideration.

Sincerely yours,

Deborah M. Murray
Senior Attorney

DMM/cs
Enclosure
cc: Chris Miller, Piedmont Environmental Council
Jolly de Give, Piedmont Environmental Council
Babette Thorpe, Piedmont Environmental Council
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6

Date: November 1, 2001

To: Deborah Murray
Southern Environmental Law Center
210 West Main Street, Suite 14
Charlottesville, VA 22902-5065

From: Tom Schueler
117 Ingleside Avenue
Catonsville, MD 21228

Re: **Comments on the Proposed Route 29 Bypass on South Fork Rivanna Watershed**
Black and Veatch Study [BV]
DOT FHA Environmental Assessment [EA]
Reevaluation of Environmental Impacts and Previous Env.Documents [RE]
Final Environmental Impact Statement Section 4(f)/106 Evaluation [106]

I have had the opportunity to review the above cited documents and, in the larger context, evaluate the probable impact of locating the proposed bypass in such close proximity to the intake of a public drinking water supply reservoir. My technical qualifications are provided in the CV which is appended to this memo. My comments are organized in five general areas, and my recommendations are provided at the conclusion of this memo.

A. The "desktop"highway and watershed stormwater load analyses are seriously flawed

All of the documents provided minimal effort to evaluate the potential risk of highway stormwater pollution so close to a drinking water intake. The most extensive analysis by BV consisted of a limited and seriously flawed desktop analysis that mis-characterizes the potential for pollutant loadings from the project to the reservoir. The basic conclusion of the BV analysis was that given the large size of the watershed and the small size of the project, the pollutant loads to be generated by the project were simply a drop in the bucket, and can be safely ignored [BV p. 1.3, 3.3, 3.35]. The desktop analysis, however, contains numerous assumptions and methods that cannot be technically supported, as shown below

A-1. The highway load analysis only computes a pollutant load from the 45 acres of the project that are considered impervious [BV page 1.21] The pollutant load from the remaining 143 acres of right of way associated with the project is assumed to be zero, which is clearly unsupportable. Pollutant loadings from the non-paved areas of the project will not be minor (much less zero) given the extreme soil compaction, high slopes, and vehicular pollutant deposition that occurs in the right of way.

A-2. The load analysis is extremely limited with respect to the highway pollutants of greatest concern to the drinking water utility. These pollutants include soluble metals (Cu, Pb, Zn) the family of PAHs compounds, MTBE, chloride, turbidity, pesticides, and total organic carbon. According to research, each of these pollutants is typically produced at higher levels in highway runoff (usually because of direct emissions from vehicles to the road surface; see highway runoff references at end of this

memo). In addition, acceptable levels of these pollutants in drinking water are very low, and will become even lower in response to recent and future drinking water rules issued under the Safe Drinking Water Act. Third, the current mix of watershed land use is not expected to produce significant loads of these pollutants, given their highway origin. Lastly, nearly all of the pollutants in this list are extremely difficult to treat with conventional stormwater treatment practices (cf section C-4).

A-3. The methods used to characterize the total load of pollutants from the watershed as a whole are seriously flawed [BV p. 123]. The method uses pollutant concentrations in watershed runoff [BV Table 1.6] that are essentially the same as used for highway runoff, despite the fact the watershed is 73% forested. Many of the average concentrations used to characterize watershed loadings [BV Table 1.6] appear inflated. For example, the watershed concentration of oil/grease is reported to be 16.8 mg/l; I am unaware of any primarily forested watershed in the U.S. that produces oil and grease at this concentration.

The BV method then uses these inflated "storm-based" concentrations and multiplies them by the total annual flow of the South Fork of Rivanna River, despite the fact that a significant fraction of the river's flow consists of baseflow (or non-storm events) during the course of the year. Pollutant loads during baseflow periods are usually one to two orders of magnitude lower than during storms. Consequently, the BV method overestimates annual watershed loadings.

A-4 The last questionable assumption involves the use of a delivery ratio for stormwater pollutants used in the BV analysis The delivery ratio for highway pollutants implies that only 37% of the highway runoff loads would reach the reservoir (BV p.1-22), but assumes that 100% of the loads produced in the watershed would reach the reservoir [BV p. 1-23]. One would expect that watershed loads would have a lower delivery ratio given that they must travel a much greater distance to get to the reservoir, and then must travel an even longer distance to arrive at the intake itself. Consequently, watershed pollutant loads have a greater chance to be settled, diluted or otherwise reduced prior to their arrival at the intake. Taken together, travel times for watershed pollutant loads are on the order of days or weeks.

By contrast, pollutant loads produced by highway runoff are located extremely close to both the reservoir and intake. According to BV report [Table 2 7, p. 2.28] runoff takes from three to 45 minutes to reach the reservoir (depending on the pour-over point), and then arrive at the intake within 4 to 15 hours.

Summary: The combined effect of these assumptions is to dramatically minimize pollutant loadings from the highway project while at the same time dramatically maximizing the pollutant loadings from the watershed In my professional opinion, the desktop pollutant loading analysis contained in the BV report is inadequate, and is misleading with respect to the potential threat to the drinking water supply. This risk can only be scientifically analyzed by using a watershed and reservoir simulation

model to accurately track the sources, pathways and risks of various pollutants to the reservoir.

B. Study neglects the impact of highway management operations on pollutant loadings.

Two highway management operations, snow removal and vegetation management, can produce additional pollutant loads to the reservoir, which are not accounted for in the BV loading analysis or the stormwater mitigation measures [RE].

B-1. The BV load comparison makes no reference to the generation of pollutants as a result of snowmelt or application of deicing compounds. The EA, RE and 106 reports do not indicate how VDOT will manage the bypass in response to snow or ice. While it is acknowledged that the region does not get much snow or ice every year, the frequency of snow/ice events is likely to be much greater than the predicted spill risk of 2 to 4% per year. Recent studies indicate that pollutant concentrations generated by even a few lane miles of treated highway can be significant from the standpoint of drinking water quality, particularly for pollutants such as cyanide, lead, chloride, and total organic carbon (Novotny et al, 1999). Road salt (chloride) contains impurities such as cyanide, and as might be expected, the drinking water regulations for cyanide levels are extremely low. In addition, chloride levels affect the taste and odor of drinking water, and are regulated as such. Novotny et al (1999) also noted that performance of stormwater ponds declines dramatically during winter conditions, which suggests that control of highway snowmelt will be problematic so close to the reservoir.

B-2. The vegetation associated with the unpaved 143 acres of project right of way will need to be continuously managed by VDOT. It is unclear from any of the four documents whether VDOT intends to use herbicides to control vegetation as part of its regular maintenance of the bypass segments The EIS should directly address this issue, since the potential application (or misapplication) of pesticides so close to the intake could become a potential risk to the water supply.

C. The proposed highway stormwater treatment system is not "enhanced" and cannot achieve a 70% removal rate.

The documents provide some indications as to the proposed stormwater treatment measures to be used to control stormwater runoff quality from the highway site. The proposed stormwater system appears to be the use of wet ponds to treat runoff at each of the 16 pour-over points to the watershed [RE, p 24]. The B/V document, on the other hand suggests that half of the ponds would be wet ponds and half would be dry ponds. The ponds are also planned to serve as spill containment devices. The RE document also suggests that oil and grit separators, dry sumps and other measures might also be incorporated into the overall stormwater design [RE, p.25]. The conveyance system for the highway is also designed to direct all runoff to the stormwater ponds by using curbs, inlets and storm drain pipes. Temporary curtains would be installed during construction at outfall points, but would be removed after construction is completed. The size and design of stormwater wet ponds planned

for the project are essentially the same as required elsewhere in Virginia, but are assumed to have 70% removal rate for all stormwater pollutants [BV, p ES-iv, and 3.15]

In my professional opinion, the proposed stormwater treatment system cannot reliably provide a 70% annual removal rate for sediment or other stormwater pollutants, nor can it provide adequate protection to the drinking water supply, for the reasons described below:

C-1. The drainage areas to the proposed ponds range from a low of 0.8 acres to 34.2 acres in size, with a median drainage area of about nine acres. In the mid-Atlantic region, a minimum drainage area of 15 to 25 acres are needed to sustain a permanent pool of water and to achieve ideal removal rates in a wet pond (Schueler, 1987). Based on my rough sizing calculation, the average wet pond would be less than a quarter acre in size (assuming a six foot depth). Given their extremely small size, it will be difficult, if not impossible, to install forebays and other design features specified for the ponds [RE p.24], and achieve the desired sediment removal rates.

C-2. The stormwater treatment volume specified for the highway wet ponds (0.5 inches times impervious area, [BV- p3.14]) is too small to achieve the desired removal rates. This sizing criterion results in the untreated bypass of about 30% of the annual runoff volume to the ponds. These small ponds would not be acceptable in the County if a private developer submitted them in the watershed because of their small treatment volume, given the watershed protection and stormwater ordinance adopted in 1998 (Kitchell, 2001).

C-3 The standard highway wet pond is assumed to have a 50% capability to remove sediment according to BV [p. 3.14]. The authors make the unsupportable assumption that a 50% sediment removal capability will also achieve an equivalent removal for all other pollutants in stormwater runoff (see C-4, below) The BV report then increases the sediment removal rate from 50 to 70% as part of the proposed VDOT stormwater control measures [BV p. 3.15], despite the fact that the design and treatment volume of the wet ponds remains essentially unchanged. The supplemental treatment methods (oil/grit separators, sump pits, etc) provide no additional treatment improvement, based on recent performance research (Schueler and Holland, articles 65, 144, 119,120, 122). There is no scientific basis to boost the efficiency of ponds to this degree.

C-4 The assumed sediment efficiency of 50% for appropriately sized wet ponds is realistic [BV p. 3-14], and is supported by median data from the CWP national pollutant removal database, which contains over 135 individual performance monitoring studies from across the country (Winer, 2000). It is important to note, however, that sediment is the easiest pollutant to remove from urban stormwater Most other pollutants have average removal rates much lower than 50% (Winer, 2000). For example, median removal rates for wet ponds are reported to be 40% for phosphorus, 30% for nitrogen, 35% for BOD. Removal rates for chloride, DOC, soluble metals, diazinon, and MBTE are much lower or even negative for stormwater wet ponds. The removal of PAH compounds is variable, but is normally less than 70%. Consequently, the repeated assertion that the stormwater treatment

system can achieve a 50 or 70% removal rate for all stormwater pollutants cannot be justified whatsoever. [BV Es-iv,.3-14, 3-15].

C-5. The effectiveness of the treatment system will be further reduced if the stormwater plan reported by B/V are implemented (½ of the ponds would be wet ponds and half would be dry ponds). The performance of dry ponds is much lower than that of wet ponds, according to Winer (2000). This is because dry ponds have little capability to remove soluble pollutants which are the greatest risk to the drinking water supply.

C-6. The proposed stormwater treatment system has no redundancy in its design, in case the ponds fail to work because of sediment accumulation, sediment release, lack of maintenance, loss of capacity during construction, ice cover and other factors. The pond design should provide multiple cells with different treatment mechanisms to ensure that pollutants are effectively removed under all storm conditions. I am particularly concerned about the dual use of the stormwater treatment system for spill containment and/or control. Quite simply, the greatest risk of highway accidents will be during inclement weather, which is precisely when the highway is producing stormwater runoff to the ponds. It is hard to imagine how the ponds can serve for spill containment when they are also treating large volumes of stormwater. From an engineering standpoint, the spill containment system should be completely separate from the stormwater treatment system. The spill containment should be off-line and have no possibility of bypassing into the stormwater pond (where the spills will be extremely difficult to treat).

C-7. The proposed VDOT design for the stormwater treatment system [EA p.24] contains no specific numerical targets for performance consistent with its close proximity to a water intake. An enhanced design would utilize greater treatment volumes and employ innovative and redundant stormwater technologies to meet reliable treatment benchmarks, as described in recommendations 6 and 7 at the end of this memo.

D. Effect of highway on induced growth in the watershed (particularly near the intake) is not considered

The EIS needs to account for the potential for induced growth within the watershed as a result of the bypass and its two termini. This is extremely important given that land use control is the primary strategy that is being relied upon to protect drinking water quality. Significant areas of the 258 square mile watershed have been down-zoned to 20 acres per dwelling unit in order to maintain the forest and rural character of the watershed, and thereby protect the quality of drinking water (see Kitchell, 2001). These limitations to impervious cover are also the central element of more than 24 other watershed management reservoirs we have surveyed across the country (CWP, 2001). Currently, impervious cover is about 5 to 10% in the watershed, which is very close to the threshold for maintaining the purity of drinking water (see Kitchell and Schueler, 2001).

A project of the magnitude of the bypass and its terminii can be expected to change the regional pattern of residential, commercial or industrial development in the watershed. Even a small increase in total watershed impervious cover, can have a potentially major impact on the ability to provide a pure drinking water supply. Yet the various documents [BV,EA,106] are completely silent on this issue; the extent to which the highway bypass and its termini influences the location and density of future watershed development patterns is not analyzed from an environmental standpoint.

This is a real shortcoming, since both the EA and BV reports rely on the current watershed loadings to minimize the apparent impact of the highway bypass on the reservoir (see A-2-4), but do not account for how these loads will increase due to highway induced watershed development. It is accepted practice to calculate the additional pollutant loadings due to increased watershed development caused by the bypass in an EIS; this kind of analysis is now routinely performed on other highway projects in other states, such as Maryland, Vermont and Oregon.

E. Analysis of the effect of highway spills is limited

Reservoir managers across the country are acutely aware that highway accidents rank among the most potentially severe risks to public drinking water (Kitchell, 2001). Under current Source Water Assessment Plans, required under the 1997 Safe Drinking Water Act Amendments, spills and accidents from existing highways in the watershed are among the most frequently cited risks to a water supply. I had several comments on the spill analysis presented in the BV report.

E-1. First, the risk analysis shown in Table 3.5 [BV p.3-30] should include the risk of facility shutdown under the no-build alternative (which is zero). The BV document implies that a 2.2% annual risk of shutdown is acceptable, given that other existing roads within eight hours of the intake are collectively computed to have this risk. However, each potential source of spills is independent and additive as more lane-miles are added in the watershed (i.e., 2.2% + 2.3% = 4.5%).

E-2. The spill risk model has three important shortcomings. First, it does not indicate what fraction of accidents or spills would occur during wet weather conditions (when the effectiveness of the containment system would be greatly reduced, because ponds are also discharging stormwater). Second, it should explicitly consider the collective quantity of all fuel and other automotive products (anti-freeze, lubricants, etc) that will be spilled in the 30 estimated accidents that will occur each year in the bypass segment [BV p. 2-24]. The current spill model only evaluates the scenario of accidents of trucks carrying hazardous materials. Third, and most importantly, the spill analysis should be based on extreme conditions and not average conditions. As an example, the EIS should investigate the implications of a worst case scenario of the discharge of an extremely dangerous substance into the reservoir, and determine if the emergency response, spill containment or treatment plant operation practices could effectively deal with it. After all, catastrophes are not average events.

E-3. The effectiveness of the spill containment system appears to be undocumented, but assumes a

70% efficiency with the tanker traps. To quote from the BV report [p. 3.19] " for these reasons, it is estimated that the tanker traps will prevent plant shutdown 70% of the time. *This estimate is not based on existing data, since none was found, and there are too many unknowns to support theoretical calculation*" (emphasis added). Yet the 70% effectiveness estimates are henceforth used to bring the annual shutdown probability down from 11.3% or 16.7% (depending on traffic volume) to a 2.3% and 3.5 % risk, respectively. No engineering models are provided to show that the spill containment system can meet this high treatment threshold. Clearly, the EIS must provide more scientific support for such a fundamental conclusion than "engineering judgement" alone [BV p. 3.19].

F. Comments relating to the presumed effectiveness of the proposed erosion and sediment control plan.

The BV report outlines standard, enhanced and maximum measures to prevent soil erosion during the construction of the bypass. The standard erosion and sediment control plan is assumed to remove 50% of the eroded sediments during construction, while the enhanced measures, which are proposed by VDOT are projected to remove 77% of eroded sediments. Finally, the maximum measures involve pumping stormwater out of the watershed, with an assumed efficiency of 97% [BV p. 3.9 to 3.13] I have several comments to offer, particularly as my prior research on the effectiveness of sediment traps and basins was used in part to base some of the sediment removal estimates.

F-1. The primary impact of construction on the water intake of the reservoir would be plumes of turbidity that interfere with drinking water treatment. Water utilities must reduce turbidity levels to less than 1 nephelometric turbidity unit (NTU) in their finished water. Construction sites typically produce turbidity levels that range from 300 to 2000 NTUs (Schueler and Lugbill, 1990). Consequently, the EIS should explicitly analyze how the highway project will influence turbidity levels in the reservoir. This analysis requires development of a simulation model that can simulate the movement of turbidity plumes through the reservoir.

F-2 The BV report indicates that sediment removal rates for the "standard " erosion and sediment control measures will remove 50%, based partly on my prior research which indicated that sediment traps and basins can remove 46% of eroded sediments (Schueler and Lugbill, 1990). The six sites that we monitored in the 1990 study not only included sediment basins and traps, but fairly aggressive erosion controls as well These practices included construction phasing, storm drain inlet controls, rapid seeding and mulching, silt fence, dikes, and soil stockpiling controls. The sites were also inspected on a weekly or biweekly basis. Even with these practices, the construction sites still had average turbidity levels very close to 300 NTUs in their outflow (TSS levels were also above 200 mg/l). The combination of erosion and sediment control measures used at our test sites more closely resembles the "enhanced" measures outlined in the BV report [p. 3.11]. Based on my research, I do not believe that the "enhanced measures could exceed a 50% removal of sediment, and they would be even less efficient in reducing turbidity levels from the construction sites.

F-3. The EIS should investigate a number of new erosion and sediment control practices developed and tested in the last few years that could achieve higher sediment removal and turbidity reduction levels. These include application of polyacrylimide (PAM) mixes to stabilize soils, use of new design features in sediment basins, such as skimmers, and PAM dosers, super silt fences, and on-site ESC inspectors.

Recommendations

A decision to locate a highway so close to a drinking water intake presents a potential risk to public health and safety, and requires an extraordinary commitment to implement practices to prevent contaminants from entering the reservoir. Several water supply systems, such as New York and Boston, have reviewed the risks and evaluated current treatment technology, and concluded that new or expanded highways should not be located adjacent to a water supply reservoir (see Kitchell, 2001).

In my professional opinion, the four documents I have reviewed about the bypass have not adequately reviewed the risks, evaluated the treatment technologies, or examined alternatives. The EIS process should be based on stronger science and engineering, and at a minimum, should consider implementing the ten recommendations outlined below:

R-1) The EIS should compute pollutant loads using hydrologic simulation models that can accurately account for the current and future land use distribution in the watershed. Examples include the source loading and management model (SLAMM), or hydrologic-simulation program fortran (HSPF).

R-2) The modeling effort should be peer-reviewed by outside modeling experts to ensure that modeling assumptions are truly conservative.

R-3) The watershed model should explicitly simulate the pollutants of greatest risk to drinking water (TP, turbidity, PAH, TOC, chloride, soluble metals, MBTE and others) so that a fair comparison can be made of the highway project.

R-4) The watershed model should be coupled with a reservoir model to evaluate fate and dispersal of pollutants once they reach the reservoir The reservoir model helps managers determine what actually happens to pollutants in the reservoir, and can assess the relative probability that they will reach the water intake. This is important since the watershed and highway pollutant loads are introduced to the reservoir at different points The reservoir model should have both vertical and horizontal segmentation, so that the migration of pollutants through the lake and from the highway can be assessed relative to the intake The appropriate model simulation would be to directly compare watershed pollutant loadings that actually arrive at the last reservoir segment, with those that arrive from the 16 pour-over areas related to the highway project. The reservoir model will be indispensable to simulate plumes of stormwater pollutants and/or potential spill events, and are essential for both risk assessment and spill contingency planning.

R-5) The EIS analysis should directly consider pollutant loadings that are directly produced by VDOT highway management scenarios (i.e, snow removal, deicing compounds, and pesticide application in the right of way, etc.).

R-6) The proposed stormwater treatment system should be scrapped. Instead, the EIS should provide detailed performance requirements for a new stormwater treatment system that can meet specific numerical targets for long term pollutant removal to safeguard the water supply. These targets might include documentation that the system can achieve 90% TSS and PAH removal, 70% TP and metals removal, and at least 50% removal of chloride, nitrogen and dissolved inorganic carbon. These removal rates are clearly at the edge of current stormwater treatment technology, but are reasonable and prudent to safeguard a drinking water supply.

R-7) To achieve these rates, highway designers may wish to consider the following:

a) at least three treatment cells for each pour over, each of which utilizes a different treatment technique (filtration, detention, wetlands),
b) increase the total volume of stormwater treatment for each pour over to three times its current size, in order to capture 95% of all runoff producing storm events,
c) locate spill containment devices off-line and with sufficient capacity for a full tanker spill,
d) ensure that the outlet controls for the containment device and stormwater treatment allow for shutoff, diversion and rapid manual operation.

Additional stormwater research and laboratory monitoring may be needed to justify the design of such a system

R-8. The EIS should contain an extensive analysis on the effect of highway induced growth on watershed development patterns, using watershed impervious cover as the major indicator of water quality change.

R-9 The EIS should include a more extensive spill analysis model that considers both wet-weather conditions and extreme events

R-10 The EIS should present a more extensive modeling analysis to demonstrate that the design of the spill containment system will actually work under a range of real world conditions.

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COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

EARL T. ROBB
STATE ENVIRONMENTAL ADMINISTRATOR

November 21, 2001

Ms. Deborah M. Murray
Senior Attorney
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902-1483

Subject: Route 29 Charlottesville Bypass
State Project: 6029-002-F22, PE101; RUVA-002-001, PE101
Supplemental EIS
Reservoir Issues

Dear Ms. Murray:

Assistant Commissioner, Mr. Jeffrey Southard passed along a copy of your November 2, 2001 letter for our use in preparing the Supplemental Environmental Impact Statement (SEIS) for this project. In the letter, you raise several issues on which we would appreciate additional information or clarification.

You note that your consultant has prepared a critique of the Black & Veatch study. Please provide us a copy of your consultant's report at your earliest convenience so that we can include it in the data we are reviewing for the SEIS. In particular, we would like to know:

- Which assumptions in the Black & Veatch study are flawed and why they are flawed.
- The basis for recommending the models SLAMM and HSPF rather than other models that has been, or could be used, for this watershed and reservoir. If your consultant has actually run these models for the project area, we would appreciate receiving the results. An analysis of the capabilities, data intensiveness, and accuracy of the models, as well as the advantages and disadvantages of each model, would be helpful.
- The basis for statements regarding the pollutant removal efficiencies of control measures. Are these based on values from the literature; if so, which sources? If these are based on research conducted by your consultant, we would appreciate receiving a copy of the data and findings.
- What suggestions your consultant has regarding how to physically separate the stormwater treatment system from the spill containment/control system.

Thank you for your input on this matter.

Sincerely

J. Mark Wittkofski
Environmental Specialist II

WE KEEP VIRGINIA MOVING

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
87 DEACON ROAD
FREDERICKSBURG, VA 22405

CHARLES D. NOTTINGHAM
COMMISSIONER

DAVID E. OGLE
DISTRICT ADMINISTRATOR

December 12, 2001

Mr. Charles Martin
Chairman, Board of Supervisors
Albemarle County
401 McIntire Road
Charlottesville, Virginia 22902

RE: Route 29, Charlottesville Bypass

Dear Chairman Martin:

In our most recent correspondence with you dated November 30, 2001, the Virginia Department of Transportation (VDOT) outlined the scope of work for the Supplemental Environmental Impact Statement (SEIS) required by the U.S. District Court. Included in this scope of work were additional archaeological studies in the footprint of the northern project terminus. Federal regulation offers local governments the opportunity to participate in consultation concerning the potential effect of this project on historic properties (properties listed in or eligible for listing in the National Register of Historic Places). In accordance with 36 CFR Parts 800.2(c)(3) and 36 CFR 800.3(f)(1), you are hereby invited to participate as a consulting party in any consultation conducted for this project in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470).

As part of the Section 106 consultation for this project, VDOT is forwarding the enclosed report entitled *Archaeological Identification Survey, Route 29 Bypass, Albemarle County, Virginia.* The report was written by John J. Mullin of The Louis Berger Group, Inc. and meets the standards set forth in both the Secretary of Interior's Standards and Guidelines (1983) and the Virginia Department of Historic Resource's Guidelines for Preparing Identification and Evaluation Reports (1992). We have also included a copy of VDOT's conveyance letter to the Virginia Department of Historic Resources (VDHR).

Please direct any written comments regarding the enclosed materials to my attention within 30 calendar days of receipt. Should you have any questions, please feel free to contact me at 540-899-4140.

Sincerely,

Jacqueline Hernigle Keeney
Preservation Program Manager

Cc: D.R. Askew, VDOT
J.M. Wittkofski, VDOT
S. Tyler, Parsons

TRANSPORTATION FOR THE 21ST CENTURY

COMMONWEALTH *of* VIRGINIA

DEPARTMENT OF TRANSPORTATION
87 DEACON ROAD
FREDERICKSBURG, VA 22405

CHARLES D. NOTTINGHAM
COMMISSIONER

DAVID E. OGLE
DISTRICT ADMINISTRATOR

December 12, 2001

Hon. Blake Caravati
Mayor of Charlottesville
1108 Little High Street
Charlottesville, Virginia 22902

RE: Route 29, Charlottesville Bypass

Dear Mayor Caravati:

In our most recent correspondence with you dated November 30, 2001, the Virginia Department of Transportation (VDOT) outlined the scope of work for the Supplemental Environmental Impact Statement (SEIS) required by the U.S. District Court. Included in this scope of work were additional archaeological studies in the footprint of the northern project terminus. Federal regulation offers local governments the opportunity to participate in consultation concerning the potential effect of this project on historic properties (properties listed in or eligible for listing in the National Register of Historic Places). In accordance with 36 CFR Parts 800.2(c)(3) and 36 CFR 800.3(f)(1), you are hereby invited to participate as a consulting party in any consultation conducted for this project in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470).

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Sincerely,

Jacqueline Hernigle Keeney
Preservation Program Manager

Cc: D.R. Askew, VDOT
J.M. Witkofski, VDOT
S. Tyler, Parsons

TRANSPORTATION FOR THE 21ST CENTURY

K.2 PUBLIC COMMENTS

Comments from citizens and others from various public meetings and hearings are listed in the following tables. Only those that are relevant to the issues of this SEIS are included. Most expressed nonspecific concerns about the watershed, the Reservoir, or the water supply. Also included is a table of comments extracted from the Administrative Record for the project. Comments received at the March 14, 2002 public hearing on the Draft SEIS are contained in **Appendix L.**

K.2.1 Location Public Hearing for Route 29 Corridor Study

On June 26, 27, and 28, 1990, Location Public Hearings were held to present the findings of the studies on the alternatives considered and their comparative environmental impacts and to receive comments. The Draft EIS was available for public review along with various technical reports and other supporting data. A total of approximately 645 people attended these hearings. **Table K-1** shows comments received at the hearings relating to the South Fork Rivanna River Reservoir.

Table K-1
COMMENTS RECEIVED ABOUT SOUTH FORK RIVANNA RIVER RESERVOIR AND THE WATERSHED AT JUNE 1990 LOCATION PUBLIC HEARINGS

Name	Comment
Beattie, Peggy	Opposed to any bypass due to the possible pollution of the public water supply.
Carr, David Jr.	Concerned about impacts of western bypass routes on the water supply Reservoir for Charlottesville and Albemarle County, construction impacts of stream crossings, and the potential for toxic spills at the crossing of streams that flow into the Reservoir.
Carr, George	Consequences to aquatic and water resources are not well defined. The projected wetlands impacts do not appear to be realistic.
Coleman, Robert	Alternative 11 runs along Naked Creek, which drains directly into the Reservoir.
Crigler, Anne	Opposed to any bypass due to the possible pollution of the public water supply.
Crutchfield, Dale	Opposed to any bypass due to the possible pollution of the public water supply.
Fennell, Gloria	Opposed to any bypass due to the possible pollution of the public water supply.
Freestone, Harry	Opposed to any bypass due to the possible pollution of the public water supply.
Haviland, John and Eleanor	Opposed to any bypass due to the possible pollution of the public water supply.
Hord, R. Anderson	Opposed to any bypass due to the possible pollution of the public water supply.
Jansen, A.P.	Opposed to any bypass due to the possible pollution of the public water supply.
Layne, Cherise	Opposed to any bypass due to the possible pollution of the public water supply.
Leitch, James	Opposed to any bypass due to the possible pollution of the public water supply.
Martin, Bruce	Opposed to any bypass due to the possible pollution of the public water supply.
Riccio, Diane	Opposed to any bypass due to the possible pollution of the public water supply.
Opal, David	Opposed to any bypass due to the possible pollution of the public water supply.

K.2.2 Location Public Hearing for Termini Modifications

In February 1995, an additional Location Public Hearing was held to present the findings of further study that was necessary due to changes in design at the southern and northern termini. Approximately 600 people attended. **Table K-2** lists the comments pertaining to the Reservoir and its watershed that were received at this hearing.

Table K-2
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1995 LOCATION PUBLIC HEARING

Name	Comment
Beattie, Daniel J.	The shift greatly increases the threat to the water supply.
Casey, Leo J.	The move will introduce new hazards to the water supply.
Dubovsky, James	The shift will increase the amount of pollutants that drain into the South Fork Rivanna River.
Groschel, Dieter and Margaret	The shift seems to have more impact on the water supply.
Murray, Jean	The water below the dam still drains into the Rivanna River and then into the Chesapeake Bay. Pollution will contaminate the bay.
Pancake, Edwina	Much more of a chance of damaging the water supply, either during construction or through a spill.
Paul, Marjorie H.	The bypass is still too close to the watershed. Build the bypass to the east of town.
Robinson, Linda M.	What is being done to protect the water supply?
Rooker, Dennis S.	The county has been working for a long time to preserve and enhance the water quality of the South Fork Rivanna River Reservoir. The bypass will nullify this effort.
Shelburne, Anita	Despite concerns about the watershed and the road crossing the watershed and the Rivanna River, this option is clearly better.
Siegel, Marjorie	It goes through so much watershed – this is a big consideration.
Slaughter, Kay	I am concerned about the Reservoir – I would prefer a terminus south of the Reservoir.
Strickler, Diana H.	I am worried about the impact on the South Fork Rivanna River Reservoir.
Fountain, Doris	No bypass through the watershed.
Paul, Marjorie M.	Build the bypass to the east of town so as not to affect the water supply.
Preston, Mary Lyle	Do not impact the watershed with a highway that we do not need.
Ivy Creek Foundation	The road will degrade the water quality of the Reservoir.
Keukenhof, Lisse-Holland	A bypass will threaten the watershed.
Chassman, Neil and Lana	Watershed concerns make the bypass ecologically questionable.
Clawson, James G.	Move the road to the west to be a real bypass – the road can be built to contain a spill. The new northern terminus also involves crossing the Rivanna River, so although this is below the dam and therefore appeases some who worry about Charlottesville water, it does little to assure those living downstream.
Anonymous	Why is the state building a road that will threaten our water supply?
Anonymous	Runoff from the road will drain directly into the Reservoir.
German, Eugene M.	I oppose the bypass because a toxic spill could leave 70 percent of our residents without water.
Huckle, Mrs. John (Babs)	A bypass will endanger the water supply.
Hoffman, K.B.	Whatever you do, do not run a bypass through the watershed.
Johnson, Walter F.	The Meadow Creek Parkway would not have an impact on the Reservoir watershed.
Macko, Faylene M.	I am deeply concerned about the water resources of this county.
Martin, Ramsey	I oppose the bypass – the watershed would be compromised.
Nuechterlein, Donald	The bypass will endanger the watershed of this area.
Myers, J.P.	The bypass will put the water at risk.
Smith, Gene E.	Anything that negatively impacts the Reservoir should not be implemented.
Vest, Charles and Andrea	The risk of harm to our water supply from this road is obvious.
Strickler, Richard S. Jr.	The risk of harm to our water supply from this road is obvious.
Wolfe, Dr. John F.	I support a road that runs over the Reservoir.
Zurbell, John and Charlotte	The Reservoir and watershed concerns seem greatly exaggerated.

Table K-2
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1995 LOCATION PUBLIC HEARING

Name	Comment
Fitzgerald, Florence	The issue of the water supply has never been addressed.
Humphris, Robert R.	I oppose any new road in the watershed.
Johnson, Vivien R.	The road impacts the watershed – the changes are not an improvement.
Lapp, Ervest Jr.	Potential impact to watershed needs to be considered.
Lasly, Hortense D.	The northern terminus is too close to the river and will impact the watershed.
Preston, Mary Lyle	The impact on the watershed would be injurious.
Siegel, Marjorie	There should be no roads through the watershed.

A group or individual distributed a preprinted postcard at this hearing listing several statements that indicated opposition to the Bypass. One of these items was: "I oppose a western bypass passing through 4.2 miles of the Reservoir's watershed where a toxic spill could leave 70 percent of our citizens without water." The record contains approximately 650 of these postcards submitted by individuals. The record includes several more of these postcards with the Reservoir item crossed out by hand.

K.2.3 March 1996 Citizen Information Meeting

In March 1996, a Citizen's Information Meeting was held to present four design alternatives for the Bypass. Approximately 524 people attended, and their comments, as they relate to the Reservoir and watershed, are presented in **Table K-3**.

Table K-3
RESERVOIR AND WATERSHED COMMENTS, MARCH 1996 CITIZENS INFORMATION MEETING

Name	Comment
Webber, Jodie	Concerned that Alternative 4 might be too close to Reservoir.
Koch, Walter	Reservoir should be protected no matter what alternative is selected.
Keeney, Paula	All alternatives are too close to the Reservoir and compromise the water supply.
Owen, John A. Jr.	Danger to Reservoir and water is overwhelming.
Gomaa, Amanda	I like Alternative 3 over Alternative 4 because it is not as close to the Reservoir.
Gomaa, Hassan	Alternative 4 is too close to the Reservoir.
Huckle, Dr. John	Hydraulic Road interchange will threaten Reservoir. *[Note: no interchange is planned at Hydraulic Road.]*
Beattie, Peggy	Alternative 4 seems to impact the Reservoir a lot.
Beattie, Dan	Alternative 4 will threaten water quality more.
Hewett, Harry C. Jr.	A Barracks Road interchange will damage or destroy our water supply. *[Note: no interchange is planned at Barracks Road.]*
Schmid, Jack and Beth	I like Alternative 4 because it is farthest from the Reservoir.
Garwood, Bob and Rochelle	Alternative 3 seems to stay the farthest to the east of the watershed at the northern end.
Moore, Mrs. Bedford	Alternative 4 would create the most problems in the watershed.
Albert, Kirsten	Alternative 4 protects the Reservoir.
Mallek, Kate	Just one accident can destroy the water supply of Charlottesville. A road that is entirely in the watershed is just asking for a disaster.
Larie, Janet	Why build a bypass that endangers the watershed?

Table K-3
RESERVOIR AND WATERSHED COMMENTS, MARCH 1996 CITIZENS INFORMATION MEETING

Name	Comment
Cooper, Phil and T.A.	Alternative 4 impacts the Reservoir too much.
Huckle, Jacqueline	Protection of the Reservoir affects all of us so concentrate on Reservoir preservation. A good quality of Alternative 3 is that it moves the road away from the water treatment plant intake.
Humphris, Robert R.	Against any bypass in the watershed.
Mallek, Ann	A traffic accident will occur that will poison the water supply and make everyone leave Charlottesville.
Mallek, Laura K.	Water will be polluted by an accident.
Dijer, Jean H.	All of the alternatives will put our water supply at risk.
Watson, Sandra	The road will endanger the water supply.
Nuechterlein, Donald	Project is a major hazard to the Reservoir – a spill will contaminate it.
Wiedman, Susan	We are concerned about the water supply should a major spill occur.
Cooper, Terri	Alternative 4 would be disastrous to the watershed.
Rivanna Water and Sewer Authority	Try to keep as much of the road out of the South Fork Rivanna River Reservoir drainage area as possible. Alternative 2 does not seem to do this very well. Alternative 4 seems to have some good measures to avoid the Reservoir but these measures need to be detailed, such as how runoff would be collected. More detail also needs to be developed as to how a spill would be contained.
Citizens for Albemarle, Inc.	The proposed interchanges at Barracks Road and Hydraulic Road will threaten the Reservoir. We oppose construction of any bypass in the watershed, but adding these two interchanges will make the threat to the watershed even worse than it would be without them. The interchanges will be a location for accidents, and will encourage development and growth in the watershed. *[Note: no interchanges are planned at Barracks Road or Hydraulic Road.]*
Weber, Dr. Lewis	Alternative 2 does not seem to be good for the Reservoir. Alternative 4 seems to be better in this respect. I would support Alternative 4 as the route for the bypass.
Porter, Hershall	The Alternative 4 path seems to be worse than the original Alternative 10 path in terms of watershed protection. It seems like there will be lot of runoff from Alternative 4 into the Reservoir.
Martin, Ramsey	The proposed interchanges at Barracks Road and Hydraulic Road will spur growth, which will be bad for the Reservoir. *[Note: no interchanges are planned at Barracks Road or Hydraulic Road.]*
Strassburg, Thomas M.	The bypass should be kept as far away from the Reservoir as possible. Alternative 2 does not do this.
Strickler, Diana H.	The Barracks Road and Hydraulic Road interchanges will pose a threat to the Reservoir. Please do not build them. *[Note: no interchanges are planned at Barracks Road or Hydraulic Road.]*
Midyette, Shirley	The bypass will damage the Reservoir. Roads can be placed in many locations; water resources cannot be moved.
Slaughter, Edward R. Jr.	The bypass would have made a lot of sense if it was built before the Reservoir was built.
Webber, Lewis	I like Alternative 4 better than Alternative 2 because it stays farther away from the watershed.
Paul, Marjorie Maupin	The interchanges will threaten the watershed. *[Note: interchanges are planned only at the project termini, both of which are outside the boundaries of the Reservoir watershed.]*

The comment sheet provided for citizens to give their input at this meeting contained a series of design criteria for respondents to check to indicate which specific criteria were important to them. One of these was "Reservoir/water quality." The above respondents may or may not have checked this box. However, an additional 119 individuals checked the box, but made no other comments about the watershed. Finally, 309 individuals signed a petition opposing the construction of interchanges at Barracks and Hydraulic Roads as part of the Bypass design. The proposed design does not include interchanges at these locations.

K.2.4 July 1996 Citizen's Information Meeting

In July 1996, VDOT held a public meeting to present the preferred Bypass design alternative to be carried forward into the next stages of the design phase. The meeting was attended by approximately 497 people and comments concerning the watershed and the Reservoir are shown in **Table K-4**.

Table K-4
RESERVOIR AND WATERSHED COMMENTS, JULY 1996 CITIZEN'S INFORMATION MEETING

Name	Comment
Huck, Roland	We need more information about how runoff will be managed and how the Reservoir will be protected.
Kenney, Ronald	Insufficient protection of the Reservoir in the design.
Kudrick, Tina	More information is needed as to how the bypass will affect the Reservoir.
Huckle, Dr. John	Concerns about the safety of the Reservoir.
Keeney, Paula M.	Bypass will pollute the Reservoir. Bypass should not be built anywhere near the Reservoir.
Edwards, M.W.	The road's proximity to the Reservoir.
Preston, Mary Lyle	Route is dangerously close to the watershed.
Opal, David D.	Road will impact watershed.
Thorup, Oscar A. Jr.	Bypass should be routed to the east of the city and avoid the Reservoir.
Humphris, Robert R.	Watershed protection techniques are lacking so far.
Rooker, Ann R.	Every measure should be taken to protect the Reservoir.
Lentlson, F.R.	Too much is being made of the road location and the watershed.
Larie, George	I do not like the proximity of the road to the water supply.
Richardson, Rebecca	Water pollution concerns.
Robinson, Linda	Reservoir pollution concerns.

K.2.5 Design Public Hearing

A Design Public Hearing was held by VDOT in February 1997 to gather comments on the preferred design alternative. The meeting was attended by approximately 1,636 people and generated more than 540 comments. Those related to the watershed and the Reservoir are presented in **Table K-5**.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Badderly, W.G.	How will construction of the bypass and heavy trucks on it affect our drinking water supply?
Neligan, Susan	I'm totally against the bypass, which will affect our environment and our water.
Mellon, DeForest	After numerous court battles fought and won by the County of Albemarle years ago to acquire and then to protect the South Fork Rivanna River Reservoir watershed, the western bypass will now place this source of drinking water for the City of Charlottesville and neighboring county neighborhoods in immediate jeopardy from hazardous materials spills.
Caravati, Blake	Concerned with the design of the road and its possible impacts to the watershed.
Chapman, James L.	There seems to be a total disrespect for the water supply for the City of Charlottesville and portions of Albemarle County.
Skalak, Tom	The bypass will endanger the watershed that supplies 60,000 people with clean water.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Tisdelle, George William	I think there's a lot of risk associated, including the water systems.
Bieker, Daniel	I think it poses an undue environmental threat to the Reservoir and the quality of water.
Thorpe, Babette (PEC)	Over the past 20 years, Albemarle County has fought and won battle after battle to protect the city and county's drinking water supply. Now VDOT wants to run a four-lane, 55-mph highway through the watershed within 700 feet to 1,000 feet of the Reservoir itself.
Christoferson, Herbert	I do not think that sufficient consideration was given to the watershed and the Reservoir.
Glassner, Hardy	I'm very concerned about the impact on the water system in this area. We already have a very limited amount of water as it is, and it doesn't appear that you're meeting any of the environmental guidelines set by the federal government regarding water.
Cooper, Martha	Opposed to building a 6-mile road through the heart of town and over the Reservoir.
Myers, Eliza	The project will hurt our water supply.
Andrews, Cheryl	If one has to be built, it looks like going way east of Charlottesville, at least ten miles out, is best; it doesn't affect our watershed.
Abbey, Will	I am concerned about the water impact.
Dame, Karen (Citizens for Albemarle)	The land your road intends to deface is the watershed of that lovely community. With this 29 Bypass, the State of Virginia seeks to do that which local landowners have been prevented from doing by the downzoning of their land – that is, threatening the integrity of our water supply.
McLean, Caroline	I am extremely concerned about our watershed.
Caperton , Nancy	I'm opposed to it being close to the Reservoir.
Dean, Henry	Concerned about possibility of vehicle carrying chemicals turning over and dumping them into these tributaries and going into our drinking water for the city.
Pelton, Louise	The Reservoir along Woodburn would be more contaminated with road salt, oil, and runoff from the road and will pollute the Reservoir even more. I think the county should be particularly concerned about the cost to them when current homes' groundwater wells are ruined from the runoff of the roads and they will be obligated to provide public water at a great cost to these homes.
Dudley, Martha	It will leave irreversible environmental impacts as it careens dangerously close to a Reservoir used for the area's drinking water.
Walker, Pam	The road will impact 4.2 miles of our water resources, which could leave sixty thousand people with no drinking water.
Moore, Milton B.	Opposed to the bypass because of its severe impacts to the Reservoir and watershed. The FEIS does not adequately address these issues.
Summers, Robert Lee Sr.	We do not want to jeopardize our water supply.
Fowler, Mary Lou	We feel that it is a serious threat to the Reservoir.
Beattie, Peggy	I think the residents of the City of Charlottesville have the potential to be adversely affected by the bypass because of impacts to the Reservoir.
Fitzgerald, William G. Jr.	In the north, it is so close to the Reservoir that the roadway will cause erosion into the deepest part of the Reservoir (the eastern sector). Any spillage from trucks could cause a catastrophe to the entire region.
Mead, Jenny	I am against the bypass because I believe that it will destroy so much about Charlottesville from the environment to the water supply.
Poist, David	The water quality that serves the whole community, the city and the county has been disregarded in the design.
Niehaus, Robert F.	There are minimal benefits compared to exposure of our major public drinking water source, the South Fork Rivanna River Reservoir.
Rust, Bob	Whenever you are dealing with an environmental issue like the South Fork Rivanna River Reservoir, you want to minimize the impact.
Wheeler, John	Put the road somewhere that it doesn't have any threat on our water supply.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Anonymous	It will leave irreversible environmental impacts as it comes dangerously close to a Reservoir used for the area's drinking water. It crosses over 4 miles of watershed and brushes the edge of an endangered Reservoir for a mile and a half.
Charlottesville-Albemarle MPO	The proposed Rt. 29 Bypass passes through 4.2 miles of the South Fork of the Rivanna River watershed, posing a threat to the primary source of drinking water for the citizens of Charlottesville and Albemarle County.
Faulkner, Harry	You need to build it farther away from the Reservoir, or, at least, construct the thing in such a way to be able to ensure no substance spilled from a truck will contaminate the water.
Somers, Robert	Runoff from the highway into the South Fork Rivanna River Reservoir watershed.
Carpenter, David	Watershed safety – particularly spills, toxic waste, etc.
Kayhoe, Matthias E.	This road should not be located adjacent to the Reservoir.
Holland, Linda	The Rivanna River watershed area.
Scully, JoNeal	Concerned about the ravine to be filled above the Reservoir.
Stroud, Kitty C.	Proximity to watershed.
Stoke, Sue	Water Reservoir.
Unknown	Watershed.
Meyer, Elizabeth	You are simulating nature's most meager of characteristics (green veneer) while destroying the real thing (the Ivy Creek watershed, urban neighborhoods, etc.).
Kirwan, Donald	Reservoir.
Garrison, James C.	Road will ruin the area between the Reservoir and U.S. 29 and not fix the traffic problem.
Cass, Cynthia	Road is too close to Reservoir.
Fitzgerald, Kenneth R.	Reservoir, watershed area.
Cavitt, Hugh	The near exposure to the Reservoir cannot be adequately addressed.
Sandlin, Mac	Watershed, Reservoir impacts.
Bates, Michael	Runoff near Reservoir.
Luger, Frances	Reservoir.
Rochester, Lois	We must safeguard our water supply.
Knight, June D.	Damage to water supply.
Keeney, Paula	This proposed highway passes through 4 miles of watershed for the community's drinking water. This is unacceptable when it means the quality of drinking water for 100,000 people.
Schenk, Christine	Water pollution.
Fitzgerald, Florence	This project severely jeopardizes Albemarle County's and Charlottesville's already fragile water supply.
Brust, Robert	Running parallel to the Reservoir is an unacceptable risk.
Seelye, Jack	Reservoir watershed.
Haffner, John	Watershed runoff into the Reservoir.
Davis, Coralee	Very concerned regarding impact on the Reservoir. One tractor-trailer spill spells disaster.
Sims, Sallie	Too close to our Reservoir.
Gibson, David	Watershed.
Moncrief, C. Herbert	Watershed.
Gibson, Mark and Anne	Watershed.
Mark, Earl	Watershed.
Morley, Alfred	Water supply.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Crosby, Linda	Threatens our water system.
Owen, John A. Jr.	Potential for Reservoir contamination.
Lawson, Nancy	Watershed.
Prillaman, Zanpha	Reservoir.
Bottomer, Albert	Water supply pollution.
Kelsey, Robert L.	Water supply pollution.
Bottomer, Marjorie	Water supply pollution.
Kelsey, Marion	Endangerment to our water supply.
Johnston, Robert C.	South Fork Rivanna River Reservoir.
Dussaud, Friederike	Water supply pollution.
Horn, J.L.	Water supply pollution.
Dussaud, Claude	Water supply pollution.
Thelpe, Gordon	Water supply risk.
Phelps, John	Impact to water supply.
Hymes, Dell H.	Watershed and Reservoir.
Hogan, Pat	Danger to water supply.
Mikkelsen, Mary	Bypass is bad for the Reservoir.
Riley, Kathleen	Rivanna River and Reservoir.
Wood, Eldon	Reservoir contamination.
McIntosh, Carol	Why build over Charlottesville's watershed?
Schmitz, Eric	The Reservoir.
McLean, Steven	How do you limit trucks that might carry pollutants from using the bypass? Trucks that could very well spill into our drinking water.
Kowler, Richard S.	Watershed concerns.
De Koven, Louise Pelton	Reservoir along Woodburn will be more contaminated from road salt, oil, etc.
Quarles, Peggy	Watershed impact.
Adler, Paul	Rivanna River watershed.
Thomas, Becky	The fact that the road is between the local water source and the water's consumers.
Huck, Roland	Safety of the Reservoir and possible toxic runoff.
Kudrick, Tina	Safety of the Reservoir.
Vest, Sarah Tarplay	Impacts on water quality.
Barth, Pamela	Watershed problems.
Smith, Eban E.	Cut and fill along the steep slopes immediately south of the Reservoir pose a very difficult problem for erosion control.
Carey, Robert Josiah	Pollution of drinking water.
Parmiter, Marcy	Road is too near the Reservoir.
Greyson, Bruce	Reservoir.
Sandridge, Mrs. Cole W.	The protection of the watershed.
Badderley, Cornelia	The watershed area.
Sandridge, Cole	Move this road out to a location where it doesn't affect our water supply.
Cowles, R. Reynolds Jr.	The Rivanna River basin will be significantly impacted.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Fennell, Gloria	Proximity to Reservoir.
Pancake, Edwina	Water quality along entire route.
Von Thelan, Alexander C.	Crossing the water supply for 100,000 people has not been properly addressed. Don't cross it.
Kennedy, Christine	Reservoir.
Mosca, Alfon B.	Protection of water supply.
Mosca, Nancy K.	Protection of water supply.
Cragwell, Joseph S. Jr.	Water pollution.
Von Waveren, Peik	Rivanna River/Reservoir.
Nottinghame, James A.	Water supply not protected.
Fischer, Sarah	Protection of water supply.
Ferneld, Mr. And Mrs. James A. III	Watershed.
Whitley, Joseph V.	Long-term impact to water system.
Neff, Elizabeth	Impact on surface water and the South Fork Rivanna River Reservoir.
Tanner, Roger and Elinor	Too near the Reservoir.
Peyton, Scott B.	Impact to watershed.
Hayes, Burnley B.	Watershed.
Jaeger, Judith B.	Too close to the water supply.
Pitts, Grover C.	Pollution to water Reservoir.
Lindstrom, Tim	Reservoir.
Crosby, Everett	Proximity to Reservoir.
Armstrong, C. Victor	Watershed.
Worthington, Janet F.	Watershed.
Worthington, Mark T.	The necessity to build a road near the watershed.
Creotz, Carl	125 tons of salt will be applied to the portion of the bypass in the Reservoir watershed. How will this affect the salinity of the water supply?
Powell, Karen	Why cut through the watershed and take the chance of a major catastrophe?
Macko, Stephen	Water impact.
Carter, Adeline R.	South Fork Rivanna River Watershed.
Thorup, Oscar A. Jr.	Has the impact study on the Reservoir been completed?
Carr, Betsy	Impact on Reservoir, watershed.
Voight, Jean	Reservoir.
Reed, Leslie	Impact on watershed.
Walter, Pam	Concerned about impact to our water supply.
Remington, Wayne	Do not build bypass in an area that could potentially endanger our water supply.
Myers, Eliza Brent	The present plan seems to ruin our water supply.
Steven, Patricia	If we contaminate our water source – what then? Too late for "Oops."
Armstrong, Phyllis	The threat to the South Fork Rivanna River Reservoir has been minimized by VDOT. In spite of engineering on paper, this project cannot be built without impacting an already fragile system.
Goodman, Debbi	Ivy Creek.
Krohn, Susan	Possible contamination should a spill occur during an accident.
Gray, Glen B.	Water quality.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Jordan, Lewellyn L.	Watershed will be endangered.
McHenry, Henry D. Jr.	Disrupting sleep slopes on Reservoir watershed.
Elder, Gloria S.	Reservoir.
Cromwell, Howard	Damage to watershed.
Garnett, Yates	In too close to the Reservoir.
Gleason, Marcia L.	Reservoir.
Boller, Diane F.	Too close to the South Fork Rivanna River Reservoir.
Czumak, Linda	Watershed.
Whiteley, Grice	Watershed and Reservoir endangered.
Battestin, Martin	The pollution of water supply.
Hubley, Reg	Effect on the river.
Palmer, Joan	Reservoir.
Dove, Frederick T.	Water quality.
Pollock, John	Run off to Reservoir.
Scott, Charles	Protection of Reservoir.
Huckle, Jacquelyn	Protection of Reservoir.
Neff, George F.	Damage to water sources.
Dow, Shirley	Water protection.
Wood, Martha	Impact on area watershed.
Chapman, Christine C.	The watershed.
Chapman, James L.	The Reservoir is seriously endangered.
Strassburg, Thomas M.	The proposed road runs through the watershed for our area's public water supply.
Houston, P.K.	Reservoir.
Bluestone, Daniel	Ivy Creek and Reservoir.
Landsverk, Lisa	Why are we destroying some undisturbed woodland areas on a mountain in a watershed area?
Parks, Cheryl	Too close to Reservoir.
Chaitin, Rebecca D.	Destruction of watershed.
Nelson, Patsy R.	Quality of water.
Grossman, Susan	Why is it so close to the Ivy Creek area?
Harrison, Archibald C. Jr.	Reservoir.
Fountain, Bill	Water supply.
Seng, Beverly	The watershed is not adequately protected.
Thompson, W.M. Jr.	Watershed.
Armstrong, Margaret D.	I'm worried about the impact on the watershed.
Simons, Jessica	Siltation of only existing Reservoir.
Valmarana, Mario	The entire watershed.
Rooker, Dennis	Build the Meadow Creek Parkway instead of the bypass; it doesn't harm the Reservoir.
Atkins, Nancy	Environmental calamity near the Reservoir.
Dickerson, Dale	Watershed for Reservoir.
Rice, Geraldine	Watershed issue was skirted over.
Feher, George	Too close to watershed and Reservoir.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
McConnell, Shirley	Water supply.
Gaston, E. Mary	There are better alternatives that are less damaging to our water.
Purstell, Francis C.	Water.
Westbury, T.J. Jr.	Should be further from the Reservoir.
Good, Edith	Construction this near the Reservoir endangers the water supply of the city.
Schmidt, David A.	The proposed route runs too close to the major watershed for this area.
Martin, W.N.	Long-term runoff – creek levels and water quality.
Bicknell, Harrison	Exactly how are you going to 100% ensure that the water Reservoir will be protected?
Palmer, Constance D.	Watershed.
Vendenbout, Paul	Water.
Hess, Kenneth H.	Dam.
Lasley, Carl T. Jr.	Water pollution.
Peyton, Gertrude B.	Watershed protection.
Austin, Helen	Reservoir.
Frame, Douglas M.	Water purity.
Wilhelm, M.C.	Reservoir impact.
Medigan, Faye	Effect on Ivy Creek.
Preston, Mary Lyle	The Reservoir is still impacted.
Houstan, Stephanie	Water supply.
Nance, Terry K.	The protection of the Reservoir and water supply.
Mott, Karin	Watershed damage.
Barnes, Sara Lee	Watershed.
Berne, Gordon	Watershed.
Kelly, Thaddeus E.	Pollution of Reservoir.
Walton, Mr. Donald P.	Watershed.
McGrath, Barbara	Watershed.
Hirsh, Wendy W.	Rivanna River Reservoir and watershed.
McGrath, James H.	Watershed.
Kenney, Linda	Watershed.
Hutchinson, Jerry L.	Road salt and chemical spills, pollution near drinking water supply.
Edgerton, Bill	Protect watershed. Bypass will pose a threat to the water supply of Charlottesville. In the case of a severe toxic spill, contingency plans are not adequate to supply Charlottesville with water, and are very expensive.
Olivier, Wren D.	The adverse effects on the Rivanna River watershed have not been considered.
Lee-Vandell, Frances	Water pollution from runoff.
James, John Peter	Water impact.
Kuhn, Beth Swanson	Right of way passes too closely to the South Fork Rivanna River Reservoir and goes through important watershed area.
Morris, Julian and Jacqueline	Contamination of the Reservoir.
Potts, Margaret H.	Contamination of Reservoir water.
Clarke, Margaret B.	Do not build this road through the Reservoir.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Jablonski, Brian	Concerned about protection of the Reservoir.
Warner, Sylvia	The effect on the Reservoir has not been adequately addressed.
Rehm, Clifford	Project needs to be moved far away from watershed area if it is at all justified.
Hall, James	Should not run through Rivanna River watershed.
Braun, Katherine	There is no way bypass should run near South Fork Rivanna River Reservoir.
Henderson, Achsah E.	The intrusion of the Reservoir is very troublesome to me.
DeLyons, John	Proximity to Reservoir.
Hubbard, M.T.	Watershed damage.
Jones, Thomas H.	Potential contamination of Reservoir.
Hoffman, Katherine Ballard	A major highway should not be built in the watershed of a major Reservoir. I am opposed to any western bypass that's going in the watershed of the Reservoir, which supplies water for this area surrounding the City of Charlottesville.
Hoffman, Courtney	The Reservoir is in trouble if an oil truck spills.
Carey, Robert M.	Pollution in the Ivy Creek water district.
Cason, John	Water quality.
Andrews, Mrs. Cheryl L.	A true bypass would effectively funnel traffic away from our watershed areas.
Scully, Edward	Road too close to Reservoir.
Stearns, Stephen K.	Impact on Reservoir.
Stroud, Robert E.	Impact on watershed.
Bergen, Bill	I find the watershed protection measures unpersuasive.
Burrowbridge, Virginia C.	Effects on water supply.
Van Beek, Janny	Water runoff into Reservoir.
McConnell, Charles	The watershed for most of the Charlottesville area. I don't believe that adequate precautions can be taken.
McNeely, Cathy H.	Rivanna River.
Cane, Robert	Watershed, in general.
Clame, Scott	Water quality.
Maudet, Alejandra A.	Pollution of the Rivanna River.
Tucker, Elly	Rivanna River watershed.
Wenger, Dean	It's still too close to the Reservoir.
McNeely, Carter	Watershed.
Miller, Lorna	The bypass is too close to the watershed. There is no way, if this road is built, to protect the Reservoir.
Lilleleht, Lembit U.	Too close to the Reservoir, potential pollution of watershed. Bypass does not have long-term provisions to protect the South Fork Rivanna River Reservoir. It will pose a threat.
Pape, Howard	Water quality.
Pape, Karen	We have building constraints in the watershed area, which appear to be ignored by this design.
Vining, Lynda C.	Water supply.
Greipon, Jane C.	Concerned about the proximity to the Reservoir.
Smith, Michael	Too close to Reservoir and river.
Stone, Debra	Watershed.
Carl, Virginia S.	Runoff into creeks and Reservoir.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Osheim, Yvonne N.	Reservoir proximity.
Bieker, Daniel	The entire concept of a western bypass so close to the South Fork Rivanna River Reservoir.
Broadbent, Linda	Impact on water Reservoir.
Rembold, Kristen	I don't think this road should be built in the Rivanna River watershed.
Merrick, Judy	Protection of the Rivanna River by stopping the building of the bypass.
Berne, Rosalyn W.	Reservoir runoff.
Keenan, Daniel	The Rivanna River and watershed.
Huckle, Dr. John	Threats to water quality.
Lyon, Donald B.	The road is too close to our Reservoir.
Bogley, Robert W.	Proximity to water supply, watershed.
Clawson, Susan K.	Watershed.
Busse, Perella	Silting of the Reservoir.
Beattie, Dan	Water quality.
Arnold, Michael	My water supply needs to be safe.
Scott, William B. Jr.	Water quality.
Slingloff, Craig L. Jr.	Risk of contamination of the water supply in the event of a truck accident at the Reservoir.
Adler, Danny	The Rivanna Watershed.
Meador, Daniel J. Jr.	Effects on Rivanna Watershed and local water supply.
Levine, Susan	Reservoir issues.
Dagneri, Anne Renee	Watershed area and Reservoir.
Crook, Patricia R.	I definitely feel that it is too close to the Reservoir.
Nicoll, Carol	The proximity to the watershed.
Kirk, Rebecca L.	Public water facilities.
Fogelman, Jane Porter	Watershed danger.
Hunter, Frank P. Jr.	Watershed.
Dean, John	Watershed.
Anderson, Geneva H.	Rivanna River watershed.
Wheeler, John O.	Water.
Cohen, Roger B.	Water, water, water.
Eastham, R. Jack	Toxic waste and fumes from trucks, autos over Reservoir.
Leggett, William Ellis Jr.	Watershed.
Harrison, Marion B.	Contamination – water.
Hemmer, Beverly C.	Save our watershed.
Gray, Ronna	Toxic spills.
Lynch, Mariann	Reservoir – our watershed.
Doyle, Janice	We'll destroy our water supply.
Dix, Janet	Proximity of road to Reservoir.
Berkeley, Elizabeth	This project should not be going through the watershed.
Brooks, James Hall	Reservoir.
Nuechterlein, Donald	Much too close to the Reservoir.
Johnson, Lucy	South Fork Rivanna River Reservoir.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Christoferson, Herbert C.	Reservoir.
Miller, Teresa A.	Impact on watershed area.
Palmer, Mrs. L.C.	Watershed.
Bredin, Stephen P.	Closeness to water supply.
Kennedy, Thomas D.	Protection of water supply.
Lyons, Patricia S.	The Reservoir is not protected.
Palmgren, Beth	Please look at a route that does not involve the watershed.
Gottesman, Carol	Watershed area.
Lerin, Patricia M.	Storm runoff into Reservoir.
Vest, Susie	The watershed of the South Fork Rivanna River Reservoir.
Stark, Peter A.	Watershed.
Mead, Jenny (Emily J.)	Reservoir.
Akers, Eileen D.	You are jeopardizing the watershed.
Williams, J. Page	I still believe the plan will adversely impact our water supply/Reservoir.
Jones, Margaret M.	More attention to water supply.
Crosby, Candace Carter	Trucks with hazardous materials going into the Reservoir.
Dent, Pamela S.	Impact on the watershed.
Dent, Magruder III	The Alternative 10 plan endangers the water supply.
Early, Cheryl Kennedy	Our Reservoir needs to be protected by routing a bypass many miles east of Charlottesville.
Blackford, Bettina B.	Water.
Kelly, Zita J.	Water supply.
Goddard, JoAnn	Do not cross the watershed or the Reservoir.
Jones, Virginia M.	More attention to the water supply.
McLean, Caroline	Watersheds.
Payne, Olga	The whole problem of building near the watershed has not been realistically addressed.
Johnson, W. Reed	Potential harm to the Reservoir.
Flamini, Joseph	Water.
Curton, Ms. Laurie	I am very unhappy and dissatisfied to see the proximity of the bypass to our Reservoir.
Weary, Janet G.	Reservoir and streams feeding it.
Marshall, Reggie	Watershed concerns.
Minich, Helen R.	Reservoir – runoff hazards.
Minich, Henry N.F.	The potential hazard to the Reservoir.
Ford, Roseanne M.	Concerns about the watershed area that will be impacted.
Bowen, Howell L.	Water protection.
Deucher, Lynne M.	Too close to the Reservoir.
Sutterly, Faye	Effect on the watershed.
Brumbaugh, John	Too close to South Fork Rivanna River Reservoir.
Beyer, Ann	Rivanna River watershed.
Adler, Karen	The Rivanna Watershed.
Bain, Andrew	Reservoir pollution.
Hunter, Mary R.	Watershed problems.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Senten, Kathrine B.	Negative impact on Reservoir watershed.
Rennolds, Gloria L.	Watershed not addressed adequately.
Mitcher, Timothy M.	Reservoir impact.
Kelly, Carolyn T.	It should not be built within the Reservoir area.
Mueller, Konrad C.	The project right of way runs too close to the South Fork Rivanna River Reservoir.
Lorber, L.B.	Water pollution.
Hirsh, J.B.	Water pollution.
Williams, Stuart A.	Projected water (Reservoir) pollution.
Rhinelander, Charles	The watershed – Reservoir.
Jesser, Barbara S.	Impacts the watershed.
Erwine, Jane	Bypass over water areas is still a big concern.
Tignor, Kinda	Damage to water supply.
Jones, John D.	Building so near a vital Reservoir is not environmentally responsible for a road of this type. The risk of spills is not avoidable.
Shugart, Ramona	The danger to the watershed.
Greene, Virginia	The Reservoir, but not exclusively.
Gilmer, Nancy L.	The Rivanna watershed.
Emery, Rose	Damage to watersheds.
Richardson, Rebecca Brock	Watershed.
Snook, Helen B.	Watershed and Reservoir.
Jackson, Carol	Reservoir.
Redick, John R.	The dangers to Charlottesville's water supply have not been adequately addressed.
Thompson, Elsie Wilson	The danger to the Reservoir.
Neel, Liz	Water pollution.
Shepherd, Joanne	Our water supply may very well be polluted by the road.
Reilly, Kevin C.	Water impact.
Kennedy, Patricia B.	Watershed.
Marshall, Anne	Should not be built near Reservoir.
Guerrant, Laura B.	Threat to Reservoir.
Guerrant, John	Water especially.
Stoudt, Barbara H.	Impact on watershed.
Drumm, Mrs. Benita M.	Water damage.
Lasley, Hortense D.	Too close to Reservoir.
Stoudt, Ralph J. Jr.	Damage to watershed.
Ulrich, Pamela L.	Too close to Reservoir.
Poist, David	Water.
Wright, James A. III	Watershed pollution – must be protected.
Wright, John B.	Watershed pollution.
Allan, Thomas Temple	Impact of silt in the Reservoir, which, from first-hand experience, is filling up rapidly even without construction.
Leake, Earl Carlton	Drainage into Reservoir needs to be diverted by storm drains and emptied below Reservoir dam.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Bender, Sarah A.	This bypass should not go through our watershed.
Stone, James and Dorothy	Possible damage to water sources.
Winnisted, Anne Thornbau	Water supply – too much silt from runoff.
Early, John E. III	Watershed concerns.
Barth, Jeffrey T.	Threatens watershed.
Opal, David D.	Stormwater runoff harmful to the environment (4 of its 6 miles are through the watershed of the South Fork Rivanna River Reservoir).
Jessup, Mary Helen	Endangerment of the Reservoir is a risk not worth taking.
Read, Tayloe "Bo"	The Woodburn Road area, where the bypass would fall off into the Reservoir.
Bartley, Judith	Concerns about water quality with the impact on the Reservoir.
McIntosh, Thomas B.	The impact on the watershed/Reservoir has not been addressed or has been trivialized.
Berman, Blanche P.	Bypass to the east would provide better link-up to I-64 without disturbance to Reservoir.
Import, Andrea	Watershed.
Heybrook, E. and A.	Watershed.
Garland, Robert A. Jr.	Stormwater management, especially near Reservoir.
MacCraken, Thomas G.	Hazmat spills from trucks near the Reservoir.
Tucker, Jenny Lee	Much too close to Charlottesville water supply.
Cole, Jeffrey	Greatest concern is the watershed, both during construction and after.
Powell-Mills, Jeanette	Concerned about the environmental impacts on the watershed and water supply.
Dunn, Brooke Rinehart	Watershed protection.
Dudley, Clarissa	Destruction of watershed and endangered Reservoir.
Dix, Martha	It seems so closely situated to the Reservoir.
Grandage, Dorothy	Water supply.
Owen, Ray W.	Gasoline additive MBTE getting into Reservoir.
Lord, J. Stephen	The possibility of a toxic spill into the City of Charlottesville Reservoir can only be avoided by relocating the road or not building it at all.
Clarkson, Thomas	Protection of water supplies.
Smith, Mrs. Frances Z.	Water pollution.
Farland, Melanie Taylor	Stormwater runoff. Increase in toxins to the water supply.
Hoyt, David P.	Water pollution.
Allan, Elizabeth Allen	Impact on the Reservoir.
Craster, Dana	Degradation of watershed.
Hertel, Marilyn M.	Proximity to the Reservoir's watershed.
Whitehill, Murray	The water supply.
Funk, Mrs. Barbara M.	It jeopardizes the watershed (Reservoir).
Wishart, Heather	Watershed – South Fork Rivanna River Reservoir.
Rogers, John W.	Severe risks of pollution – watershed contamination.
Benzinger, Elizabeth	Proximity to our Reservoir.
Reback, Forbes R.	Watershed protection.
Austill, Michael L.	Running a road like this through 4 miles of the Rivanna River watershed is unacceptable.
Allison, Patricia S.	Impact on watershed.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Rybalt, David M.	Concerned about water supply and environment.
Bielecki, Christopher	The bypass is in the neighborhood of the only water source for 60,000 people.
Dudek, Joyce	Runoff into Reservoir.
Bielecki, Anna	The bypass is designed next to the only source of water for 60,000 people.
Andrews, Mary E.	Watershed.
Carlin, Jeremy	Why are you in the watershed and right next to the Ivy Creek Natural Area? You may injure the former and definitely degrade the latter.
Hertel, Marilyn M.	Proximity to Reservoir's watershed.
Harryman, Frances M.	Our water supply is threatened.
Booth, William A.	Further study of the impact on the Rivanna River.
Bryant, Kathy	Watershed area.
Grove, Jessie C.	Stormwater controls.
Staton, Suzanne	A different route would have less of an environmental impact on the area considering the amount of traffic that close to the Reservoir.
Lamb, James C. III	Impact on water resources.
Cooper, Terri A.	Reservoir, watershed.
Nance, Joanne L.	Impact on the Reservoir.
Murray, Evan and Janice	This road provides absolutely no protection for the Reservoir should a disaster occur.
Havenner, George	Watershed.
Gatling-Austin, Bruce B.	Routing of a bypass within a few meters of a primary Reservoir – water pollution.
Eubank, Keith	Water will be polluted.
Richards, Mercedes	Impact on the Rivanna River.
Bennett, Donna	Concern for watershed.
Fall, Betty L.	Water supply quality.
Bennett, James P. Jr.	Location of Alternative 10 near the municipal water Reservoir is dangerous and unacceptable.
Curtis, Elizabeth B.B.	Water control.
Ball, Melissa	Safety of water supply.
Taylor, Kimberly & Douglas	Watershed.
Gregory, Charlotte	Water pollution.
Murray, Langhorne K.	Impact on Reservoir has not been adequately addressed.
Gaines, Denise	Proximity to South Fork Rivanna River Reservoir and its watershed.
Jobes, Frank S.	Drainage impact on water systems.
Patterson, Lily	Reservoir.
Via, Ann M.	Silting of South Fork Rivanna River Reservoir.
Barnes, Eleanor	It would impact our Reservoir.
Eubank, Marilyn C.	Stormwater controls.
Bryant, Mark	Water pollution – especially impact on the Rivanna River watershed.
Murray, Latham	Do we really want a four-lane, high-speed road on the bluffs overlooking the South Fork Rivanna River Reservoir?
Humphris, Charlotte Y.	Albemarle County has had to employ drastic measures from the 1970s to the present to restore to health the major drinking water supply for 60,000 people. VDOT has not conducted a study to show the impact of the construction of this project through 4.2 miles of watershed and very close the Reservoir itself and the intake for the water treatment plant.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
McKay, Jennifer	Very poor location relative to area's water supply.
Havenner, George W.	Too close to water source – go to east.
Humphris, Robert R.	Watershed and Reservoir protection.
Wimer, Mary Catherine	The water supply is endangered.
Rooker, Ann R.	Protection of watershed.
Turner, Dr. U.G. III	Reservoir protection.
Williams, Vera L.	Contaminated waters.
Grupe, Juanita C.	Danger to water supply during construction and after completion of project. Probability of contamination of wells and streams feeding into the Reservoir is extremely high. The undeniable threat to the area's major water supply is of serious concern and has not been realistically addressed.
Bastedo, Mary L.	Watershed – Reservoir.
Abbey, Mr. Willis F.	Impact on Charlottesville water supply.
Sprinkle, Janice	The ability to go east and totally avoid our Reservoir or go further west and give space (therefore time) to allow containment of potential spills prior to endangering the Reservoir.
Stinnette, Mary C.	Protection of the Reservoir.
Dalldorf, Carolyn	Reservoir contamination due to proximity.
Austui, Lois B.	Watershed pollution.
Looney, Dr. and Mrs.	Watershed contamination.
Brannock, Cleve	Water.
Sours, J.M.	Install sanitary sewers in conjunction with bypass and connect properties now on septic systems, particularly those in the watershed.
Lester, Linda	Water supply is threatened.
Grupe, Warren	The precautions to protect a significant watershed are the minimum required by law for an insignificant watershed. Daily drainage threatens the watershed, let alone the potential for a toxic spill. The bypass seriously threatens a significant watershed.
Caplin, Jeremy	Charlottesville has a unique feel, and a tradition, and we don't want VDOT building a road through our watershed.
Slaughter, Anne	It puts at risk the water supply for 60,000 people.
Sierra Club, Virginia Chapter	It would run close to the Rivanna River, the water source for Charlottesville, and would pollute it with runoff contaminants too light to settle out as sediment.
Dudley, John, Clarissa, and Martha	We are looking at extremely damaging runoff from a truck route with the possibility of hazardous spills from accidents.
Rives, Barclay	The planned road threatens the area's principal water supply.
Wiedman, Susan	I am appalled that VDOT would even allow the proposed route to cross over several tributaries leading to the South Fork Rivanna River Reservoir. On any roadway, there is always the possibility of tractor-trailer accidents and spills of contaminated materials. As a Charlottesville resident, I don't want the Rivanna River watershed to be subject to a crisis such as this one.
Doyle, Robert	Our water supply is threatened.
Bieker, Daniel	Despite assurances, the wisdom of building a road of this scale so near the Reservoir must be questioned.
League of Women Voters	The bypass will threaten the Reservoir, and undermines years of enacting rules designed to protect the Reservoir from environmental harm. Incorporate more protective measures into the design of the road to protect the integrity of the Reservoir from pollution from the road.
McIntosh, Tom	The proposed bypass impacts the South Fork Rivanna River Reservoir – the source of Charlottesville's drinking water.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Johnston, Elizabeth	If you need a truck route to divert traffic, place it 6 to 10 miles east of the city. There, the impact to water, watershed will be less stressful to fewer people.
Ziemer, Scott	I feel that the risk to the South Fork Rivanna River Reservoir is too great. One truck spill could ruin the drinking water for thousands of people.
Lowenstein, Evan	The EIS admits that construction and use of the bypass in close proximity to a river and Reservoir will further compromise already-threatened water quality through non-point source pollution from soil erosion, road salts, pavement tars and automotive fluids and emissions.
Johnson, John W. Jr.	Bypass is a great harm to the environment and the watershed.
Burris, Marjorie B.	It will threaten the South Fork South Fork Rivanna River Reservoir since it runs through 4.2 miles of the watershed and passes along very steep slopes 400 feet to 1,000 feet from the Reservoir, near the intake to the water treatment plant. A toxic spill could leave 60,000 without water.
Stevens, Ross L.	Same comment.
Wilson, Robert S.	Same comment.
Lent, Dareene	Same comment.
Johnson, Bill	Same comment.
Kringle, Kimberly	Same comment.
Faulkner, Phillipa	Same comment.
Johnson, John Jr. and Mildred	We have read numerous letters, editorials, and commentaries in the Daily Progress, which have indicated how dangerously close the bypass will be to the watershed.
Charlottesville-Albemarle Transportation Coalition	The proposed bypass will threaten our water supply by running through 4.2 miles of the watershed of the South Fork Rivanna River Reservoir, our primary source of water, and will do so on steep slopes. VDOT is taking only minimal precautions to protect the watershed and Reservoir.
Chisholm, Meta	Water supply.
Williams, Page	Watershed.
Piedmont Environmental Council	Bypass will threaten the water supply.
Christoferson, Herbert C.	Their proposed location of the 29 Bypass has serious and adverse impacts on the environment concerning a very important Reservoir.
King, Donald and Barbara	Close to the drinking water Reservoir and within the water supply watershed (toxic spills, etc.).
Mott, Charles J. & Karin V.	Damage to the water supply.
Mueller, Konrad & Georgia	Possible water pollution.
Brust, Robert and Kathryn	Having this highway parallel the South Fork Rivanna River Reservoir, in the watershed, for more than 4 miles is an excessive risk.
Niehaus, Robert F. and Joanne C.	Exposure of our major public drinking water source, the South Fork Rivanna River Reservoir, in this bypass location and construction.
Moore, Mrs. W. Bedford III	Reservoir is very fragile and sensitive to pollution – a bypass in the areas of the Reservoir will threaten it.
Kennedy, Thomas D.	Community water supply.
Gercke, George	The bypass will get very close to my home, which sits near the Reservoir. It will ruin the scenic nature of my property.
Cresap, Anne H.	Reservoir needs to be a primary concern of the project.
Larie, George R.	Various agencies – the EPA, local MPO, and Rivanna Water and Sewer Authority – have expressed concern about the bypass route and its possible threat to the Rivanna River watershed.

Table K-5
RESERVOIR AND WATERSHED COMMENTS, FEBRUARY 1997 DESIGN PUBLIC HEARING

Name	Comment/Concern
Kells, Robyn L.	The North Charlottesville Business Council notes that there are already 200 miles of roads in the watershed, and that a road farther out would impact the Reservoir more. Well, the bypass will carry much more traffic than any of the current roads. How about not building a bypass at all?
Ivy Creek Foundation	Bypass will damage the Reservoir with runoff and possibility of toxic spills.
Jost, Tim F. Tolson	A toxic spill could leave 60,000 people without water.
Jablonski, Brian	Bypass is a threat to the Reservoir.
Rough, William H. and Joan	Bypass will pollute the Reservoir with runoff, threaten it by possibility of a toxic spill.
Rosene, Dave	Placing a bypass of questionable need over a major source of drinking water for the county is ludicrous.
Paul, Marjorie M. and James R.	How can VDOT justify spending so much money for just 6 short miles of highway that will endanger the water supply for so many people?
Broadbent, Linda M.	Impact on the river.
Freilich, Samuel C.	Much of the bypass will encroach on a major watershed area.
Long, Charles F. Sr.	Water runoff in a big storm.
Bertrand, Caroline	Water.
Skalak, Thomas C.	Water pollution.
Preston, William C.	Runoff.

In addition to these comments, comments were received via petitions, flyers, and postcards organized by interest groups. The Charlottesville/Albemarle Transportation Coalition (CATCO) distributed a postcard at the hearing that listed several items, of which sending the postcard to VDOT implied endorsement by the sender. One of these items was: "I oppose the proposed Route 29 Bypass passing through 4.2 miles of the Reservoir's watershed where a toxic spill could leave 60,000 of our citizens without water." VDOT received 530 of these postcards. In addition, CATCO submitted a petition to VDOT that expressed opposition to the Bypass route. The section of the petition regarding water quality read as follows: "4.2 miles of the road is in the South Fork Rivanna River Reservoir Watershed and dangerously close to the intake for the main water supply for over 60,000 people." This section was listed as one of seven reasons why the Bypass should not be built. The petition was signed by 2,911 individuals.

The North Charlottesville Business Council distributed a flyer at the 1997 Design Public Hearing that listed a series of statements under the heading "Here is the TRUTH that they don't want you to know." Several of these items pertained to water quality:

- "The current alignment would have the least impact on our water supply."
- "Anyone opposing the bypass for supposed watershed concerns should realize that a farther-out bypass would impact the watershed much more."
- "There are currently over 200 miles of roads in the watershed including two bridges that go over the Reservoir – the western bypass only adds 4.2 miles more."

At the end of the flyer, readers were asked to check a box that read: "The long-planned Route 29 Western Bypass around Charlottesville should be built," or a box that read: "I do not want a

Charlottesville Bypass." The box supporting the Bypass was checked by 914 people, while 320 people checked the box for opposing the Bypass.

K.2.6 Additional Correspondence

In addition to comments received through public meetings, VDOT received comments throughout the study by mail, e-mail, and phone. These comments span the duration of the project studies from 1982 through 1999 and are shown in **Table K-6**.

Table K-6
ADDITIONAL CORRESPONDENCE FROM PROJECT RECORDS (1982 – 1999)

Date	Name	Comment/Concern
7/18/84	Albemarle County Board of Supervisors	Opposed to "Piedmont Highway Corridor" (Charlottesville Bypass) because, in part, it will threaten the watershed.
7/30/85	Edgerton, William A.	A bypass in the Rivanna River watershed will threaten the quality of the Reservoir.
1985	University of Virginia Division of Urban and Environmental Planning (class study of bypass alternatives)	The Western Bypass was second only to the Piedmont Corridor in its impact on noise and water quality.
6/12/86	Charlottesville/Albemarle Highway Bypass Committee	A bypass cannot be built either east or west of Charlottesville due, in part, to the proximity of the route to the water supply.
7/86	VDHT study	A western alignment has been opposed by the recent Albemarle County Board of Supervisors and by local citizens. The primary objection has been based upon the possible negative environmental impacts to the Rivanna River watershed. ... Highways already cross the watershed, however. In other areas of the state, water quality in Reservoirs was not significantly impacted by the presence of a highway.
11/19/86	Easter, Peter	Make the improvements to mainline Route 29 instead of building a western bypass. A western bypass will harm the Reservoir.
11/25/86	Liady, Mrs. Fred G.	Build a western bypass rather than upgrading current 29 for through traffic. The arguments against this option based on water quality concerns do not hold water.
12/18/86	Citizens for Albemarle	No bypass should be built in the Reservoir watershed. Study expressway concept of existing 29 instead.
1/12/87	Fornes, Gaston B.	There are highways all over the country that cross watersheds with little or no impact on them. This is a local smoke-screen.
1/14/87	Buck, Frances L. (City of Charlottesville) Fisher, Gerald E., Lindstrom, C. Timothy (Albemarle County Board of Supervisors) Haas, Raymond M (UVA)	Concerns about pollution of watershed due to construction. Separate assessment of impact should be done if not part of the EIS.
5/7/87	Viise, Michael and Neva	Environmental concerns of a highway through the watershed need to be addressed. Examine the expressway alternative.
5/29/87	Tucker, Robert W. (Albemarle County)	Suggests that VDOT ask consultants for the EIS when interviewing them for work how they would study threats to the watershed.
6/87	Cromwell, Treva W.	When studying the impact on the Reservoir, an analysis of its maximum silt load should be made.
12/4/87	Piedmont Environmental Council	An expressway concept will be less of a threat to the water supply than a western bypass.
12/8/87	Edgerton, William A.	Western bypass will impact the Reservoir, expressway concept is best.

Table K-6
ADDITIONAL CORRESPONDENCE FROM PROJECT RECORDS (1982 – 1999)

Date	Name	Comment/Concern
12/14/87	Tucker, Robert W. Jr. (Albemarle County)	Review of history of Reservoir protection efforts by Albemarle County.
12/23/87	Thornton, Marcus	I do not believe the hysteria about water quality so long as the bypass is properly designed.
12/14/87	Unknown – comments from a public meeting	Watershed is an issue.
12/14/87	Unknown – comments from a public meeting	Watershed is not an issue – is a smoke screen for the western residents.
12/14/87	Unknown – comments from a public meeting	Concerned that the water supply would be jeopardized by a bypass.
12/14/87	Unknown – comments from a public meeting	Concerns about spoiling the watershed.
12/14/87	Unknown – comments from a public meeting	Individual concerned about watershed explained how Norfolk lost theirs. He said a new road would tempt people to develop in the area by the Reservoir.
12/14/87	Unknown – comments from a public meeting	A siltation study of the Reservoir should be done.
12/14/87	Unknown – comments from a public meeting	No western bypass due to the water supply.
12/14/87	Unknown – comments from a public meeting	Our water supply needs to be preserved.
12/14/87	Unknown – comments from a public meeting	Bypass will threaten the watershed.
12/14/87	Unknown – comments from a public meeting	The bypass will pollute the South Fork Rivanna River Reservoir.
12/14/87	Unknown – comments from a public meeting	My concern is to preserve the watershed.
12/14/87	Unknown – comments from a public meeting	I'm very concerned about the South Fork Rivanna River Reservoir and its fragile state.
12/14/87	Unknown – comments from a public meeting	Watershed concerns are exaggerated with this project.
12/14/87	Unknown – comments from a public meeting	Completely against the bypass because of the risks to the watershed.
12/14/87	Unknown – comments from a public meeting	The west route is our watershed – should not be done.
12/14/87	Unknown – comments from a public meeting	Water quality concerns.
12/14/87	Unknown – comments from a public meeting	Concern about sedimentation of the Reservoir.
12/14/87	Unknown – comments from a public meeting	Avoid construction in the watershed.
12/14/87	Unknown – comments from a public meeting	Bypass would go through the watershed – not good.
12/14/87	Unknown – comments from a public meeting	Watershed concerns.
12/14/87	Unknown – comments from a public meeting	Damage to the watershed is a concern with the west bypass.
12/14/87	Unknown – comments from a public meeting	Concerned about the impact of a western route on the bypass.
12/14/87	Unknown – comments from a public meeting	I reject the "Reservoir argument" against the bypass.
12/14/87	Unknown – comments from a public meeting	Water quality concerns.
12/14/87	Unknown – comments from a public meeting	Please protect our drinking water supply if you build a western bypass.
12/14/87	Unknown – comments from a public meeting	Do not pollute the watershed.
12/14/87	Unknown – comments from a public meeting	There is potential damage to the watershed if you build a bypass.
12/87	Hickle, Mrs. John	Bypass will harm watershed due to soil in the area that is very prone to erosion.
12/87	Sours, D.E. PE	A western bypass will not impact Reservoir significantly. Reservoir gets more pollution now from the airport than it would from a road.
12/87	Reel, K.D.	A western bypass would not significantly impact the Reservoir.
12/87	Crosby, Marian H.	Emergency crews have the ability to contain a spill on a western bypass – fear of a spill is not a reason not to build it.

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Date	Name	Comment/Concern
12/87	Baxter, Ellie Wood	Consider that the western bypass would go through the watershed.
12/87	Sunburn, Robert H.	Water quality concerns.
12/87	Felger, Mr. and Mrs. T.C.	Construction in the watershed will be a problem.
12/87	Fife, Francis H.	Watershed concerns with a western bypass.
12/87	Chase, Mrs. Marion	Watershed concerns.
12/87	Bell, Pamela	Water quality concerns.
12/87	Birdsall, John	Bypass will go through the watershed. This is a concern.
12/87	Cromwell, Treva W.	Bypass will cause siltation of Reservoir.
12/87	Bryan, Gary III	Western bypass will threaten Reservoir – go east instead.
12/87	Porterfield, Jean and Joe	Bypass will have potential effect on Reservoir.
12/87	Haynes, Mrs. Mary Jane	Watershed concerns.
12/87	Heyward, Mrs. H.	Very concerned about South Fork Rivanna River Reservoir.
12/87	Langhorne-Reeve, Elizabeth	Concerns about protecting the water supply.
12/87	Rice, Margarete	Threats to Reservoir appear to be greatly exaggerated.
12/87	Scott, Mrs. F.W.	My concern is to preserve the watershed.
12/87	Sheppard, Steve	Salt and chemicals will be detrimental to Reservoir.
12/87	Anderson, David B.	Concerns about the watershed.
12/87	Bauer, Edward	Please protect the watershed – do the expressway concept if a bypass must be built.
12/87	Patterson, Lily	Do the expressway because it will solve the impact to Reservoir problem.
12/87	Patterson, Roy M.	Do not pollute the Reservoir – do the expressway.
12/87	Simonds, Elsie	An expressway would not pollute the Reservoir.
12/87	Perry, Elmer V. Jr.	An eastern bypass will solve the water problem.
12/87	Morgan, Cecil V.	Don't screw up the watershed.
12/87	Bass, Mr. and Mrs. David	Western bypass would affect the watershed.
12/87	Rovnyak, Virginia	Construction in the Rivanna River watershed is a concern.
12/31/87	U.S. EPA, Region 3 (letter to VDOT)	An EIS must include identification of sources of drinking water and assess the impact of the bypass on these drinking water sources.
3/23/88	Peeks, Marvin and Barbara	Western bypass will threaten watershed.
4/1/88	Lorenzoni, Cynthia	We need to protect the watershed, I hope we do not build the bypass.
4/6/88	Woods, Joseph M. II	Concerns about damage a western bypass would do to the Reservoir.
4/7/88	Several individuals speaking at an ALERT meeting	Water concerns brought up by people at the meeting, as noted in meeting summary.
4/13/88	Pearl, Elliott R. and S. Gail	Western bypass will impact the watershed.
5/13/88	Fehse, Barbara and Robert	Western bypass would degrade the quality of the Reservoir.
5/88	Loronzoni, Mark	Western bypass would damage the watershed.
5/16/88	Bergin, Thomas F.	Highway in western Albemarle will degrade the watershed.
5/16/88	Silver, David, Miller, Teresa	Oppose western bypass due to watershed concerns, among other things.

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Date	Name	Comment/Concern
5/16/88	Hunt, Mr. James W.	Opposed to any close-in bypass; study needs to consider watershed concerns.
5/27/88	Huckle, Babs	A western bypass will cause siltation of Reservoir – build expressway.
6/15/88-6/16/88	Eight individuals – comment cards from June 15-16, 1988 meeting	Concerns about spills into the Reservoir.
6/20/88	Busch, Leo (Ardwood Property Owners Association)	Western bypass would inflict damage on the watershed.
6/20/88	Locher, C. Preston	Watershed is a serious concern with a western bypass alignment.
6/24/88	Ancona, Charles F.	There are watershed issues with various bypass options.
7/4/88	Goldstein, Gilly S.	We must try to protect our water supply.
7/5/88	Thorup, Barbara and Oscar	Water supply is threatened by bypass options.
7/6/88	Kelsey, Bob and Betty	Watershed is threatened by bypass options.
7/7/88	Nuechterlein, Donald and Mildred	A bypass will threaten the Reservoir. We must not allow the contamination of our drinking water from a spill. Do the expressway option.
7/9/88	Babby, Richard and Cristen	Bypass option threatens the water supply. Widen 29 – do not build a bypass.
7/11/88	McCulloch, Frank	A bypass will damage the water supply.
7/11/88	Clermont, Lucille	The Reservoir is our sole water supply; a bypass will compromise it.
7/11/88	Carey, Robert M. M.D.	Watershed is vital to the community as the only source of water in the area; a bypass will threaten it.
7/11/88	Dulaney, Gracie C.	Bypass would endanger drinking water supply.
7/15/88	Nichols, Mrs. George H.	A western route will contaminate the water supply.
7/20/88	Petition with the names of more than 2,500 people, according to the group Citizens for Albemarle	A western bypass will threaten the watershed, build the expressway.
7/18/88	Haynes, Kim	Putting a bypass in the watershed is asinine – it is our only source of drinking water.
7/21/88	Anderson, Jeanne Edmonds	A western bypass will threaten the Reservoir – one spill would contaminate the whole Reservoir.
7/25/88	Levine, Paul A. M.D.	Resistance to the bypass is only natural, since it passes through the Rivanna River watershed.
1988	Anonymous flyer – "Charlottesville Bypass Myths" – 1988	Bypass will not do the damage to the Reservoir that people think it will.
7/26/88	Whitmore, Madeline M.	Western bypass will damage the water supply.
7/29/88	Bowden, Tamara L.	A bypass will kill the Reservoir, build the expressway instead.
8/1/88	Davis, Richard M.	A bypass would not have a negative impact on the Reservoir – to think it will is ridiculous.
8/3/88	Fernald, James A. and Elizabeth W.	Runoff from the road will inevitably contaminate the Reservoir.
8/8/88	Van de Castle, Craig	Threats to the Reservoir make building a western bypass a bad idea. Go with the expressway.
8/11/88	Wertenbaker, Dr. R. Turner Jr.	The bypass would endanger the water supply.
8/22/88	Rooker, Dennis S.	Western bypass would threaten the Reservoir.
8/27/88	Mandell, Gerald and Judith	Oppose bypass because of risk of chemical spill into water supply.
8/30/88	Brown, Rita Mae	Bypass would threaten the Reservoir.

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Date	Name	Comment/Concern
9/1/88	Hammond, William R. Dr.	The bypass will interfere with the water supply.
9/1/88	Ooghe, Robert B. Dr.	Watershed would be threatened by bypass construction and threat of a spill.
9/2/88	Creed, James G.	The Reservoir would be threatened by a toxic spill on the bypass.
9/6/88	Wagner, Clarence P.	Bypass will jeopardize water supply.
9/6/88	Fountain, Doris K.	Bypass would devastate watershed.
9/7/88	Sloan, Gary P.	The impact of the bypass on the Reservoir is an area of concern.
9/7/88	Volkan, Vamik D. Dr.	A spill will contaminate the Reservoir if a bypass is built.
9/7/88	Echols, Catherine A.	Western bypass will destroy the watershed.
9/7/88	Gloekner, Kurt M.	Oppose a high-volume (traffic) bridge over a Reservoir – too risky.
9/7/88	McLaughlin, David J.	Bypass will pose a danger to the watershed.
9/8/88	Kosowitz, Erich and Margaret	Bypass would undermine the water table.
9/8/88	Pullen, Belinda M.	Bypass will have a negative effect on the Reservoir.
9/9/88	Larson, Daniel J.	Bypass will impact the water supply.
9/9/88	Edgerton, William A.	A toxic spill on a bypass will threaten the water supply.
9/9/88	Sussman, Michael D.	Bypass would be dangerously close to Reservoir.
9/9/88	Frieden, Mrs. Janet C.	A toxic spill on the bypass will contaminate the Reservoir – unacceptable.
9/9/88	Langbaum, Robert W. and Francesca V.	Bypass will ruin Charlottesville's only source of drinking water.
9/9/88	Pullen, Belinda M.	Bypass will negatively impact drinking water source.
9/12/88	Doyle, Robert	A bypass would threaten our water supply.
9/12/88	Pretzger, Dwayne L.	Bypass will be a danger to the water supply.
9/13/88	Wall, Heloise and James	Bypass will threaten the Reservoir.
9/13/88	Kattwinkel, John Dr.	Watershed will be destroyed by a bypass.
9/13/88	Barth, Pamela B.	Bypass will be dangerously close to the Reservoir.
9/13/88	Jogensen, Thomas C.	It is not wise to allow the bypass near the Reservoir.
9/14/88	Romanac, Mrs. Martin R.	Bypass will jeopardize the watershed.
9/14/88	Sloan, Robin	Bypass will threaten the watershed – hazmat spill.
9/16/88	Montague, Perey	Building a bridge over the public drinking water supply would be irresponsible.
9/28/88	Barth, Jeffrey T.	Watershed will be endangered by the road.
9/24/88	Hubbard, Wendy	Bypass will endanger the water supply.
9/26/88	Hodge, J.S. (VDOT)	Impact on the Reservoir will be evaluated as part of the bypass study process.
10/6/88	Goodwin, Robert D.	Bypass should not go through watershed area.
10/88	PEC document discussing the merits of the expressway concept	A bypass in the area of the watershed will spur development in that area and will pose a threat to the water quality of the Reservoir.
10/15/88	Garth, Horace	A bypass will impact the watershed.
10/23/88	McMurdo, Mrs. Montagu	A bypass will impact the watershed.
10/26/88	Gardner, Lawrence H. II	A bypass will impact the watershed.
10/26/88	Chase, Mrs. Marion H.	Expressway concept will be better for the watershed.
10/30/88	Mandell, Judith R. and Gerald L. M.D.	Risk of a toxic spill into the watershed.

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Date	Name	Comment/Concern
10/88	Huckle, Jacqueline	Governor Baliles is destroying the water supply for the Charlottesville area.
11/9/88	Knight, June D.	The expressway concept would not harm the water supply.
11/16/88	Weary, Peyton and Janet	The bypass would threaten Charlottesville's only water supply during the construction process.
11/18/88	Watts, Vivian E. (Governor Baliles' office)	Water quality will be examined as part of the bypass study process.
11/21/88	Salem, Eleanor Shannon	It is nonsensical to put a bypass over our Reservoir.
11/29/88	Community Planning Coalition (letter to Sverdrup)	Can you tell us what the impact of western bypass on the Reservoir would be?
12/1/88	Goodell, H.G., and Emmitt, G.D.	A road should not be built in the bypass watershed – this will increase siltation of the Reservoir by spurring development.
12/6/88	Larie, George R.	Bypass could cause considerable harm to the Reservoir.
12/19/88	Preservation Alliance of Virginia	Expressway concept is better for the Reservoir than the bypass concept.
12/12/88	Edgerton, William Alton	Bypass will endanger the water supply.
1/26/89	ALERT letter to VDOT	What will impact on the Reservoir from the bypass be?
2/28/89	Edgerton, William A.	Three bypass routes through the watershed are still being studied – this is not good.
3/20/89	Fogarty, Andrew B. (Governor Baliles' Chief of Staff) letter to William Edgerton	Impact on the watershed will be addressed in the EIS.
4/5/89	Brenbridge, Norman	Bypass will damage the water supply.
4/10/89	Edgerton, William	Bypass will harm the water supply, sole source of drinking water for Charlottesville.
4/29/89	Sacuto, Peg and John	Bypass will endanger the watershed.
5/1/89	Kirk, John	Bypass will harm watershed.
6/12/89	Edgerton, William A.	Bypass will harm the watershed – the Reed study confirms that the bypass would cause additional silting of the Reservoir.
7/5/89	Sadowski, Frank E.	Concerned about how the bypass will impact the Reservoir.
7/5/89	Dockeray, Judith A. and Hugh	Concerns about silt runoff into the Reservoir from the bypass.
7/6/89	Sandridge, Mr. and Mrs. Cole	Bypass will pose a threat to the water quality of the Reservoir.
7/8/89	MacCracken, Thomas G.	A bypass spill would contaminate the Reservoir.
7/12/89	Bloomfield, Louis	Bypass will pollute the Reservoir.
4/20/90	Carr, David W.	One of the bypass alternatives seriously disrupts the flow of water into the Reservoir.
6/6/90	Citizens for Albemarle	A spill on the bypass will threaten the watershed, no matter what the Sverdrup study says.
6/28/90	McCullough, Edith L. and Frank	A bypass would endanger the Reservoir through the risk of a spill.
6/29/90	Towler, Jeannine C. and William R.	Western bypass will endanger the water supply.
7/2/90	Haviland, John Kenneth and Eleanor Valerie	A western bypass will endanger the Reservoir because of the risk of a spill.
7/3/90	Crutchfield, Betty and Dale	The bypass would threaten the South Fork Rivanna River Reservoir.
7/3/90	State Water Control Board (letter to VDOT)	For an improvement to Rt. 29, the board expects VDOT to develop guidelines for how it would manage pollutant runoff into streams.

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Date	Name	Comment/Concern
7/7/90	Walsh, William M. "Bucky"	A central or eastern highway will still have watershed impacts. I favor the western bypass.
7/9/90	Davy, John R. (VA Dept. of Conservation and Recreation)	Alternative 11 and Alternative 12 would have potential water quality impacts. ... Construction in the South Fork Rivanna Watershed will follow the guidelines outlined by Albemarle County.
7/9/90	Poore, William H. Jr. (U.S. Army Corp of Engineers)	Alternative 9 would have the least impact on the Reservoir.
7/19/90	Robb, Phoebe C. (EPA)	Western bypass alignments carry the greatest risk to water quality in the watershed.
7/17/90	Unknown	Summary of recent history of South Fork Rivanna River Reservoir with regards to water quality preservation.
8/3/90	Edwards (Mayor of Charlottesville)	We need to protect the watershed with regard to a bypass.
8/28/90	Neal, William (VA Dept. of Game and Inland Fisheries)	Construction of a bypass would impact the quality of the Rivanna River for fish. Alternative 9 and Alternative 10 would have the least impact.
8/31/90	Buttleman, Keith (VA Council on the Environment)	Recommend that Final EIS include specifics on what runoff mitigation measures will be provided with the western bypass alternatives.
10/31/90	Albemarle County Board of Supervisors	Bypass would be a violation of county's long-standing, court-tested policy for protection of the Reservoir.
11/5/90	Celli, Vittorio	Western bypass would downgrade the water supply.
11/6/90	Langbaum, Robert W. and Francesca V.	Bypass will pose a danger to the watershed.
1990	Unknown – 29 Near Western Bypass Fact Sheet	Bypass will run through the watershed and pose a danger to it.
10/31/90	Albemarle County Board of Supervisors	VDOT should drop western bypass idea; start the process for building interchanges at Hydraulic, Greenbrier, and Rio Roads.
11/9/90	Moore, Jane T.	A bypass should not be going near the Reservoir.
11/10/90	Davis, Edward W.	Bypass will impact the watershed.
3/25/88	Berry, Frederick – project hotline comment	Watershed concerns.
6/23/88	Austin, Randy – project hotline comment	Requested info on Reservoir study.
9/2/88	Coach, Mr. – project hotline comment	Is the watershed being considered?
9/6/88	Fountain, Bill – project hotline comment	Road goes by a pond that dumps into Ivy Creek.
9/9/88	Echols, Bill – project hotline comment	Concerned about impact on water quality in Ivy Farms.
9/9/88	Edgerton, William – project hotline comment	Concerned about the watershed.
9/13/88	Wall, James – project hotline comment	Concerned about the watershed.
4/16/90	Carr, David – project hotline comment	Concerned about water impact from bypass on five streams feeding into the Reservoir.
11/23/93	Cummings, Loretta (VDOT)	Request to Albemarle County Health Department to assess impact of new northern terminus on public water supply.
1/7/94	District Conservationist (name illegible)	Siltation and erosion will be an issue when bridging the Rivanna River for the new northern terminus for the bypass.
11/4/94	Cummings, Loretta (VDOT)	Most of Alternative 10 extension area does not drain into Reservoir watershed. Management practices will be employed to contain silt.
1/6/95	North Charlottesville Business Council	Alternative 10 extension will not impact the Reservoir. The area where bridge construction will take place drains south, out of the watershed. Other construction in the area drains out of the Reservoir watershed as well.

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Date	Name	Comment/Concern
2/12/95	Citizens for Albemarle	The bypass will silt the Reservoir and reduce the draw from the Reservoir. The bypass also will spur development. Toxic spills are also a risk. New northern terminus is very close to water intake for the treatment plant. Make the 29 North interchange improvements and delay bypass construction.
11/13/95	Piano, Steve	Plans to mitigate a spill need to be drawn up to protect the Reservoir should a spill occur.
11/16/95	Larie, George	It is not right that Carter Myers and Bill Roudabush have instructed VDOT to do traffic studies for possible interchanges at Barracks and Hydraulic Road. For watershed protection, interchanges should not be at these locations. Also, the Albemarle County Board of Supervisors should make the decision whether interchanges should be at these locations.
12/1995	Citizens for Albemarle – flyer	Interchanges at Hydraulic and Barracks Roads will spur development in the watershed and compromise its integrity.
12/1995	Wagner, Donald	Interchanges at Hydraulic and Barracks pose threat to watershed.
3/17/96	Porter, Hershall	Since Alternative 4 (design option) is on a creek bed, where will runoff end up? In the Reservoir?
4/3/96	Rooker, Ann	The location alternative that minimizes runoff into the Reservoir is the one that should be chosen.
4/8/96	Charlottesville-Albemarle MPO	Care should be taken to design the road to minimize impact on Reservoir, during and after construction.
7/3/96	Albemarle County BOS	An interchange at Hydraulic Road should not be built because it will spur development that will harm the water quality of the Reservoir.
7/8/96	Schmid, Jack and Beth	We don't think the bypass should go near the Reservoir.
3/27/95	Citizens Bypass Design Advisory Committee	Alternative 4 (design concept) seems to have the least impact on the Reservoir.
8/96	Huckle, Babs	Reservoir will be imperiled by the bypass.
9/12/96	CATCO, PEC, Taxpayers for Common Sense	Bypass selected as one of 22 projects nationwide as most wasteful and destructive by Taxpayers for Common Sense and Friends of the Earth. Threat to the South Fork Rivanna River Reservoir cited as a chief reason.
1995	1995 CATCO petition – signed by 1,731 people	Bypass should only be built when the need for it outweighs the risk to the Reservoir and other transportation improvements have been made.
9/19/96	Parsons Brinckerhoff	Proposed design will have provisions to protect the Rivanna River.
10/11/96	Massry, B. and Dee, D.	Details about various runoff and spill control techniques and how they fit in with the bypass design.
11/18/96	Minutes from a meeting between VDOT and Rivanna Water and Sewer Authority	Various pieces of information regarding stormwater management and spill containment with regards to the bypass.
12/96	Vest, Tarplay; Lowenstein, Evan; Clark, Scott – report for a UVA class	Identifies risks that the bypass poses to water quality in the Reservoir and suggests measures to mitigate these impacts.
12/1/96	Fowler, Richard and Mary Lou	The emergency spill control system for the bypass will be aesthetically unpleasing.
12/3/96	Albrecht, Sue A.	Several suggestions that would lessen the impact on the Roslyn Ridge neighborhood are consistent with the county's desire to protect the Reservoir.
12/4/96	Boyadjian, Simon K.	Bypass will pose a threat to the quality of the Reservoir.

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Date	Name	Comment/Concern
12/6/96	Goodman, Debbi	The bypass should go as far east of the knoll in Roslyn Ridge as possible – this will lessen the impact to the neighborhood and is in line with the guidelines for protecting the Reservoir.
12/16/96	Rivanna Water and Sewer Authority	Memo makes several recommendations regarding stormwater management for the bypass. The first is to divert runoff away from the two easternmost tributaries that the road crosses. The second is to use wet ponds instead of dry ponds. The third is to set up a water quality monitoring system for runoff. The fourth is to put retention area below outlets to delay a spill from spreading should one occur. RWSA also encourages VDOT to go above and beyond the typical standards in the design of the bypass given the efforts to safeguard the Reservoir from contamination.
12/22/96	Moore, Milton B.	Bypass will damage the Reservoir.
10/24/96	Route 29 Design Advisory Committee	The bypass should not be built, in part because of water quality concerns.
12/23/96	Tucker, Robert W. Jr. (Albemarle County executive)	VDOT should adopt the stormwater control measures for the bypass outlined in its October 1990 report to the CTB. This should be done to minimize the risks to the Reservoir.
12/27/96	Browder, J.G. Jr. (VDOT Chief Engineer)	Protection of the Reservoir has been given a high priority during the design process.
1/17/97	Fitzgerald, William G. Jr.	The bypass will harm the Reservoir – don't build it.
1/15/97	Rooker, Ann R.	Bypass will threaten the watershed – I have not seen evidence that VDOT has made protecting the Reservoir a top priority, though I hear this a lot at meetings.
1/16/97	CATCO	Memo suggesting that one of the survey questions should have asked people if they supported the idea of a road near the Reservoir.
1/20/97	Tatum, Stan (LPDA)	The design team has done a good job mitigating the road's effect on the Reservoir. Most pollution in the Reservoir is a result of runoff from farmland and other property.
1/30/97	Citizens for Albemarle	The bypass will endanger the watershed. It should not be built.
2/3/97	Wheelock, Betty Crampton	Bypass will harm the watershed.
2/20/97	Garland, Robert	Southern interchange will not impact watershed.
2/20/97	Weary, Jan	Bypass will threaten the Reservoir, which is where the Montvue neighborhood gets its water.
2/20/97	Rooker, Ann	Bypass will pollute the South Fork Rivanna River Reservoir to a large extent.
2/20/97	Keeney, Ron	There are no retention ponds in the Hydraulic Road to Rio Road area of the bypass.
2/20/97	Dotson, Alex	VDOT has not shown any concern for the water system in Charlottesville.
2/20/97	Huckle, Jacquelyn	Bypass will pollute the Reservoir.
2/20/97	Wagner, Don	The northern terminus is outside of the watershed.
2/20/97	Cilimberg, Wayne (Albemarle County)	The county is still waiting to see stormwater management plans from VDOT.
2/21/97	Route 29 Bypass Design Advisory Committee	The bypass will harm the watershed and should not be built.
2/97	PEC – flyer about 2/25 meeting	Bypass will harm the watershed.
2/97	Citizens for Albemarle – flyer about 2/25 meeting	Bypass will harm the watershed.
2/23/97	Huckle, Mrs. John	Bypass will harm the watershed.

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Date	Name	Comment/Concern
2/97	CATCO – flyer about 2/25 meeting	Bypass will harm the watershed.
2/97	CATCO flyer	VDOT literature on location of project makes no mention of it going through the watershed, VDOT intends to do the minimum required by law with regard to stormwater mitigation.
2/25/97	PEC	Bypass will harm the watershed.
2/26/97	Dudley, John, Clarissa, and Martha	Bypass will harm the watershed.
2/26/97	Denmark, Roy E. Jr. (EPA)	Memo suggesting that VDOT and the CTB did not give adequate weight to concerns about water quality when selecting Alternative 10 over Alternative 9.
3/4/97	Sierra Club, VA chapter	Bypass will pollute Reservoir.
2/28/97	Letter signed by seven individuals	Bypass will threaten the quality of the Reservoir.
2/28/97	Huckle, Mrs. John	Bypass will fill the Reservoir with silt.
3/5/97	Strickland, Karen S.	Bypass could jeopardize the source of water for Charlottesville.
3/5/97	Bailey, Thomas	Bypass will cause water pollution.
3/6/97	Wiedman, Susan	Concerned about the effect of the bypass on the watershed.
3/6/97	Hirschman, David	Memo detailing various points regarding the water quality mitigation measures of the bypass.
3/7/97	Fowler, Mary Lou and Richard S.	Bypass will harm the watershed and require very expensive mitigation measures during construction.
3/7/87	Moore, Milton – history of the bypass	Albemarle County has worked hard to preserve the watershed, and the bypass will impact the watershed.
3/31/97	Brown, William A.	Bypass is too close to the Reservoir.
3/8/97	Martin, Ramsey	Road is going through the watershed – not good.
4/11/97	Barnes, Eleana	Project may impact the watershed.
3/10/97	Doyle, Janice J.	Bypass will threaten the watershed. The EPA says this too.
3/11/97	Slingluff, Craig L.	Bypass presents a threat to the Reservoir through the risk of a toxic spill.
3/11/97	Wax, Amy L.	Bypass endangers the water supply.
4/16/97	Mehring, Peter and Leslie	Bypass could threaten the Reservoir.
3/12/97	Craven, Katharine	Bypass could pollute the water supply.
3/12/97	Langbaum, Robert and Francesca	Bypass will threaten the water supply.
3/13/97	Larie, George	Bypass threatens watershed.
3/13/97	Purinton, Margaret W.	Bypass will threaten the watershed.
3/14/97	Murray, Latham B.	Road will endanger the water supply.
3/16/97	Ryder, Shirley	Road will threaten the watershed.
3/17/97	Browder, J.G. Jr. (VDOT Chief Engineer)	Pollution concerns will be addressed.
3/17/97	Doyle, Ann J.	Bypass will threaten the water supply.
3/19/97	Read, Tayloe P.	Bypass will endanger the watershed.
3/21/97	Morris, Lynn	Bypass will harm the watershed; it has already been harmed.
3/19/97	Gehr, David R. (VDOT Commissioner)	The protection of the watershed is very important.
3/19/97	Haynes, Robert C.	The bypass will threaten the watershed.
3/24/97	Fitzgerald, William G. Jr.	Bypass will threaten the water supply.
3/26/97	Daggett, John and Janet	Bypass will threaten the water supply.

Table K-6
ADDITIONAL CORRESPONDENCE FROM PROJECT RECORDS (1982 – 1999)

Date	Name	Comment/Concern
3/25/97	Tatum, R. Stan	The argument against the bypass because it will harm the water supply does not hold water.
3/27/97	Taylor, Sarah S.	Bypass will harm the watershed.
4/10/97	Wingate, Henry	Bypass will not harm the watershed.
3/30/97	Albert, Martin P.	Bypass will damage the Reservoir.
4/7/97	Nuechterlein, Mildred and Donald	A toxic spill on the bypass will ruin the Reservoir.
3/31/97	Hinkle, K.R.	Memo on a recent chemical spill incident into a tributary of Ivy Creek.
4/4/97	Jordan, Joanne	Bypass will harm the Reservoir.
4/4/97	CATCO press release	Bypass will harm the Reservoir.
4/4/97	Tatum, Stan	The rate of development around the watershed.
4/7/97	Strickler, Diana H.	Bypass will harm the water supply.
4/8/97	Weary, Janet G.	Bypass will damage the watershed.
4/9/97	Watson, Sandra T.	Bypass will damage the watershed.
4/11/97	Beattie, Peggy	One toxic spill can ruin the whole watershed.
4/10/97	Fitzgerald, William G. Jr.	A spill into the Reservoir is a major concern.
4/10/97	Webber, Jodie L.	Bypass will threaten the Reservoir.
4/10/97	Dotson, Alex B.	Bypass will threaten the watershed – toxic spill risk.
4/11/97	Holt, Ms. Mabel	We need to protect the water supply first and foremost.
4/12/97	Keeney, Paula M.	Watershed pollution.
4/15/97	Albemarle County BOS	Opposed to bypass, citing watershed pollution concerns, among other reasons.
3/11/97	Slingluff, Craig L. Jr.	Bypass will pose a health threat to the community by potentially polluting the Reservoir.
2/26/97	Johnson, John and Mildred	The bypass will harm the Reservoir by being so close to it.
2/28/97	Letter signed by seven individuals	Bypass will harm the watershed.
2/24/97	Martinez, Robert E. (Va. Sec. of Trans.)	Bypass design will mitigate water pollution concerns.
6/18/97	Parks, Geoff	Bypass will threaten the watershed.
6/27/97	Martinez, Robert E. (Va. Sec. of Trans.)	The bypass design will mitigate water quality issues.
8/4/97	Lamb, James C. III	Bypass will threaten the Reservoir.
8/17/97	Lamb, James C. III	Bypass will harm the watershed.
8/20/97	Lamb, James C. III	Concerned about potential health risks from storm runoff and toxic spills.
9/97	Yu, Dr. Shaw (Univ. of Virginia)	Bypass will not have the negative impact on the Reservoir that Dr. Lamb says it will.
8/31/97	Lamb, James C. III	Bypass will harm the watershed.
9/10/97	Robb, Charles S. (U.S. Senate)	Bypass project has raised concerns regarding the Reservoir.
9/14/97	Lamb, James C. III	Bypass will pose a health threat to the Charlottesville area by posing a threat to the Reservoir.
10/8/97	Gendell, David S. (FHWA)	Many roads already exist in the watershed, the risk of the bypass to the watershed is being mitigated.
2/9/95	CATCO	Bypass will impact watershed.
3/7/95	Humphris, Mr. (speaking at an MPO meeting)	Risk of a toxic spill on the bypass into the Reservoir or watershed is very real.

Table K-6
ADDITIONAL CORRESPONDENCE FROM PROJECT RECORDS (1982 – 1999)

Date	Name	Comment/Concern
2/23/97	League of Women Voters	Questions the wisdom of proceeding with planning a bypass so close to the local water supply.
3/10/97	Ivy Creek Foundation	Opposed to the bypass, in part, because it threatens the watershed of the Reservoir.
3/4/97	Charlottesville-Albemarle MPO	Encourages VDOT to employ an expert to design the stormwater management and erosion control for the bypass to protect the Reservoir.
3/11/97	Larie, George	Bypass endangers water supply; the Rivanna Water and Sewer Authority has concerns about watershed quality and the bypass.
4/2/97	Van Yahres, Mitchell (State Delegate)	Bypass poses a danger to the watershed.
5/21/97	McCabe, W. Michael (Regional Administrator, EPA)	Concerns over the threats to water quality posed by Alternative 10.
6/25/97	Larie, George	Road will harm watershed.
7/30/97	Route 29 Bypass Design Advisory Committee	VDOT's stormwater management consultant, Dr. Yu, did not present information to the CTB about the history of South Fork Rivanna River Reservoir protection efforts, even though he was asked to do this by the MPO.
1/27/98	Lamb, James C. III	Bypass will pose a threat to drinking water quality and public health.
2/17/98	Route 29 Bypass Design Advisory Committee	An additional study needs to be done to assess how the bypass will impact water quality in the Reservoir; the EIS did not do this adequately.
2/19/98	Cilimberg, V. Wayne (on behalf of Robert Garland and the Rt. 29 Bypass Design Advisory Committee)	A meeting should be held to discuss the impact on the watershed.
3/6/98	Lamb, James C. III	Bypass will threaten drinking water supply.
4/25/98	Lamb, James C. III	VDOT has still not provided answers to how they will protect the Reservoir.
4/30/98	Brent, J.W. ACSA	Bypass will threaten the Reservoir due to proximity to the main water intake.
5/10/98	Charlottesville-Albemarle MPO	VDOT should re-study the effects of the bypass on the Reservoir.
8/14/98	Charlottesville-Albemarle MPO	VDOT should re-study the effects of the bypass on the Reservoir.
6/26/98	Garland, Robert A. Jr.	Meeting should be held to discuss the impacts to the Reservoir from the bypass.
6/30/98	Presentation made by Charlottesville-Albemarle MPO for meeting with Shirley Ybarra, Va. Sec. of Trans.	Concerns about bypass impacts to Reservoir.
8/14/98	Charlottesville-Albemarle MPO	A plan for mitigation of impacts to the bypass needs to be developed.
1/26/99	Petrini, Arthur D., Rivanna Water and Sewer Authority	The Rivanna Water and Sewer Authority will not grant VDOT the easements that it requested.
1/12/00	CATCO	Unlike Alternative 10, grade-separated interchanges on existing Rt. 29 at Hydraulic, Greenbrier, and Rio Roads and Alternative 9 (expressway concept along existing Rt. 29) would not impact the Reservoir.
2/8/99	The following comments are from minutes of *Water Resource Protection and the Proposed Route 29 Bypass: A Public Forum* sponsored by MPO.	

Table K-6
ADDITIONAL CORRESPONDENCE FROM PROJECT RECORDS (1982 – 1999)

Date	Name	Comment/Concern
	Humphris, Charlotte	Charlottesville has had to work hard over the years to improve the water quality in the Reservoir. It is ironic that by preserving the land around the watershed, the area has made it an easy place to put a highway.
	Petrini, Art	A hazmat spill, runoff, and siltation are risks that a bypass would bring to the Reservoir.
	Hirschman, David	Erosion during construction. Afterward, runoff from traffic and the risk of a spill are the greatest threats to the Reservoir.
	Crow, Bruce	Albemarle County has hazmat unit that can respond to spills.
	Philips, Rob	Local authorities can get state help to contain a spill – the DEQ handles oil, all other materials are handled by the Department of Emergency Services.
	Carpenter, Larry	Spill clean-up efforts are consistent with water quality regulations.
	Lamb, James	One of the following should be done: The bypass should be built to the east of Charlottesville to avoid the Reservoir, all the runoff from the Reservoir should be pumped below the dam, or the dam should be rebuilt at a location above the bypass route.
	Daniels, Laura	DCR can shut down the construction at any point if it is determined that contractors are not taking proper erosion and runoff control steps.
	Cooper, Robert	As a first impression, it seems VDOT has incorporated more controls for stormwater management than any other project he has seen in Virginia.
	Humphris, Charlotte	VDOT is not being aggressive enough on water quality issues.
	Rooker, Dennis	What measures will be taken if VDOT finds problems with erosion, etc. once construction begins? Is VDOT bound to the recommendations of its stormwater consultant? Is there room for community input on the stormwater consultant's study? Who will pay for a toxic spill clean-up?
	Larie, George	Expressed concerns about risk of the bypass to Reservoir. New location should be found for the bypass.
	Slaughter, Ned	Bypass is greatest land disturbance in the watershed in 30 years. Dr. Yu (stormwater consultant) is not a completely impartial analyst since VDOT pays 40 percent of his salary.
	Humphris, Dr. Robert	VDOT has underestimated the amount of rainfall that the area gets.
	Richards, Meredith	Hazardous materials should be banned from the bypass; the city and county should fund a study assessing the impact of the bypass on the water supply; the city, county, and MPO should work out with VDOT who will pay for spill clean-up.
	Moore, Milton	Bypass will pose risks to the Reservoir; VDOT has not done enough to study them.
	Daggett, John	Hazmat trucks need to be banned from the bypass.
	Fowler, Mary Lou	VDOT should commit to paying for the cost of a clean-up should a spill occur.

L

COMMENTS ON THE DRAFT SUPPLEMENTAL EIS AND PUBLIC HEARING COMMENTS

In accordance with 40 CFR 1503.4 and 23 CFR 771.125(a)(1), this appendix contains the substantive comments received on the Draft SEIS and provides appropriate responses. Agency comments are listed and responded to individually and copies of agency correspondence are included at the end of this appendix. Because citizen comments were voluminous and repetitive, they have been summarized, categorized, and paraphrased, rather than listed and responded to individually. The individual comments are contained in a comprehensive transcript that is available for review at VDOT's Culpeper District Office, VDOT's Central Office in Richmond, and FHWA's office in Richmond.

As noted on page 1-3 of the Draft SEIS, only those substantive comments relative to the issues identified by the Court and that are the subjects of the SEIS have been considered in the development of this Final SEIS. To clarify, only comments relative to impacts of the Bypass on the South Fork Rivanna Reservoir and its watershed and on archaeological sites located within the footprint of the northern interchange, along with the methods and bases for determining those impacts, and the accuracy or adequacy of information on those impacts have been considered. Nonsubstantive comments are nevertheless part of the public record and are included in the transcript noted above.

L.1 AGENCY COMMENTS

Comments from agencies on the Draft SEIS are listed below, along with a response to each comment. On the copies of the correspondence at the end of this appendix are numbers corresponding to the numbered comments and responses listed below so that the reader can refer to the original text of the comments.

Date	Agency Comments and Responses	Page
3/12/02	**U.S. Department of Commerce, Deputy Under Secretary for Oceans and Atmosphere letter to Mark Wittkofski of VDOT**	
	Comment: Any geodetic control monuments affected by the project would need to be relocated at project expense.	L-46
	Response: No geodetic control monuments would be displaced by the project.	

4/16/02 **U.S. Army Corps of Engineers letter to Edward Sundra of FHWA**

Comment 1: The nature of stream crossings should be specified. L-47

Response: Section 4.3.2 was revised to add more information about stream crossings.

Comment 2: Bridges or bottomless arches are recommended where practicable to minimize impacts to water contributing to the Reservoir. Compensatory mitigation may be required. L-47

Response: Bridges will be provided at one tributary of Ivy Creek and at the South Fork Rivanna River. At other locations, standard or special design box or pipe culverts will be provided. The extent of compensatory mitigation required will be determined during future coordination with the Corps and other agencies during permit acquisition. At this time, it is anticipated that as much as 5.6 acres of replacement wetlands would be required (assuming 2:1 ratio maximum compensation for 2.8 acres of impacts). Preliminary site searches in areas surrounding the project indicate that suitable compensation sites can be found.

Comment 3: The extent to which stormwater management facilities would be located in streams or wetlands should be discussed. Requests for authorization to place these facilities in such areas will need to be accompanied by an analysis of why alternative upland sites are not practicable. L-47

Response: Table 4-6 and Sections 4.3.8 and 4.8.1 present additional information.

Comment 4: Comparable wetland impact information for the other alternatives would be helpful in substantiating whether there are less damaging practicable alternatives to the one proposed. L-47

Response: Table 4-5 and Section 4.3.8 have been revised to discuss comparability of wetland impact information in greater detail.

Comment 5: Clarify whether all wetland impacts proposed have been presented in the SEIS (e.g., those due to stormwater ponds). L-47

Response: All wetland impacts attributable to the project have been included.

Comment 6: Compensation must be provided for unavoidable wetland impacts. Such compensation should account for wetland functions as well as types. Impacted wetlands likely provide other functions besides groundwater discharge, such as habitat and nutrient filtering. L-47

Response: While the Corps is correct that the wetlands in the corridor provide other functions, the intent of the discussion in the DSEIS was to focus on the predominant function identified for the wetlands. The small, fragmented character of the wetlands, along with their scattered distribution, diminishes the quality of the other wetland functions, which include sediment/toxicant retention, sediment stabilization, wildlife habitat, and finfish habitat. Additional discussion has been added to Sections 3.2.1 and 4.3.8 to document these other functions.

4/29/02 **U.S. Environmental Protection Agency (EPA) letter to Edward Sundra of FHWA**

Comment 1: Although the DSEIS discusses generic pollutant loadings from highways and other land uses, it does not provide data on comparative loadings from the proposed Route 29 Bypass and the existing and future land uses within the Reservoir watershed. The FSEIS should include discussion of cumulative long-term loadings from the Bypass and the watershed as a whole, including projections through the life of the Reservoir, rather than just to the design year of the highway. L-49

Response: Section 4.3.3 has been revised to add additional information about pollutant loadings.

Comment 2: The DSEIS includes data on typical or predicted pollutant loadings (Tables 4-6, 4-7, 4-15, and 4-16) and information on actual conditions (Table 4-8), but should also include a table showing the actual pollutant loading from the existing and modeled future land uses with and without the Bypass. L-49

The table should be broken down by pollutant type and watershed area to show the relative contributions of the Bypass to total pollutant loadings. The FSEIS should include total estimated highway pollutant loadings for key pollutants and a discussion of how these numbers compare to the watershed pollutant loadings as a whole. L-49

Response: Sections 4.3.3 and 4.4.2 have been revised to add additional information about pollutant loadings.

Comment 3: A discussion of pollutant uptake rates along streams and wetlands should be provided. Include a discussion of how pollutant uptake opportunities in the "critical segment" would be limited due to the proximity of the Bypass to the Reservoir, and compare to opportunities for such uptake in other parts of the watershed. L-49

Response: Additional discussion as suggested has been added to Section 4.3.3.

Comment 4: The total estimated annual pollutant loading to the Reservoir from the Bypass should be provided and compared to total watershed annual loading in a table similar to Table 4-17. The results of the University of Virginia's (UVA) follow-up studies on Reservoir contaminants should be included in the FSEIS. L-49

Response: Sections 4.3.3 and 4.4.2 have been revised to add additional information about pollutant loadings. The results of UVA's follow-up studies have been added.

Comment 5: More detail is needed on the proposed stormwater management measures. In particular, pollutant removal rate assumptions and resulting final pollutant loadings to the Reservoir should be provided, along with discussion of the considerations and concerns expressed in comments from the Center for Watershed Protection (CWP). L-50

Response: More detail has been added as suggested. Appendix D contains details on the efficacy of stormwater management and erosion and sediment control measures.

Comment 6: The impacts of the stormwater management units on streams and wetlands should be discussed in more detail, along with measures to avoid and minimize them. The feasibility of routing stormwater out of the Reservoir watershed should be discussed. L-50

Response: More detail has been added as suggested.

Comment 7: Restructuring of the format of stormwater management and hazardous material discussions is recommended to facilitate better understanding of the whole issue. L-50

Response: We believe the format of the referenced discussions usefully focuses on individual elements of the issues (impacts to the watershed, impacts to the Reservoir, impacts to water treatment/distribution facilities, impacts that would occur only during construction), as opposed to long-term operation of the Bypass, and mitigation measures for all of these. The Summary and discussions in Chapter 2 may be better sources for an overview of the issues.

Comment 8: The discussion of hazardous waste transport focuses on locally transported materials. The FSEIS should add discussion of long-distance shipments, including nuclear materials. L-50

Response: As explained in Section 4.3.10, materials used by local industry in Albemarle County have the greatest likelihood of being transported on the Bypass, and therefore would be the most likely materials to be involved in spills. Nevertheless, additional discussion has been added regarding long-distance shipments, including nuclear materials.

Comment 9: The FSEIS should include analysis of the potential for trucks diverting to Route 29 once it is upgraded. L-50

Response: We assume the commenter is referring to a corridor study conducted several years ago that posed a scenario of upgrading Route 29 to a limited-access freeway from Charlottesville to I-66. Such an upgrade is only speculative and is not a reasonably foreseeable occurrence as neither VDOT nor FHWA have any plans or intentions to implement such an upgrade. Therefore, there is no need to analyze its potential for diverting trucks to Route 29.

4/26/02	**U.S. Fish and Wildlife Service (USFWS) letter to Roberto Fonseca-Martinez of FHWA**	
	Comment 1: Since the footprint of the preferred alternative has been changed, FHWA must determine whether the modification to the project would trigger reinitiation of formal Section 7 consultation regarding James spinymussel (*Pleurobema collina*).	L-51
	Response: The footprint of the proposed project and the location of the alignment in the watershed has not changed from what was presented to USFWS during the formal Section 7 consultation, which resulted in a biological opinion by USFWS that the project is "not likely to jeopardize the continued existence of the James spinymussel and is not likely to destroy or adversely modify its critical habitat because no critical habitat exists for this species." FHWA has determined that reinitiation of formal consultation is not warranted because none of the conditions identified in 50 CFR 402.16 have been satisfied.	
3/24/02	**Virginia Department of Conservation and Recreation (VDCR) letter to Mark Wittkofski of VDOT**	
	Comment 1: The James spinymussel (*Pleurobema collina*), a federally listed endangered species, has been recorded in Ivy Creek. VDCR recommends coordination with the U.S. Fish and Wildlife Service (USFWS) to ensure compliance with protective legislation.	L-52
	Response: Section 4.3.7 of the SEIS documents investigations relative to the James spinymussel and the coordination undertaken with USFWS. USFWS determined that the project would not jeopardize the continued existence of the species.	
	Comment 2: In addition, the green floater (*Lasmigona subviridis*), a species of special concern to the state but with no federal status, has been documented historically in the South Fork of the Rivanna River.	L-53
	Response: A survey for mussels was conducted in the South Fork Rivanna River upstream and downstream of the proposed Bypass crossing; no green floaters were found.	
	Comment 3: The project will not affect any documented state-listed plants or insects.	L-53
	Response: Comment acknowledged.	
	Comment 4: Appropriate erosion and sediment control and stormwater management measures must be implemented.	L-53
	Response: A comprehensive erosion and sediment control plan and stormwater management facilities will be implemented as part of the project. All erosion and sediment control measures and stormwater management provisions will be in accordance with or exceed VDOT's *Road and Bridge Specifications* and other applicable requirements.	
	Comment 5: Other existing or proposed land use conversion or expansion plans for other nearby properties should be considered for cumulative impacts on the receiving drainage or environmental systems.	L-53
	Response: Cumulative impacts are discussed in Section 4.11.2.	
	Comment 6: The proposed project is not anticipated to have any adverse impacts on existing or planned recreational facilities. Nor will it affect any streams on the National Park Service Nationwide Inventory, Final List of Rivers, potential Scenic Rivers, or existing or potential State Scenic Byways.	L-53
	Response: Comment acknowledged.	
3/4/02	**Virginia Department of Environmental Quality, Office of Air Data Analysis e-mail to Mark Wittkofski of VDOT**	
	Comment: Attention is drawn to Virginia State Air Regulations regarding open burning and fugitive dust emissions, which should be followed during the construction phase.	L-55
	Response: All pertinent regulations will be followed.	

3/12/02	**Virginia Department of Health, Division of Drinking Water e-mail to Mark Wittkofski of VDOT**	
	Comment: The proposed Bypass is located downstream of the raw water intake for the Rivanna Water and Sewer Authority's South Rivanna water treatment plant. As such, this project will not affect raw water quality entering the treatment facility.	L-55
	Response: Comment acknowledged.	
4/9/02	**Virginia Department of Historic Resources (VDHR) letter to Edward Sundra of FHWA**	
	Comment 1: The Draft SEIS fully addresses the Section 106 responsibilities of FHWA and VDOT and effects to historic properties.	L-56
	Response: Comment acknowledged.	
	Comment 2: VDHR has concurred that archaeological sites 44AB481, 44AB482, and 44AB483 are not eligible for listing in the National Register of Historic Places (NRHP). VDHR has further concurred that sites 44AB428 and 44AB430 are eligible for listing on the NRHP and has subsequently reviewed and approved the data recovery plans submitted by VDOT.	L-56
	Response: Comment acknowledged.	
	Comment 3: We look forward to continuing to work with FHWA and VDOT on the successful completion of the Section 106 process for this project and to receiving the data recovery reports for 44AB428 and 44AB430.	L-56
	Response: Comment acknowledged.	
2/25/02	**Virginia Marine Resources Commission (VMRC) letter to Mark Wittkofski of VDOT**	
	Comment 1: It would assist our review if a table were included with the permit application that identifies the waterways to be crossed, their individual drainage areas, width, depth, and other relevant information so that we may determine which stream crossings will require authorization from this office. (Jurisdiction is exerted only for beds of perennial waterways with an upstream drainage area greater than 5 square miles.)	L-56
	Response: A list with this information, along with a graphic depicting stream crossing locations, has been added to Section 4.3.2 of the Final SEIS and also will be included, along with additional detailed information, with the permit application.	
	Comment 2: For streams over which we take jurisdiction, we recommend the entire waterway be spanned, if possible. The number of in-stream piers should be minimized. Countersinking of culverts is recommended to allow fish passage during low flow.	L-57
	Response: The South Fork Rivanna River and a tributary of Ivy Creek will be spanned by bridges. At other stream crossings, the box or pipe culverts will be countersunk to the extent possible.	
	Comment 3: We recommend conducting in-stream work in the dry, blocking no more than 50% of the stream flow at any one time.	L-57
	Response: All in-stream work will be conducted in accordance with VDOT's *Road and Bridge Specifications*, which stipulate the environmental controls to be implemented by the contractor, as well as requirements for submission to VDOT of plans for temporary stream diversions (so that work can be conducted in the dry) where appropriate.	
no date recvd by VDOT 4/15/02	**Charlottesville-Albemarle Metropolitan Planning Organization (MPO) letter to Edward Sundra of FHWA**	
	Comment: Attached for review are comments submitted by Albemarle County, the Rivanna Water and Sewer Authority, the Thomas Jefferson Planning District Commission's (TJPDC) Senior Environmental Planner, and two individuals (Mr. & Mrs. Ray) affiliated with the University of Virginia's Environmental Science Department. We endorse these comments and suggest consideration of them.	L-57
	Response: Comments from Albemarle County and the Rivanna Water and Sewer Authority are discussed separately below and are not repeated here.	

TJPDC Comment 1: The risk probability assessment is limited; only a small stretch of roadway is considered. The analysis done by Black & Veatch was much more thorough, factoring in spills along other stretches of road and considering the probability of a treatment plant shutdown, which is the biggest concern. L-58

Response: The entire stretch of Bypass roadway within the Reservoir watershed was considered in the risk assessment. Additional and more focused assessment was conducted within what's referred to as the "critical segment," the section lying closest to the Reservoir between Earlysville Road and Woodburn Road, because this is the section potentially posing the most serious consequences for the Reservoir and the treatment plant in the event of a spill. The SEIS also discusses the assessment and findings contained in the Black & Veatch report.

TJPDC Comment 2: The SEIS reports that it would take a contaminant plume 2-4 days to pass the water treatment plant intake under normal flow conditions, and that RWSA can supply three days' worth of water in the event of a plant shutdown. What would happen on the fourth day, and what would happen when flow conditions are not "normal"? L-58

Response: If a plant-closing event were to occur as a result of a spill on the Bypass, and cleanup or pass-by could not be attained within the three days, then, presumably, RWSA would do the same things they would do in a similar event in the absence of the Bypass. That is, it would implement conservation measures and water use restrictions, as it did during the Summer 2002 drought, and tap alternative supplies to the extent possible. At the time of this document preparation, RWSA is working on a so-called "Doomsday Water Supply Plan" to identify alternative courses of action to respond to future water shortages. Those same actions would be applicable in the event of a plant shutdown or abnormal flow conditions resulting from whatever cause.

TJPDC Comment 3: A more thorough analysis of the use by VDOT of herbicides, plant growth regulators, and road salts in close proximity to the Reservoir, along with consideration of alternative treatment methods, would be desirable. L-58

Response: It is not clear what additional analysis the commenter desires that would make it "more thorough." Section 4.3.9 already discusses this issue at length.

TJPDC Comment 4: The SEIS should take into account scenarios in which the Rivanna Water and Sewer Authority would raise the crest height of the Reservoir dam by 4 feet and 8 feet as a means of increasing Reservoir storage capacity. L-58

Response: Sections 3.7 (now 3.6 in the FSEIS), 4.4, 4.6, and 4.7 were revised to reflect potential future increases to the Reservoir dam crest height.

Ray Comment: A study published by the U.S. Geological Survey in *Environmental Science and Technology* describes pollution of reservoirs by polycyclic aromatic hydrocarbons (PAH), a substance with detrimental biological effects that is linked to fossil fuel combustion. Please consider the findings of that paper in deliberations on the Bypass. L-58

Response: Sections 4.3.3 and 4.4.2 were revised to discuss PAH.

3/29/02 **Rivanna Water and Sewer Authority (RWSA) letter to Mark Wittkofski of VDOT**

Comment 1: VDOT must commit to providing the highest possible level of protection of community water supply. L-59

Response: VDOT has committed to a number of design features and stormwater control measures to protect water quality in the Reservoir. These measures are discussed at length in Section 4.8 and go well beyond standard procedures for controlling runoff and protecting water quality.

Comment 2: VDOT must invest in the best possible measures to eliminate or minimize chemical introduction into our water supply. L-59

Response: VDOT has committed to a number of design features and stormwater control measures to minimize the introduction of chemicals into the Reservoir from the proposed Bypass while others are still under consideration by FHWA. These measures are discussed at length in Section 4.8.

Comment 3: VDOT must use the Best Available Technology to reduce the risk of spills and ensure the best possible runoff control technology. L-59

Response: VDOT has committed to a number of design features and stormwater control measures to minimize the risk of spills into the Reservoir from the proposed Bypass. These measures are discussed at length in Section 4.8.

Comment 4: VDOT must establish upfront funding for needed spill planning, monitoring systems, emergency operations, Reservoir restoration, sediment removal and a myriad of other new costs that will otherwise have to be shouldered by RWSA and local government. L-59

Response: VDOT has committed to funding and implementing a number of design features, stormwater control measures, and other mitigation measures as part of the project to minimize impacts attributable to the Bypass project. These measures are discussed at length in Section 4.8. VDOT is not in a position to assume primary financial responsibility for spill planning and other costs of protecting and rehabilitating the entire watershed and the water supply, as these are local functions and there are many potential sources of spills or other contamination of the watershed and Reservoir that are in no way attributable to VDOT.

Comment 5: VDOT must take into account the Authority's future water supply plan, especially the four-foot crest controls planned for the Reservoir's dam. L-59

Response: Sections 3.7, 4.4, and 4.6 were revised to reflect the Authority's planned increases to the Reservoir dam crest height.

Comment 6: VDOT must fund construction of a new upstream water supply intake on the South Fork Rivanna River Reservoir. L-59

Response: VDOT investigated the potential for constructing a new upstream water supply intake (see Section 4.8.2 and Appendix D, Section D.5.3) and determined that it did not appear to be feasible.

3/14/02 **Rivanna Water and Sewer Authority (RWSA) statement delivered at public hearing**

Comment 7: We believe the risk of a spill that would adversely affect the Reservoir has been underestimated. Regardless of what the actual risk might be, we do not believe a 500-foot buffer between the Reservoir and the bypass provides adequate protection to the water supply. L-60

Response: Comment acknowledged.

Comment 8: We find it unacceptable to read that VDOT plans to use herbicides and plant growth regulators in the watershed. L-60

Response: Comment acknowledged.

Comment 9: VDOT needs to eliminate, or at least minimize, all chemical introduction into our water supply. L-60

Response: VDOT has committed to a number of design features and stormwater control measures to minimize the introduction of chemicals into the Reservoir from the proposed Bypass. These measures are discussed at length in Section 4.8.

Comment 10: VDOT needs to make a firm financial commitment to sophisticated mitigation measures, rather than just identifying them. L-60

Response: VDOT has committed to a number of design features, stormwater control measures, and other mitigation measures that would be funded and implemented as part of the project. These measures are discussed at length in Section 4.8.

Comment 11: We look to VDOT to guarantee funding for the ongoing costs of protecting and rehabilitating the water supply and to assume primary responsibility for spill planning, monitoring systems, spill clean-up, emergency operations of the water supply, and restoration of the watershed and Reservoir. L-60

Response: VDOT has committed to funding and implementing a number of design features, stormwater control measures, and other mitigation measures as part of the project to minimize impacts attributable to the Bypass project. These measures are discussed at length in Section 4.8.

VDOT is not in a position to assume primary financial responsibility for spill planning and other costs of protecting and rehabilitating the entire watershed and the water supply, as these are local functions and there are many potential sources of spills or other contamination of the watershed and Reservoir that are in no way attributable to VDOT.

Comment 12: We request that VDOT provide the Authority upfront funding for the new manpower, transportation-related dredging, physical improvements, and perpetual maintenance that will be required. We also request that VDOT fund an independent environmental auditor position at the Authority to monitor all VDOT and contractor activities. L-60

Response: We cannot determine what manpower, dredging, physical improvement, and maintenance RWSA has in mind here. VDOT already has committed to implementing a number of mitigation measures as part of the project and is willing to discuss with RWSA the funding of additional measures that might help mitigate impacts attributable to the project. However, VDOT is not willing to commit to the *carte blanche* funding that seems to be implied in the comment.

Comment 13: We request that VDOT update the risk analysis to include updated traffic flow data. L-61

Response: The risk analysis is based on traffic data projected to the design year of the project, 2022, using accepted traffic prediction methods. The results are consistent with the traffic projects used by the MPO for transportation planning purposes in developing the long-range transportation plan for the region. Risk analyses conducted by Black & Veatch under contract to the MPO included hypothetical scenarios using arbitrary traffic volumes and truck mixes, unsupported by any traffic analysis, that would be higher than the 2022 design-year volumes to illustrate the potential effects of such higher volumes if they were to occur. Those results have been added to the discussion in Section 4.3.10 for informational purposes. We have examined the traffic forecasts and land use patterns in the region and do not believe that updated traffic flow data would produce substantially different results from those reported.

Comment 14: We request that VDOT analyze RWSA's ability to supply water during severe droughts if the Reservoir were adversely affected by a spill. L-61

Response: During hazmat spill events (from the Bypass or from existing sources) that are coincident with severe droughts, RWSA's ability to supply water would be the same, with or without the Bypass in place. That is, RWSA would implement conservation measures and water use restrictions, as it did during the Summer 2002 drought, and tap alternative supplies to the extent possible. At the time of this document preparation, RWSA is working on a so-called "Doomsday Water Supply Plan" to identify alternative courses of action to respond to future water shortages. Those same actions would be applicable in the event of a plant shutdown or nonnormal flow conditions resulting from whatever cause.

Comment 15: We request that VDOT develop a plan for how drinking water would be provided, and who would pay for it, if the main water supply Reservoir is knocked out of service for more than three days. L-61

Response: Water supply contingency planning is the province of RWSA, not VDOT. In fact, RWSA already is working on planning for water shortage scenarios in its "Doomsday Water Supply Plan currently under development.

Comment 16: We strongly urge that VDOT minimize use of deicing chemicals within the watershed. L-61

Response: VDOT will use no more deicing chemicals than are necessary to achieve and maintain safe travel conditions on roads within the watershed.

Comment 17: VDOT must take financial responsibility to remove any increased sedimentation to the Reservoir that occurs due to construction of the Bypass. L-61

Response: Because sedimentation of the Reservoir is occurring from a variety of sources, it would be difficult to identify the fraction attributable to the Bypass construction and equitably assign a cost for removing that fraction. VDOT has committed to implementing a number of erosion and sediment control measures during construction to minimize sedimentation of the Reservoir. On portions of the project where drainage flows directly to the Reservoir, and where turbidity curtains would be used to contain sediment from stormwater outfalls, the collected sediment could be removed at the completion of construction.

Comment 18: The SEIS should acknowledge that pollution loadings and spill potentials from existing roads in the watershed are not comparable to those associated with the Bypass. L-61

Response: Additional discussion has been added to Sections 4.3, 4.4, and 4.5 to note the relative qualitative and quantitative differences between the proposed Bypass and other roads in the watershed with respect to pollutant loadings and spill potentials.

Comment 19: VDOT must assume financial responsibility for any increased operating cost for treatment of synthetic organics, pesticides, and herbicides from the Bypass. L-61

Response: We cannot determine how RWSA would plan to identify and segregate any additional treatment costs attributable to the Bypass versus those attributable to sources elsewhere in the watershed.

Comment 20: Section 3.7 of the SEIS on Water Supply and Future Needs should be updated to reflect RWSA's most recently adopted strategies (attached to the comments, the strategies include expanding Reservoir capacity, water conservation measures, and watershed management measures). L-62

Response: Section 3.7 of the DSEIS is now Section 3.6 in the FSEIS. The suggested information has been added to it.

Comment 21: We request that VDOT alter its use of anti-caking agents containing cyanide in deicing salts used on roadways. L-62

Response: At this time, VDOT sees no basis for discontinuing its use of deicing salts that may contain sodium ferrocyanide (also known as yellow prussiate of soda) as an anti-caking agent. No problems have been identified from past use of these materials on roads in the watershed. VDOT's specifications require that cyanide concentrations in products it accepts for use do not exceed 1 part per million. Sodium ferrocyanide is widely used in many products, including food products for human consumption. The Food and Drug Administration permits concentrations of 13 parts per million in food additives (23 CFR 172.490). EPA (2002) notes that, although some studies have found that releases of cyanide ions can be toxic to fish, "[t]here is no evidence of toxicity in humans from sodium ferrocyanide, even at levels higher than those employed for deicing." The limited number of storm events during which this material is used, the relatively low quantities that are used, the distance of the proposed Bypass from the drinking water intake, and the use of stormwater management facilities all point to a conclusion that no human health effects or other adverse consequences would result from continued use of deicing materials containing minute quantities of this substance.

Comment 22: We request that VDOT discuss in more detail the adverse effects, and mitigation measures for those effects, on tributary streams feeding the Reservoir. L-62

Response: Additional discussion on tributary streams and impacts to them has been added to Sections 4.3.2, 4.3.3, and 4.7. Mitigation measures already are discussed at length in Section 4.8.

Comment 23: We believe the spill scenarios listed on page 4-27 are incomplete and do not accurately reflect the myriad of ways a spill could reach the Reservoir and adversely affect the water supply. L-62

Response: We believe the listed scenarios represent the most likely ones and they were not intended to be all encompassing. It is not clear what other scenarios the commenter had in mind, and thus we have not added any additional ones.

Comment 24: Keep in mind that "1 in x" spill risks could translate into a spill in the first year, or even two spills or more during the first year. L-62

Response: Comment acknowledged.

Comment 25: The SEIS provides no proof to back the assertion that RWSA could close the intake for several days, thus allowing all potential problems from a spill to dissipate. Some of the chemicals potentially entering the Reservoir are persistent in the environment and may actually bioaccumulate. L-62

Response: During preparation of the Draft SEIS, a meeting was held between VDOT's consultants and RWSA staff. At that time, RWSA staff indicated that three days was the maximum that demand could be met if the South Fork Water Treatment Plant had to shut down.

Comment 26: RWSA agrees that monitoring stations are desirable and asks for VDOT commitments to upfront funding of them. L-62

Response: VDOT has committed to conducting water quality sampling during and after construction of the project. The details regarding the number and locations of sampling will be determined at a later date.

Comment 27: RWSA is unclear as to what is meant by the need for "a higher state of treatment preparedness at the water treatment plant during the construction period" and requests commitments to use of proven erosion and sediment controls in the construction phase. L-62

Response: We simply meant that the construction period poses the greatest potential for elevated levels of silt in the Reservoir, just as periods following storms currently tend to have elevated levels of silt. So, whatever additional preparedness RWSA institutes now to handle increased silt loads, they would do the same thing during the project construction period. VDOT has committed to implementing a number of proven erosion and sediment controls in the construction phase, as described in Section 4.8.

Comment 28: RWSA questions the efficacy of stormwater ponds in materially affecting the quality of runoff. Further, high intensity short-duration storms would move quickly through the treatment system and no appreciable removal of dissolved contaminants will occur under any conditions. L-62

Response: It is difficult to precisely estimate the effectiveness of the stormwater ponds because much depends on individual site conditions, pond design, and installation and maintenance. However, the literature (Schueler 1993) suggests that removal rates of 50% are reasonably achievable. For example, Schueler's review found that more than 70% of studies reported removal rates exceeding 60% for suspended solids and lead. For phosphorus, 55% of the studies reported removal rates exceeding 60%. In addition, Schueler found that wet ponds, which are proposed for use in the Bypass stormwater management system, consistently were more effective in removing pollutants. A study of a wet pond system in New Zealand (reported by Schueler 1994) was found to remove nearly 75% of solids and phosphorus, more than 85% of copper, lead, and zinc, and 62% of nitrate. Young reported average removal rates of 74% for sediment, 49% for phosphorus, 34% for total nitrogen, and 59% for zinc. Clearly, stormwater ponds are worthwhile investments. Otherwise, they would not be required by Albemarle County's Watershed Protection Ordinance or Virginia's Stormwater Management Act.

Comment 29: High intensity rains or snowmelts, back-to-back events, and large storm events that exceed the pond design criteria will result in little, if any, removal of contaminants (other than rudimentary sedimentation). L-62

Response: The stormwater ponds are designed to exceed the requirements and criteria of Virginia's Stormwater Management Act and Albemarle County's own regulations for stormwater management in the watershed. Stormwater management facilities are not intended to handle the largest conceivable storm event or the worst conceivable conditions.

They are designed to handle events that occur most frequently and regularly. By doing so, they provide protection against the majority of storms that contribute to runoff in the watershed. Furthermore, large-storm events would not occur in isolation just over the Bypass right of way, they would affect the entire watershed. Therefore, the proportions of pollutant contributions from the Bypass relative to the entire watershed would not change. That is, pollutant loads from the entire watershed would be correspondingly higher relative to any higher pollutant loads from the Bypass resulting from more intense or larger storms. However, the concentrations of pollutants during higher intensity or larger storms may actually be lower than in the smaller and more frequent storms.

A USGS study of the 1999 flood episode associated with Hurricanes Dennis, Floyd, and Irene in eastern North Carolina compared water quality samples taken from sites throughout the affected watersheds immediately after Hurricane Floyd with samples collected from the same sites during the nine-year period from 1990 to 1999. Samples were analyzed for nutrients, trace metals, dissolved and suspended organic carbon, suspended sediment, and *E. coli* and *C. perfringens* bacteria. While the study only hints at the contributions of various land uses to the overall pollutant loads in the watersheds, it found that the maximum pollutant concentrations associated with Hurricane Floyd tended to be similar to the median concentrations at the same sites during the nine-year period prior to the fall of 1999. At three of the five sites for which comparisons could be made, maximum ammonia concentrations measured in floodwaters were approximately equal to the median concentrations measured from January 1990 to August 1999 and much less than the maximum concentrations measured during that period. Organic nitrogen, total phosphorus, and orthophosphorus concentrations measured in floodwaters were approximately equal to concentrations measured during the previous nine years, while nitrate concentrations were low compared to previous measurements. The study concluded that although large masses of pollutants were carried by floodwaters, the high streamflow caused by the storms resulted in significant dilution of nitrogen, phosphorus, and organic carbon.

Comment 30: RWSA asks that VDOT commit to upgrading local emergency service response capability for the full range of spills that local resources will be expected to handle. L-62

Response: We do not view the range of potential spills that might occur on the Bypass to be any different than the range of potential spills already present in Albemarle County. Therefore, we do not know of any upgrades that might be warranted for local emergency service response capability.

Comment 31: The SFRR Report referenced on page 4-67 is a draft report still under review by the RWSA Board of Directors. L-62

Response: Comment acknowledged. The report still has not been finalized at the time of preparation of this document.

4/15/02 **Albemarle County Board of Supervisors FAX to Patsy Napier of VDOT**

Comment 1: Albemarle County agrees with the assessment and VDHR's concurrence regarding the potential National Register of Historic Places eligibility of archaeological sites 44AB428 and 44AB430. The County further agrees with VDHR's recommendation to undertake Phase III data recovery activities in accordance with the proposed data recovery plan, which will use an appropriately conservative methodology. L-69

Response: Comments acknowledged.

Comment 2: We believe that VDOT should proceed with Phase III data recovery efforts, which are necessary before any consideration can be given to the sites' National Register nomination or special status designation, including site preservation. We would like to receive the results of the Phase III work and reserve the right to comment on them. L70

Response: VDOT intends to proceed with the Phase III efforts as project funding and scheduling permit prior to project construction, and as the court allows in light of the injunction. Because the sites already have been determined to be important chiefly for the information they contain, based on a sampling and evaluation protocol consistent with the Secretary of the Interior's standards, there would be no basis for preserving the sites from further disturbance once that information is recovered. Copies of the Phase III report will be submitted to the County.

Comment 3: The DSEIS shows a surprising lack of adherence to standard problem analysis approaches used in the engineering and environmental science fields, and until VDOT brings its analysis up to the standards of professional norms, the water quality impacts of the Bypass will not have been properly considered. L-71

Response: It is not clear what the commenter considers "standard problem analysis approaches" to be; however, FHWA and VDOT believe the methodologies used to conduct the studies for the SEIS do reflect standard practices for such studies. As illustrated by the technical appendices, the fundamentals of water quality science, the state of the art of water pollution controls and drinking water treatment, water quality regulation and control programs, mitigation measures for water quality impacts, and various models for water quality impact assessment all have been taken into consideration in developing the analyses and findings contained in the SEIS.

Further, the numerous pages of references reflect careful research into applicable data sources and analysis methods. The coordination and comments chapter (Chapter 7) and the new Appendix L discussing comments on the DSEIS reflect attention to concerns expressed by agencies with jurisdiction or special expertise, as well as the viewpoints of local citizens, interest groups, and other experts hired by interest groups.

Comment 4: As an example of Comment 3, the commenter offers that the SEIS contains an incomplete and potentially misleading risk probability assessment for the catastrophic spill scenario. It is suggested that, based on the low probability of a hazmat spill on a small stretch of highway [described in the SEIS as a "critical segment" between Earlysville Road and Woodburn Road], VDOT has concluded that no further analysis is necessary. The commenter contends that not all potential avenues of spills reaching the Reservoir have been considered ("the windows and back door as well as the front door" need to be accounted for). The commenter then states that "the Black and Veatch analysis stands as the only useful risk analysis that has been carried out." L-71

Response: There was no conclusion in the DSEIS suggesting that no further analysis beyond the critical segment was necessary. Rather, a separate analysis for the critical segment is reported because that segment, being the closest to the Reservoir and the water treatment plant, represents the area of greatest concern for spills with more serious consequences. The findings of the Black & Veatch studies were included in the DSEIS.

Comment 5: As another example of Comment 3, the commenter offers that the implications of a worst-case scenario have not been considered; more specifically, there is no discussion of what would happen on the fourth day of a treatment plant shutdown. L-71

Response: If a plant-closing event were to occur as a result of a spill on the Bypass, and cleanup or pass-by could not be attained within the three days, then, presumably, RWSA would do the same things they would do in a similar event in the absence of the Bypass. That is, it would implement conservation measures and water use restrictions, as it did during the Summer 2002 drought, and tap alternative supplies to the extent possible. At the time of this document preparation, RWSA is working on a so-called "Doomsday Water Supply Plan" to identify alternative courses of action to respond to future water shortages. Those same actions would be applicable in the event of a plant shutdown or nonnormal flow conditions resulting from whatever cause.

Comment 6: As a third example of Comment 3, the commenter offers that phosphorus loads should have been examined, rather than concentrations; more specifically, it is the difference between the pre-Bypass load and post-Bypass load that defines potential impact on phosphorus delivery to the Reservoir. L-72

Response: Section 4.4.3 presented information about phosphorous inputs from the Bypass. It has been revised to present additional information. Ultimately, it is the resulting concentration, not the magnitude of the load, that is of concern for most pollutants, including phosphorous. For it is the concentration that testing, regulatory programs, human health effects, eutrophication processes, and water treatment processes are based upon.

Comment 7: There is no discussion of alternatives other than the selected alternative regarding Reservoir impacts (e.g., tables and discussion should include the base case with interchanges and Alternatives 9, 11, and 12). L-72

Response: The entire Chapter 2 discusses alternatives both within and outside the watershed, along with summaries of their impacts, including watershed and Reservoir impacts. It is clear that Alternatives 11 and 12 would have more severe impacts than the Selected Alternative, not only to the Reservoir and its watershed, but to a host of other resources including historic properties, agricultural and forestal districts (see Figure 2-2), and the federally listed endangered James spinymussel. Moreover, Alternative 12 has previously been shown not to meet the needs for the project. It would not appear to be productive to generate additional data to support the obvious. It is understood that alternatives not in the watershed would have no impact on the watershed or the Reservoir. Therefore, again, it would appear to be counterproductive to add these alternatives to the tables and discussion. Finally, the focus of the SEIS, as directed by the Court, is on the Selected Alternative and its impacts to the Reservoir and its watershed and on certain archaeological resources. The document is not intended to be a complete reanalysis of a universe of alternatives, as acknowledged in the DSEIS.

Comment 8: VDOT suggests proposals for limiting the risk, but does not take responsibility for these proposals. L-72

Response: VDOT has incorporated a number of design features into the proposed project as presented in Section 4.8 and takes full responsibility for their construction and maintenance.

Comment 9: The substance of the SEIS is a small portion of the body of text; extraneous information should be moved to appendices and the appendices should be printed as a separate volume. L-72

Response: Subjective comment, no response needed.

Comment 10: Some of the stormwater treatment measures appear to be musings rather than commitments. L-72

Response: We cannot determine what measures are being referred to, and therefore cannot formulate a response.

Comment 11: Most of Chapter 3 is only vaguely relevant to the problems being studied and should be referenced or moved to an appendix. L-72

Response: Before one can assess the consequences of particular actions, it is necessary, and required by the CEQ's NEPA regulations, to know the characteristics and conditions of the resources and systems being affected, and, if possible, how they came to have those characteristics and conditions. The information contained in Chapter 3 is essential to establish the context within which the consequences discussed in Chapter 4 would occur. We have reviewed Chapter 3 in detail and streamlined it where possible by removing verbiage that might be considered extraneous. For example, the separate discussion of the Rivanna River watershed beyond the limits of the Reservoir watershed has been eliminated.

Comment 12: Why was the SEIS released before Dr. Yu's water quality analysis was complete? L-72

Response: Dr. Yu's analyses were not completed during the time frame established for preparing the Draft SEIS. His findings are, however, included in this Final SEIS.

Comment 13: Recent total phosphorus concentrations are more like 0.027 ppm than 0.04 ppm. L-72

Response: Comment acknowledged.

Comment 14: MtBE does reach this area even though it is not a nonattainment area. L-72

Response: Section 4.3.3 has been revised to reflect additional information on MtBE.

Comment 15: What groundwater maps were used? L-72

Response: Groundwater information consulted for the Draft SEIS included maps contained in Albemarle County's Comprehensive Plan.

Comment 16: Is VDOT saying that existing impact to the endangered mussels is justification for further impacts? L-73

Response: No. VDOT is establishing the context under which project impacts must be viewed and to help the reader better understand some of the rationale used by USFWS in issuing a "no jeopardy opinion."

Comment 17: Need more discussion of herbicide use, particularly regarding potential herbicide concentrations in drinking water. L-73

Response: Additional information has been added to Section 4.3.9.

Comment 18: Alternative vegetation control and deicing measures should be analyzed. L-73

Response: Additional information has been added to Section 4.3.9.

Comment 19: Fuel oil estimates seem low. L-73

Response: Comment acknowledged.

Comment 20: Estimate the chances of a plant shutdown, not just a truck crash. A full risk analysis similar to Black & Veatch's is necessary. L-73

Response: Black & Veatch's findings are reported in the SEIS; there is no need to repeat them.

Comment 21: Provide examples of typical response times when the services of a "State On-Scene Coordinator" is required. L-73

Response: Added to Section 4.3.10.

Comment 22: How would hydraulic residence time be affected by the likely addition of 4 or 8 feet to the Reservoir pool elevation? What other effects would these elevation changes have on the analyses? L-73

Response: Impacts to the Reservoir under scenarios with a raised pool elevation have been added to Section 4.4.

Comment 23: What would happen if the Reservoir contamination happened during a dry period when the Reservoir pool was below the top of the dam? L-73

Response: This information has been added to Section 4.4.

Comment 24: Describe the AnAGNPS model; what explains the difference between the Black & Veatch findings and Dr. Yu's findings. Does VDOT view the findings as having the same meaning? L-73

Response: A brief description of the model was provided in Section E.5.3 in Appendix E. Additional information has been added to that description, and also to the results discussion in Chapter 4. It is not clear what "findings" the commenter is referring to; however, any differences in those findings can be attributed to differences in assumptions, analysis methods, and models used, all of which are summarized in the discussions. The results from both analyses clearly show that pollutant loadings from the proposed Bypass, particularly with the proposed mitigation measures to be implemented, would not substantially increase over pollutant loadings without the Bypass in place.

Comment 25: Has mosquito control (in light of West Nile Virus) been taken into account in designing the wet ponds? Will they evolve into ecosystems that sustain mosquito predator populations, or will VDOT need to use insecticides for mosquito control? L-73

Response: No chemical mosquito controls are planned for the stormwater ponds. Additional information on this issue has been added to Section 4.3.9.

Comment 26: Could the proposed stormwater pond gate systems include bypass systems to help with wet weather contaminant trapping? L-73

Response: A definitive answer to this question cannot be determined at this time. Although VDOT is willing to consider implementation of these systems, further design work (which has been proscribed by the Court) is necessary to fully evaluate them.

Comment 27: RWSA and VHB have determined that the 8 mgd flowby is not a legal requirement, discuss this topic more fully, including relationships to bathymetric data. L-73

Response: Not germane to the discussion of impacts of the Bypass; no response needed.

L.2 PUBLIC COMMENTS

L.2.1 Public Hearing and Overview of Comments

On March 14, 2002, a public hearing was held at the DoubleTree Hotel in Albemarle County near the northern terminus of the proposed Bypass. The hearing consisted of two parts: first, an informal informational session was held during which displays and documents (including the FEIS, the Draft SEIS, and the detailed archaeology report that was prepared for the northern interchange), were available for review, and VDOT and consultant personnel were available for discussion; second, a formal statement session was held, during which individuals were allotted three minutes each to make public statements for the record.

Citizens were invited to provide their comments by any of several avenues:

- Pre-printed comment sheets were provided at the hearing, upon which citizens could write their comments and then either deposit the sheets in a box at the hearing or mail later to the pre-printed address on the sheet.
- Persons wishing to speak privately could record their comments at an oral recording station throughout the hearing.
- Persons speaking publicly during the formal statement session were recorded.
- Letters could be sent to designated addresses at either VDOT or FHWA.
- E-mails could be sent electronically to an address specifically established to receive electronic comments.

The attendance sign-in sheets show that 682 people attended the hearing. However, the actual attendance was greater because some people did not sign, or refused to sign, the attendance sheets. Comments were received from more than 3,600 people either at the Public Hearing or during the comment period following the hearing. In many cases, identical or similar comments were received from more than one person. For example, support and opposition groups both mounted post card mail-in campaigns, with the post cards containing preprinted statements that people could endorse by signing and submitting the card. Identical or very similar statements in many letters and e-mails evidence organized campaigns to orchestrate the expression of certain themes, sentiments, or opinions. Some people submitted the same comments by more than one method. Many people simply expressed support for or opposition to the project.

Because the comments were exceptionally voluminous, they have been summarized in this document rather than repeated verbatim. Additionally, because a large number of the comments were identical or very similar, they have been categorized to facilitate the analysis of comments and to better organize the responses to them. The comments were further classified as substantive or nonsubstantive.

Substantive comments are those that raise issues that are relevant to the topics of the SEIS and that were not considered or discussed previously, or those that raise questions about the results of the analysis, whether it be the methodology used or the conclusions that have been drawn. They are presented in Section L.2.2 along with responses to them.

Nonsubstantive comments are those that concern issues beyond the scope of the SEIS, or those that are simply unsupported subjective statements. They do not require responses, but are summarized in Section L.2.3

L.2.2 Substantive Public Comments

The substantive public comments have been placed in the following categories:

1. Proximity of Bypass to Reservoir.
2. Hazardous material spills and cleanup.
3. Stormwater runoff contamination.
4. Sedimentation during construction.
5. Water supply system (reservoirs, treatment plant, intake, distribution).
6. Groundwater contamination and contamination of private wells.
7. Watershed ecosystem, wildlife, and endangered species.
8. Induced development in watershed.
9. Ivy Creek Natural Area.
10. Archaeological resources.

The detailed comments and responses are as follows:

1. Proximity of Bypass to Reservoir

1.1 **Comment:** Construction of the Bypass would increase the threat of terrorist attacks on the water supply. Increased public access to the Reservoir increases chances of terrorist attack at the Reservoir
Response: A new Section 4.4.5 has been added to discuss potential terrorist threats. The Bypass would not provide any additional public access to the Reservoir, but the water supply is already vulnerable from the roads that pass directly over the water supply and as evidenced by the recent finding of abandoned vehicles in the Reservoir.

1.2 **Comment:** Displays at hearing showing terrain around Reservoir near Woodburn Road were grossly inaccurate.
Response: We have rechecked the graphics depicting the terrain at specific locations along the Bypass near the Reservoir (Figures 4-4A - 4-4D in the SEIS) and they are correct.

1.3 **Comment:** Project is too close to Reservoir; proposes alternative plan for an arterial (lower design speed) bypass east of the proposed bypass route and alongside and parallel to Hydraulic Road that would be mostly below existing ground level, believes it would be less costly and less damaging to watershed.
Response: A bypass alignment similar to one proposed was considered and determined not to be feasible and prudent (see Section 2.3.2) during previous environmental studies.

1.4 **Comment:** Bypass will cut through several springs and streams in Squirrel Ridge neighborhood, with harmful effects on watershed.
Response: Surface water impacts are discussed in Section 4.3 and the consequences for the Reservoir are discussed in Section 4.4.

2. Hazardous Material Spills and Cleanup

2.1 **Comment:** The SEIS did not thoroughly examine the possibility of toxic spill accidents in wet weather, thus omitting an increased risk factor.
Response: Section 4.3.10 discusses the relative potential for accidents occurring during wet weather compared to dry weather.

2.2 **Comment:** DSEIS limited consideration of hazmats to those found in area only.
Response: The DSEIS discussion focused on hazmats most likely to be transported on the Bypass (i.e., those that are generated, consumed, or disposed locally). Additional discussion has been added to Section 4.3.10 to acknowledge other potential sources.

2.3 **Comment:** VDOT has not adequately assessed cleanup costs and responsible parties for inevitable toxic spill pollution of Reservoir.
Response: Additional information has been added to Section 4.3.10 and 4.4.4 to discuss these issues.

2.4 **Comment:** DSEIS does not address the possibility of banning hazmat carriers from the Bypass.

Response: FHWA and VDOT do not believe that banning of hazmat carriers from the Bypass is warranted for the following reasons:

- The risk analysis for hazmat spills showed that the incremental risk of a hazmat spill occurring on the Bypass is about the same as the risk of a spill occurring on existing roads near the Reservoir, which suggest the Bypass would not lead to a substantial increase in risk to the water supply from hazardous materials. An analysis of the section of Bypass closest to the Reservoir shows an even lower incremental risk to that portion of the Reservoir deemed most vulnerable to a spill from the Bypass.
- Although some individuals have suggested that no incremental increase in risk because of the Bypass is acceptable, FHWA and VDOT do not agree that zero risk is an attainable goal. Society lives with, and deals with, risk everyday and everywhere. The fact is that the Reservoir already is at risk to various degrees for a variety of problems from a variety of sources. The additional increment of risk posed by the Bypass, in the opinion of FHWA and VDOT, is not unacceptably high.
- Limited access highways, such as the proposed Bypass, generally are safer than nonlimited access highways, such as existing Route 29. The former are designed to high standards to promote safety, have a limited number of access points where vehicle conflicts could occur, have a high degree of control on traffic movements where access points are provided, and operate with relatively consistent rates of traffic speed. In contrast, the latter have a large number of access points and cross-street intersections where turning movements create many vehicle conflicts, have a relatively low degree of control on traffic movements where access points are provided (generally, traffic signals at intersections), no consistency in rates of traffic speed (stop-and-go at intersections, acceleration and deceleration of turning vehicles), and greater occurrence of lane changes. Speed differentials are a leading cause of vehicle accidents. In addition, national accident statistics show that accident rates are four times higher on nonlimited access highways than on limited access highways.
- VDOT has incorporated into the project design a number of features to minimize the potential for hazmat spills (e.g., installation of concrete Jersey barrier along fill sections of roadway closest to the Reservoir) and to help contain any spills should they occur (e.g., concrete curbing to direct roadway runoff into stormwater system, stormwater management ponds).
- Even if hazmat carriers were forced to use existing Route 29, the risk of hazmat spills in populated areas, and spills into waterways, would remain. For example, existing Route 29 crosses the South Fork Rivanna River and passes through highly developed commercial and residential areas; the existing interchange of Route 29 and Route 250 Bypass has ramps with sharp curves that have required posting of cautionary signs to truckers about rollover risk.
- In view of the relatively limited additional risk posed by the Bypass, imposing a ban on hazardous material transport, and instead forcing hazmat carriers to use existing Route 29, would constitute an unwarranted impedance of commerce.

3. Stormwater Runoff Contamination

3.1 **Comment:** Concerned that work done by University of Virginia professor Dr. Shaw Yu is being represented as University work rather than Virginia Transportation Research Council work. Because Dr. Yu is on the state payroll, the work he did is not independent study and the data may possibly be skewed to VDOT's favor.

Response: Dr. Shaw Yu is a professor at the University of Virginia with long experience and research expertise in the areas of surface water hydrology, computer applications for water resources problems, stormwater management, and watershed modeling and management. Dr. Yu also works as a Faculty Research Engineer for the Virginia Transportation Research Council. The Research Council is one of the nation's oldest state-sponsored centers for the study and development of advanced transportation-related engineering technology and improved management and operational practices. Since its inception in 1948, the Research Council has operated under the terms of a joint agreement between the University and VDOT. This arrangement permits each organization to utilize the resources of the other and has resulted in many mutually beneficial endeavors over the years. The Research Council accomplishes its mission by conducting a broad-based program of applied and basic research, providing technical consulting, supporting technology transfer activities, and sponsoring technical education and training programs. Dr. Yu's work on the Bypass studies was initiated to help develop more effective stormwater management and pollution control features for the proposed project. The commenter's concerns and insinuations about Dr. Yu's objectivity are completely unfounded and without merit. Using the same reasoning, one could also argue that the consultants hired by the project's opponents and their research and conclusion are also skewed in favor of those they have their contracts with.

3.2 **Comment:** SEIS did not address or fully analyze "first flush" effects.

Response: Although this topic was presented in Section 4.4.2, we have decided to expand the discussion to present more details about this phenomenon and its applicability to the project.

3.3 **Comment:** SEIS did not address or fully analyze single storm events.
Response: Additional information has been added to Section 4.3.3 to discuss this issue with respect to roadway runoff.

3.4 **Comment:** Flow patterns of local streams will be changed.
Response: Flow patterns of local streams would be changed only to the extent that the stream channels would be realigned at the roadway crossings where culverts would carry the streams under the roadway.

3.5 **Comment:** Vehicular traffic will emit aerosols and particulates, such as polycyclic aromatic hydrocarbons, which are toxic to human biology.
Response: Section 4.3.3 has been modified to add more information about polycyclic aromatic hydrocarbons.

3.6 **Comment:** Construction of Bypass would further eutrophication of the Reservoir
Response: Section 4.4.3 discusses potential effects on eutrophication.

4. Sedimentation During Construction

4.1 **Comment:** The SEIS did not analyze single storm events and the resulting impacts of erosion and sedimentation into the reservoir, particularly during construction.
Response: Additional information has been added to Section 4.7.1 to discuss this issue with respect to erosion and sedimentation during construction.

4.2 **Comment:** Bypass environmental impacts underestimated due to "decimation of underground springs and clearing old ecosystems."
Response: There are no "old ecosystems" that would be cleared by the project. All of the land within the proposed right of way is either disturbed now or was disturbed in the past for human use. Underground springs are dealt with routinely on highway projects in accordance with VDOT's Road Design Manual and *Road and Bridge Specifications*. No springs would be "decimated" by the project.

5. Water Supply System (Reservoirs, Treatment Plant, Intake, Distribution)

5.1 **Comment:** Disputes information in DSEIS that Reservoir represents 54% of public water supply (he thinks it's more).
Response: According to the Rivanna Water and Sewer Authority (2001), the Reservoir accounts for 66.2% of the water used in the urban area. The smaller percentage came from earlier documents and has been corrected.

5.2 **Comment:** SEIS does not discuss future addition of four feet to the dam at the Reservoir for additional water capacity.
Response: Additional discussion has been added to Section 4.4 regarding the likely differences in consequences for the higher Reservoir level that would result from raising the dam crest 4 or 8 feet.

5.3 **Comment:** DSEIS does not consider decline in water level as a result of climate change.
Response: Climate changes, if they are occurring, cannot reasonably be attributed to the proposed project. In addition, climate changes generally are long-term, gradual events, occurring in time-scales significantly longer than the time frame considered for the environmental consequences of this project. Consequently, they are beyond the scope of this document.

5.4 **Comment:** Study did not consider impacts to Reservoir under drought conditions.
Response: In drought conditions, there would be no rain, hence no runoff, and therefore no impacts on the Reservoir from the Bypass.

6. Groundwater Contamination and Contamination of Private Wells

6.1 **Comment:** The SEIS stated that "50% of the proposed Bypass right of way may potentially contain private wells." However, the SEIS contained no analysis of possible groundwater contamination from a toxic spill and the resulting impact on private wells. DSEIS does not describe remedy for well contamination.
Response: Section 4.3.6 has been expanded to discuss this issue in more detail.

6.2 **Comment:** Bypass will destroy water table.
Response: Additional information has been added to Section 4.3.6.

6.3 **Comment:** Flow patterns of groundwater will be changed.
Response: Section 4.3.6 has been expanded to discuss this issue.

7. Watershed Ecosystem, Wildlife, and Endangered Species

7.1 **Comment:** Bypass will decrease native biodiversity, change watershed biota, and increase nuisance species.
Response: The proposed Bypass right of way constitutes a mere 0.13% of the total watershed area. The Bypass, therefore, could not reasonably be expected to have a meaningful effect on biodiversity or biota in the watershed. The Bypass construction and maintenance will be fully in accord with Executive Order 13112, *Invasive Species*, pertaining to the introduction and control of nuisance species.

7.2 **Comment:** Wetland buffers will be removed.
Response: Localized removal of wetlands will occur at locations where the proposed roadway would cross them.

8. Induced Development in Watershed

8.1 **Comment:** If interchanges are built at some future time at Barracks Road and at Earlysville Road, development pressures in watershed would occur.
Response: There are no plans to build interchanges at these locations, either now or in the foreseeable future.

8.2 **Comment:** DSEIS does not address potential growth-inducing impacts ("Building the Bypass would spur additional development at both termini and create tremendous pressure to build intermediate access points on it.")
Response: Potential growth-inducing impacts are discussed in Section 4.10.

9. Ivy Creek Natural Area

9.1 **Comment:** Concerned about impacts to waterways (Martins Branch and Ivy Creek), wildlife, and trails of the Ivy Creek Natural Area from sedimentation or pollution from runoff or spills.
Response: A new section, 4.3.11, Ivy Creek Natural Area, has been added to discuss these concerns. A new graphic, Figure 4-5, also has been added to show the relationship between the Natural Area and the proposed Bypass.

10. Archaeological Resources

10.1 **Comment:** Excavation of archaeological resources will destroy them and their research value.
Response: All important archaeological data contained in the sites will be recovered, analyzed, documented, and conserved in accordance with the data recovery plan outlined in the SEIS. The recovery plan was approved by the Virginia State Historic Preservation Officer. The research value lies in the information gathered through data recovery.

10.2 **Comment:** Removing archaeological sites will further reduce Virginia's history.
Response: On the contrary, recovery of important data from the archaeological sites will add to our knowledge about prehistoric residents of the area.

10.3 **Comment:** Educational value of archaeological resources will be destroyed.
Response: Recovering the important archaeological information, documenting it, and disseminating it to both professionals and the general public will increase the educational value of the archaeological resources. Right now, that value is nonexistent.

10.4 **Comment:** Potential tourist sites will be affected if archaeological resources are paved over.
Response: The archaeological sites will not be affected by road construction until all important scientific data has been recovered. Furthermore, these sites are important for the information they contain and are not of a type that could become tourist sites.

10.5 **Comment:** The archaeological sites should be preserved in place as a tourist site or park.
Response: The pursuit of knowledge about the past is in the public interest. Recovery of important archaeological information through controlled excavation, not preservation in place, is an appropriate treatment for these archaeological sites, as concurred in by the SHPO.

10.6 **Comment:** The area of investigation should be enlarged to learn more about the context of the sites.
Response: The archaeological data recovery plans stipulate the areas to be investigated and are specifically designed to answer important research questions.

10.7 **Comment:** VDOT would break the law by paving over important archaeological sites.
Response: Section 106 of the National Historic Preservation Act stipulates that effects on historic properties (such as important archaeological sites) are to be considered by federal agencies prior to federal projects and that the Advisory Council on Historic Preservation be given an opportunity to comment. VDOT and FHWA have compiled with the letter and intent of the law.

10.8 **Comment:** Historical evidence should be preserved for study.
Response: The data recovery plan provides for conservation of any artifacts recovered at the sites. They will be permanently curated at the Virginia State Historic Preservation Office in Richmond, Virginia and will be available for study.

10.9 **Comment:** Archaeological sites are valuable, irreplaceable resources that must be protected.
Response: Recovery of artifacts and information from archaeological sites is by its nature destructive. Therefore archaeological site excavations are conducted in a spirit of stewardship for future generations, with full recognition of their non-renewable nature and their potential multiple uses and public values. Not all archaeological sites possess the same value or significance (i.e., eligibility for the National Register). In this case, the value lies in the information gained through excavation.

10.10 **Comment:** Archaeological resources have not yet been investigated, so effects cannot be determined at this time.
Response: Archaeological sites have been identified and the project effect established according to the Secretary of Interior's standards, and appropriate treatments approved by the Virginia State Historic Preservation Officer (Virginia Department of Historic Resources).

10.11 **Comment:** Ask Virginia Department of Historic Resources, not lay people, about effects on historic resources.
Response: VDHR has been consulted numerous times during project development. With respect to the archaeological sites, VDHR has concurred in the eligibility and effects determinations (i.e., "no effect," provided the agreed-upon data recovery plan is implemented).

10.12 **Comment:** Archaeological resources should be investigated further by an independent party, not VDOT.
Response: Professional archaeologists meeting the Secretary of the Interior's Standards have objectively investigated the archaeological sites identified. The results of the investigations have been reviewed and concurred with by VDHR and by Albemarle County's Historic Preservation Committee.

10.13 **Comment:** Future improvements in archaeological data recovery techniques will be unavailable for use if the data recovery excavations are done now.
Response: Postponing all action until some future date when speculative and unforeseeable improvements in technology might be available is not a viable option in this case. The cultural material recovered from these archaeological sites will be permanently curated and available to future researchers for study.

10.14 **Comment:** More studies should be done on archaeological sites.
Response: More studies <u>will</u> be done during the archaeological data recovery efforts.

10.15 **Comment:** Conclusion that archaeological sites do not warrant preservation in place is premature.
Response: These archaeological sites were determined to be of value chiefly for their important information about prehistory, based on consultation with the SHPO. As such they have little or no value for preservation in place. Therefore, it was entirely appropriate to prepare data recovery plans.

10.16 **Comment:** SEIS has simply accepted the Phase III data recovery proposal and secured VDHR's blessing without knowing what features might be discovered.
Response: The archaeological sampling work undertaken previously identified numerous features within the sites. In part, it is this information that has assisted in the conclusion that the sites are important only for the information that can be gained from them and the design of the data recovery plans. This is the nature of archaeological research and coordination.

10.17 **Comment:** An accurate assessment of archaeological sites has not been conducted; moving resources is not the same as protecting them.
Response: A reasonable and good-faith effort to identify all National Register-eligible archaeological sites has been completed using the Secretary of the Interior's standards. There are no plans to "move" any resources; rather, data recovery at each site will appropriately recover all important information.

10.18 **Comment:** SEIS should not be finalized until archaeological site studies have been completed.
Response: The SEIS documents the commitments for data recovery at sites 44AB428 and 44AB430. As such, the requirements of Section 106 have been satisfied and the SEIS can be finalized accordingly. It is not required that such commitments be implemented prior to finalizing the SEIS just as, for example, the other commitments such as stormwater management haven't been implemented.

10.19 **Comment:** It is disrespectful to assume that archaeological sites "can be sifted and lifted" without the ancestors' approval.
Response: These archaeological sites are not likely to contain human remains, associated or unassociated funerary objects, sacred objects, or items of cultural patrimony, as those terms are defined by the Native American Graves Protection and Repatriation Act. Additionally, the archaeological sites do not have long-term preservation value, such as traditional cultural and religious importance to an Indian tribe. Finally, the archaeological sites do not possess special significance to another ethnic group or community that historically ascribes cultural or symbolic value to the sites and who would object to the excavation and removal of the contents of the sites.

10.20 **Comment:** The law disallows destruction of archaeological resources if options exist to protect them.
Response: Section 106 of the National Historic Preservation Act does not "disallow" destruction of archaeological properties. Rather, it requires that the effects of federal undertakings be considered. Appropriate treatments for affected archaeological sites may include preservation in place, recovery or partial recovery of archaeological data, public interpretive display, or any combination of these and other measures. The specific treatment deemed appropriate is a decision made by the federal agency (FHWA) in consultation with the Virginia State Historic Preservation Officer. In this particular case, the VA SHPO concurred that data recovery was an appropriate treatment for sites 44AB428 and 44AB430.

10.21 **Comment:** It would be difficult to do any serious archaeology once a road is built over a site.
Response: All archaeological data recovery work will be completed well in advance of any road construction.

10.22 **Comment:** Project will pave over archaeological resources without first finding out what they are.
Response: Data recovery plans for archaeological sites 44AB428 and 44AB430 will be implemented well in advance of any construction activities.

L.2.3 Nonsubstantive Public Comments

The following comments pertain to issues that are beyond the scope of this SEIS, which is limited to water quality issues associated with the South Fork Rivanna River Reservoir and its watershed and archaeological resources at the northern Bypass terminus.

- Though the Reservoir might be affected by a spill, so would people downstream be affected by spills on other alternatives that would drain into the Rivanna River and to the James River.
- Comments related to noise, schools, recreation areas, homes, etc.
- Maps do not reflect potential impact to recent residential development.

The following comments represent unsupported subjective statements received during the comment period. They simply express an opinion, or they provide insufficient information upon which to base a reasoned response.

- I oppose the Bypass.
- I support the Bypass.
- The project poses a significant risk to the South Fork Rivanna River watershed and Reservoir, which is the primary source of water for Charlottesville and Albemarle County, and that risk was not sufficiently addressed nor would it be adequately mitigated by the measures proposed in the Draft SEIS.
- The proposed bypass will pass through 3.4 miles of the reservoir's watershed where a toxic spill would jeopardize drinking water for 80,000 people.
- The SEIS did not adequately address the issue of alternatives to the proposed bypass.
- The Charlottesville U.S. 29 Bypass has been delayed long enough. It is time to build it after 25 years of unnecessary delays.
- The Bypass should be built as soon as possible, because it will eliminate through traffic from U.S. 29 and make shopping on U.S. 29 more convenient. It will also greatly improve access to the University of Virginia North Grounds, especially on game weekends.
- I know the Bypass can be designed to be aesthetically very pleasant, just as the U.S. 250 Bypass is now. I also know that it can be designed, built, and operated so as to have a minimal impact on the reservoir. It will be a great - and long overdue - improvement for our community.
- Albemarle will be turned into a suburb of Washington D.C. and Richmond.
- Bypass would potentially devastate Reservoir if hazmat spill occurs.
- An alternative water treatment plant intake relocation upstream would reduce risk of toxic spill to zero.
- Watershed would be affected by sprawling development.
- Bypass would disrupt entire watershed ecosystem.
- Concerned about impact to wildlife.

L.3 INTEREST GROUP COMMENTS

Several interest groups attended the public hearing and submitted comments on the project and on the DSEIS. These groups, like the public, submitted both substantive and nonsubstantive comments as follows.

L.3.1 Charlottesville - Albemarle Transportation Coalition (CATCO)

CATCO is a local organization involved in local and regional transportation issues. It's president, George Larie, lives in Colthurst, one of the residential subdivisions within the

Reservoir watershed along the proposed Bypass alignment. He frequently attends MPO meetings, VDOT public meetings, and other forums for transportation planning in the Charlottesville region. CATCO, long a vocal opponent of the proposed Bypass, offered a number of general and specific comments on the DSEIS.

General Comments

A 2-page section of CATCO's comments titled "Introduction" contains a number of subjective and nonsubstantive statements that do not require responses. They include allegations of bias by VDOT and FHWA in preparing the DSEIS, unsubstantiated assertions that the document is inadequate or incomplete in various respects, mention of impacts that are not germane to the issues covered in the SEIS, and unsupported claims that the document does not fulfill the requirements of the court order. This is followed by a list of specific comments by DSEIS page number and section number. They are repeated verbatim below, along with responses.

Specific Comments

1. S-1 (S.1) - Project is not located in the City of Charlottesville.
Response: A short portion of the North Grounds Connector extends into the City limits.

2. S-1 (S.2) - DSEIS states, "Pursuant to a court order by the U.S. District Court for the Western District of Virginia, this Supplemental Environmental Impact Statement (DSEIS) has been prepared to more fully consider the effects for the Selected Alternative on...the project's northern terminus on archaeological resources." This has not been done because the Phase III Data Recovery Survey has not been performed. Therefore, this DSEIS should not be finalized until this Survey is completed.
Response: The data recoveries are to mitigate effects that already have been determined, not to further evaluate the potential effects. As such, it is not required that they be implemented prior to finalizing the SEIS. FHWA and VDOT have committed in the SEIS to implementing the data recoveries prior to construction in accordance with the plan that is summarized in the SEIS, and that was approved by VDHR and Albemarle County's Historic Preservation Committee.

3. S-2 (S.4.1) – DSEIS states that Alternative 10 (Alt. 10) has "fewer environmental impacts than other alternatives." This conclusion is incorrect because VDOT has not updated traffic studies, i.e., origin-destination study, has not considered use of 12.4 acres of Section 4(f) property, and has not considered the impacts on 6 schools and 6 established neighborhoods. VDOT has not sufficiently studied impacts on SFRR and on groundwater. Contrary to what is stated in the FEIS, Alt. 10 has always taken agricultural-forestal district land. Furthermore, Alt. 9 and the Base Case with grade-separated interchanges on Route 29 have no environmental consequences.
Response: Subjective and nonsubstantive comments, no response needed.

4. S-2 (S.4.1) – Alt. 10 impacts the state and federally endangered species James spinymussel.
Response: The U.S. Fish and Wildlife Service issued a "no-jeopardy" Biological Opinion for the Selected Alternative and the James spinymussel.

5. S-2 (S.4.2) – VDOT considered a modification to Alt. 11 that would shift it to the west to avoid <u>constructive</u> use of Section 4(f) property. However, Alt. 10 involves <u>actual</u> use of 12.4 acres of Section 4(f) property at the AHS-Jouett-Greer school complex.
Response: Issue not germane to the SEIS; no response needed.

6. S-2 (S.4.2) – VDOT avoided use of Alt. 11 so as not to "destroy community cohesion in the Ivy Farm subdivision." However, this was not a consideration for any of the neighborhoods impacted by Alt. 10.
Response: Issue not germane to the SEIS; no response needed.

7. S-3 (S.4.2) – DSEIS states that an alternative to Alt. 10 would take 6.7 acres of Section 4(f) property; however, the approved Alt. 10 takes 12.4 acres of Section 4(f) property.
Response: Issue not germane to the SEIS; no response needed.

8. S-3 (S.4.2) – DSEIS incorrectly states that "recreational attributes of facilities on the School Complex can be recreated elsewhere" without designating any possible relocation site.
Response: Issue not germane to the SEIS; no response needed.

9. S-4 (S.4.3) – DSEIS fails to note that the Alt. 9 Expressway entails the shortest travel time of all of the alternatives, and that travel time on the Alt. 10 bypass was only approximately one minute shorter than the Base Case with grade-separated interchanges alternative.
Response: Issue not germane to the SEIS; no response needed.

10. S-4 (S.4.3) – DSEIS incorrectly states that level of service on Route 29 Expressway would be "the worst level of traffic service ["C"] of all of the build alternatives." In fact, the level of service on Route 29, for all alternatives except Alt. 9 would remain "F" with or without the proposed Route 29 Bypass.
Response: Issue not germane to the SEIS; no response needed.

11. S-4 (S.4.3) – DSEIS incorrectly states the City of Charlottesville's opposition to the interchange at Hydraulic Road, which referred primarily to the massive overdesign of the interchange and its resulting impact on businesses.
Response: Issue not germane to the SEIS; no response needed.

12. S-5 (S.4.3) – DSEIS states, "Although the interchanges would improve travel conditions on segments of existing Route 29, they would not do so to the extent that the Bypass would not be needed." There is no document or data to support this statement. In fact, the CTB resolution of 1990 states that the Bypass would not be built "until such time as traffic conditions become unacceptable and economic conditions permit."
Response: Issue not germane to the SEIS; no response needed.

13. S-5 (S.4.3) – DSEIS fails to note that construction of grade-separated interchanges on Route 29 would improve the level of service from "F" to "B".
Response: Issue not germane to the SEIS; no response needed.

14. S-5 (S.4.3) – DSEIS fails to note the role that Carter Myers, owner of Colonial Auto Center, Culpeper District CTB member, and a founder and former chairman of the North Charlottesville Business Council, played in the removal of the grade-separated interchanges on Route 29. This matter was addressed by the Joint Legislative and Audit Review Committee (JLARC) Report of 1998.
Response: Issue not germane to the SEIS; no response needed.

15. S-6 (S.5.1) – DSEIS does not contain an analysis of the effects of the Route 29 Bypass on groundwater quality and quantity. Potential problems are acknowledged, but no adequate solutions or resolutions are offered. This is extremely significant since private wells are used in 50% of the Bypass right-of-way.
Response: The groundwater and well discussions have been expanded in Section 4.3.6.

16. S-7 (S.5.1) – DSEIS does not agree with opinion of certified ecologist Phil Stevenson who concluded that the Alt. 10 Bypass would "pose a significant threat of extinction to the James spinymussel." Stevenson's report is not included in the DSEIS.
Response: The U.S. Fish and Wildlife Service issued a "no-jeopardy" Biological Opinion for the Selected Alternative and the James spinymussel after considering Mr. Stevenson's report as well as the report of malacologist, Dr. Neves.

17. S-7 (S.5.1) – A VDOT consultant from the Parsons Group admitted at an Albemarle County Board of Supervisors meeting (2/6/02) that a hazardous material spill with the potential to affect water quality in the watershed area is possible. DSEIS only states that the risk of such a spill is "extremely small."
Response: It is not clear what distinction the commenter is making; events with small risks are certainly possible.

18. S-8 (S.5.1) – DSEIS only addresses hazardous material spills containing chemicals that are used in the area. The DSEIS does not address hazardous material spills containing exotic chemicals that would be transported on the Bypass, such as carbon tetrachloride.
Response: Section 4.3.10 has been expanded to include discussion on materials not generated locally.

19. S-8 (S.5.1) – DSEIS states, "An accident resulting in a spill release on the Bypass anywhere within the Reservoir watershed is projected to occur once every 65 years." This ignores the independent Black and Veatch Study of April 2001 which concludes that the risk of a hazardous material spill release that would shut down the SFRR water treatment plant (WTP) is once

every 16 years with proposed VDOT mitigation controls for 24,000 vpd. For 36,000 vpd, Black and Veatch states the recurrence interval with VDOT mitigation controls is once in every 10 years.
Response: The findings of the Black & Veatch study are included in the SEIS. The Black & Veatch scenario using a traffic volume of 36,000 vpd was hypothetical. The report also did not account for all of the mitigation committed to by VDOT, such as the jersey barrier on the shoulder.

20. S-8 (S.5.2) – DSEIS gives the false impression that the University of Virginia (UVA) formally supports the conclusions reached by some of their faculty researchers who were employed by VDOT as consultants.
Response: Subjective comment, no response needed.

21. S-8 (S.5.2) – DSEIS states that "Even without any stormwater treatment measures, the sediment load is expected to be equivalent to the pre-construction level." This is questionable.
Response: Subjective comment, no response needed.

22. S-8 (S.5.2) – DSEIS underestimates potential traffic count of the Bypass, thereby underestimating impact on SFRR. DSEIS does not include traffic that will travel on bypass (19,000 vpd) if Route 29 is converted to a limited access road.
Response: There are no plans to convert Route 29 to a limited access road.

23. S-8 (S.5.2) – DSEIS attempts to compare existing 2 lane rural roads in the watershed to the proposed 4 lane interstate-like Bypass. The existing roads and the proposed bypass would carry vastly different cargoes, and the bypass would have a much greater vpd count, thereby greatly increasing the risk to the SFRR.
Response: Discussion on this topic has been expanded in Sections 4.3 and 4.4.

24. S-8 – S-9 (S.5.2) – DSEIS states that "although the proposed bypass may pose a certain incremental additional risk for contamination of the reservoir, this risk represents only a small part of the total risk of contamination." The Black and Veatch Study stated that this risk would be almost 3 times greater than the existing risk. Any additional risk to the community's fragile primary drinking water supply is unacceptable.
Response: Subjective comment, no response needed.

25. S-9 (S.5.2) – DSEIS ignores fact that nitrogen is also a major contributor to eutrophication in the SFRR.
Response: The discussions on eutrophication in Sections 3.3.3 (3.4.3 in the DSEIS) and 4.4.3 have been expanded to include more information on the relationship between nitrogen levels and eutrophication. However, as has been noted recently by the Watershed Manager, phosphorus almost always is the more important nutrient, which is why the County's Water Protection Ordinance targets reductions in phosphorus inputs in the watershed.

26. S-9 (S.5.2) – DSEIS does not address who pays for clean-up activities in case of hazardous materials spills.
Response: Section 4.4.4 has been expanded to include information on spill response and cleanup issues.

27. S-9 – S-10 (S.5.3) – DSEIS incorrectly states that the RWSA would be able to supply approximately 3 days of water from its storage. This is incorrect because, with a storage capacity of approximately 12 million gallons per day in the distribution system, this could furnish approximately one day's water supply. The combined production capacity from the other treatment plants (Observatory and North Rivanna) cannot satisfy the average demand. Normally, these plants serve different pressure zones, and use of water may be limited in some areas, due to pumping capacities and pressure reducing valves. DSEIS does not address what the community will do if a hazardous material spill cannot be removed or mitigated before the reserve water supply is depleted.
Response: During preparation of the Draft SEIS, a meeting was held between VDOT's consultants and RWSA staff. At that time, RWSA staff indicated that three days was the maximum that demand could be met if the South Fork Water Treatment Plant had to shut down. If a plant-closing event were to occur as a result of a spill on the Bypass, and cleanup or pass-by could not be attained within the three days, then, presumably, RWSA would do the same things they would do in a similar event in the absence of the Bypass. That is, it would implement conservation measures and water use restrictions, as it has done during the recent drought, and tap alternative supplies to the extent possible. At the time of this document preparation, RWSA is working on a so-called "Doomsday Water Supply Plan" to identify alternative courses of action to respond to future water shortages. Those same actions would be applicable in the event of a plant shutdown or nonnormal flow conditions resulting from whatever cause.

28. S-10 (S.5.3) – DSEIS presumes that two prehistoric archaeological "sites are important only for the information they may contain," without having conducted a Phase III data recovery survey. The Phase II Archaeological Investigation report of these two sites states, "...activities appear to have included procurement of quartz for the production of chipped-stone

tools...[the artifacts] suggest that the initial stages for tool production were emphasized at each site. The process would have resulted in early- or middle-stage bifaces that could be taken to other locations for further work as necessary...the sites exhibit qualities [termed] 'quarries' and 'quarry reductions stations; where the newly obtained raw material was reduced to forms that were convenient to transport elsewhere...activities appear to have been localized, and it is possible that different components may be associated with individual activity areas.

"...few detailed analyses of these site types have been performed. Because so few of these types of sites have been excavated, they are not well understood in the context of their local environmental settings. Moreover, only limited data are available regarding individual site types...detailed analysis of this site type can provide information on site function and settlement patterns...

"...useful for understanding the 'sociopolitical and economic organization' of hunter-gatherer populations within specific regions...little research has been conducted on the spatial configurations of sites represented by lithic scatters...information from these sites may contribute significantly to a body of data necessary to comprehend the nature of upland sites occupations in the region."

Thus, in addition to the information from the recovered artifacts, it appears that a very broad spectrum of information about the activities and the inhabitants of these sites may be obtained from these sites. This is an opportunity to enhance greatly knowledge of the early dwellers of the Mid-Atlantic regions. These sites may indicate the oldest activity yet discovered in the area.

Once the Northern Terminus of the Bypass has been built, further information from this site will be lost forever. The potential for this being a major archaeological discovery from the Mid-Archaic Period warrants a more detailed search with smaller grids to cover the entire area. The taking of these sites appears to be a direct constructive use. These sites need preservation in place.
Response: The determination that sites 44AB428 and 44AB430 are important chiefly for the information they contain was based on the Phase II evaluation survey (Botwick, Bradford, 1994, *Phase II Archaeological Investigations, Sites 44AB428, 44AB429, and 44AB430, Route 29, Albemarle County, Virginia*, prepared for the Virginia Department of Transportation by Louis Berger and Associates, Inc., Richmond, Virginia). VDHR concurred with the determination and approved the data recovery plan. Data recovery does not constitute further survey to identify sites or evaluate effects on them; rather, data recovery aims to retrieve all important data from a site prior to construction of the project. After completion of the data recovery efforts, there would be no more data to be "lost forever." "Section 4(f) does not apply to archeological sites where the Administration, after consultation with the SHPO and the ACHP, determines that the archeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place." (23 CFR 771.135((g)(2). FHWA made such a determination in consultation with the SHPO and the ACHP. Thus, there will be no direct or constructive use of the sites under the provisions of the Section 4(f).

29. S-10 (S.5.4) – DSEIS does not acknowledge that a future Board of Supervisors could request interchanges on the Bypass at Hydraulic and Barracks Road. Such interchanges would dramatically induce sprawl development and "contribute to the cumulative effects of development in the Reservoir watershed."
Response: Such "what-if" scenarios are highly speculative and unsupported by the long-range transportation plan for the region as well as VDOT's Six-Year Program. If it occurs, then additional NEPA documentation would have to be prepared to study its consequences if Federal-aid funds are used.

30. S-11 (S.5.4) – DSEIS ignores impacts of pollution generated by Bypass and potential hazardous materials spills on downstream communities.
Response: Cannot respond because cannot determine what "downstream communities" are being referred to.

31. S-11 (S.5.4) – DSEIS cites roads, which currently cross the SFRR, but fails to note that they carry local traffic, not north-south through interstate-type high speed traffic, including hazardous materials carriers.
Response: Discussion on this topic has been expanded in Sections 4.3 and 4.4. These roads already carry trucks transporting hazardous materials, such as home heating oil, home pest controls, and lawn care fertilizers, herbicides, and pesticides.

32. S-11 (S.5.7) – The DSEIS editorializes and states, "Supporters of the project believe that the risks are acceptable, particularly in view of the extensive protective measures and stormwater management facilities that will be incorporated into the project." In fact, supporters have had no opportunity to comment on the DSEIS prior to its publication. For more than 15 years, opponents have consistently voiced serious concerns about SFRR protection.
Response: The DSEIS was not made available to anyone for comment prior to its publication. Supporters have in fact expressed their views that risks are acceptable, just as opponents have expressed their views that the risks are unacceptable.

33. 1-1 (1.1) – DSEIS does not adequately address the events and process by which the grade-separated interchanges on Route 29 were removed from the transportation plan. DSEIS fails to document the role of Carter Myers and the North Charlottesville Business Council (NCBC) in influencing the CTB's decision to rescind the grade-separated interchanges without notice to Albemarle County. Public comment on the initial design of the grade-separated interchanges was given at a Public Information Meeting, not a Public Hearing. VDOT accepted these comments and touted them to the CTB as a reason to remove the grade-separated interchange project, because VDOT wanted to build the Bypass instead.
Response: Issue not germane to the SEIS; no response needed.

34. 1-1 (1.1) – DSEIS states that "design work and right of way acquisition were ongoing for the Bypass at the time the suit was filed," but fails to state that in 1996 the MPO had withheld federal construction funding unless and until VDOT reinstated the sequencing agreement outlined in the 1990 and 1991 CTB resolutions.
Response: Issue not germane to the SEIS; no response needed.

35. 1-1 (1.1) – The eight counts that were denied by the Court are under appeal.
Response: The United States Court of Appeals for the Fourth Circuit on February 7, 2003 affirmed the district court's grant of summary judgment in favor of the defendants on Counts 1, 3, 4, 6, 7, 8, and 9 and remanded Count 5 to the district court with instructions to dismiss it.

36. 1-2 (1.1) – FHWA concluded that it would accept the draft DSEIS (1/29/02) before the Public Hearing (3/14/02) on it occurred.
Response: True. Federal regulations require that a signed draft EIS be available at a public hearing.

37. 1-12 (1.3) – DSEIS incorrectly states the need for the proposed Bypass. The DSEIS states, "The need for the proposed project is based on the inability of existing Route 29 to adequately accommodate projected traffic volumes, particularly traffic that is not generated by, or oriented to, the development along existing Route 29 [i.e., through traffic.]" However, the FEIS stated that the primary purpose for the Route 29 Corridor Study was to identify a way to relieve traffic congestion on a 3-mile section of route 29 between the US 250 Bypass and the South Fork Rivanna River. A secondary purpose was to accommodate through traffic. The Bypass does little to relieve traffic congestion on Route 29, which was the primary purpose of the route 29 Corridor Study. The DSEIS fails to note that constructing grade-separated interchanges on route 29 would raise the level of service in that corridor from "F" to "B."
Response: Issue not germane to the SEIS; no response needed.

38. 1-13 (1.3) – DSEIS states, "Some of this traffic circulates within the corridor and some of it travels beyond the immediate area." In fact, 90% of the traffic in this corridor is local.
Response: Issue not germane to the SEIS; no response needed. However, as this was a frequent comment from others, some clarification is in order. "Local," as used in the traffic origin and destination studies and the modeling efforts conducted for the Route 29 Corridor Study, was defined as the CATS study area and includes the City of Charlottesville and portions of Albemarle County, not just the portion of the Route 29 corridor under study. "Through" was defined as traffic passing entirely through the CATS region. Thus, the commenter's statement that "90% of the traffic in this corridor is local" refers to any traffic with an origin or destination or both within the greater Charlottesville metropolitan area.

39. 1-13 (1.3) – DSEIS states, "Route 29 also has long been identified as part of the State Arterial system, mandated by the Virginia General Assembly to provide multi-lane divided, high-speed highways serving major towns and cities in the state." However, VDOT consultant Stuart Tyler stated to the Albemarle County Board of Supervisors on 2/6/02 that Route 29 north of Charlottesville to Warrenton would not become limited access.
Response: Issue not germane to the SEIS; no response needed. However, it can be noted that multi-lane divided high-speed highways on the State Arterial system are not necessarily limited-access highways.

40. 1-13 (1.3) – DSEIS states, "Year 2010 traffic estimates in the FEIS indicated diversions of approximately 16% to 27% of the traffic from existing Route 29." These traffic diversion figures are incorrect because they were derived from studies that included two interchanges on the Bypass. VDOT has never corrected this error, despite requests from Albemarle County and numerous citizens.
Response: Issue not germane to the SEIS; no response needed. However, there was no error, and VDOT has addressed this issue directly with the County and George Larie, as documented in the project files.

41. 1-16 (1.4.1) – DSEIS states that "extensive coordination was conducted with the public, local officials," etc. However, the figures for public comment taken at VDOT Public Hearings during the course of the study are not listed in the DSEIS. Those figures show overwhelming opposition to the Bypass.

Response: Issue not germane to the SEIS; no response needed.

42. 1-16 (1.4.1) – DSEIS omits criteria for CTB's 1990 and 1991 selection of sequence of improvements, i.e. Alt. 10 Bypass to be built only "when traffic conditions become unacceptable and economic conditions permit."
Response: Issue not germane to the SEIS; no response needed.

43. 1-17 (1.4.3) – DSEIS omits Citizens' Design Advisory Committee's 10/24/96 resolution opposing construction of the Bypass and its 2/21/97 letter to VDOT reconfirming this resolution.
Response: Issue not germane to the SEIS; no response needed.

44. 1-17 (1.4.3) – DSEIS does not correctly or completely address the events surrounding the changing of the Northern Terminus from an at grade intersection with stoplight to a grade-separated interchange. The original corridor approved by the CTB in 1990 incorporated grade-separated interchanges at both termini. However, VDOT's booklet prepared for the February 13, 1995 Location Public Hearing on Revised Termini stated, "Finally the corridor bridges the South For[k] of the Rivanna River and ties into existing Route 29 with at at-grade intersection approximately 3,000 feet north of the river...[For the southern terminus], [t]he through traffic on route 29/250 would be free flow movement in the interchange design and the movements on Alternative 10 and the North Grounds Connector would be controlled by signalization on the bridge structure." VDOT claimed that these changes in termini reduced the cost of the Bypass by $32 million. This VDOT proposed design actually had a stoplight for through traffic at both termini of Alternative 10. These stoplights would have created longer travel time, thereby defeating VDOT's most important reason (expediting north-south through traffic for a bypass). After approval of this new design by the CTB on Mach 16, 1995, VDOT reinstated the grade-separated interchange at the Northern Terminus and designed a very complex three-level grade-separated interchange for the southern terminus. (It is interesting to note that VDOT first deleted grade-separated interchanges to reduce costs by $25 to $35 million for the Location Public Hearing and to gain CTB approval, then reinstated them after CTB approval.) In fact, the revised termini cost in February 1997 was $52.2 million greater than the estimate presented at the 1995 Location Public Hearing.
Response: Issue not germane to the SEIS; no response needed.

45. 1-17 (1.4.4) – DSEIS states "new information about trails on the [Albemarle County school complex] property and the designation of the property by the County as a district park necessitated preparation of a new Section 4(f) Evaluation." The fact is that the information was not new, but was ignored by VDOT in its research. In July 1993, a VDOT Environmental Specialist informed her VDOT supervisor that the school recreational areas required Section 4(f) coordination. The designation of school recreation property by the County as district parks appears in many county documents, including the County's Comprehensive Plan.
Response: Issue not germane to the SEIS; no response needed.

46. 2-1 (2.1) – DSEIS in quoting the FEIS, states that Alt. 10 "would provide the shortest and most direct route for through traffic." This is incorrect. A July 1990 VDOT document stated that Alt. 9 would provide the shortest and fastest route for through traffic.
Response: Issue not germane to the SEIS; no response needed.

47. 2-1 (2.1) – DSEIS states, "The adjustment at the north end was made to reduce the number of business displacements and to bypass additional commercial developments that had occurred within the corridor. An additional shift was made in the vicinity of Woodburn road to avoid a cemetery and to avoid a new elementary school and associated playground areas that were constructed in the path of the original selected Alternative 10 alignment." Zoning of properties along Route 29 and within the corridor study area was in place in 1990 and was ignored by VDOT and the CTB in the selection of Alt. 10. Albemarle County had no legal authority to prevent development in the corridor study area.
Response: Issue not germane to the SEIS; no response needed.

48. 2-1 (2.1) – Contrary to what is implied in the DSEIS, the Albemarle County School Board contracted to purchase the Agnor-Hurt Elementary School property in July 1990 prior to the selection of Alt. 10 by the CTB on November 15, 1990.
Response: Issue not germane to the SEIS; no response needed.

49. 2-2 (2.1) – DSEIS states that in the worst-case scenario, pollutants from runoff are unlikely to measurably affect the water quality of the SFRR. However, the Black and Veatch study indicates that constructing the Bypass increases the likelihood of a serious event threatening the SFRR and shutting down the water treatment plant from 45 years (without the Bypass) to 16 years (with the Bypass) with 24,000 vpd or 10 years with 36,000 vpd.
Response: The referenced paragraph in the DSEIS was discussion on roadway runoff whereas the events referred to from the Black & Veatch study involve hazardous material spills. These are treated as two separate topics in both the SEIS and the Black

& Veatch study. The 36,000 vpd scenario referred to from the Black and Veatch study was purely hypothetical and was not based on any traffic studies.

50. 2-2 (2.1) – DSEIS states, "The risk of a hazardous material spill with the potential to affect water quality in the watershed area is once within a 30-to-40 year interval. A hazardous material spill on the proposed Bypass within the Reservoir watershed is predicted to occur every 45 to 65 years, while spills on the critical segment of the Bypass closest to the Reservoir are so improbable that one is predicted only once every 785 years." This is inconsistent with DSEIS's figures on S-8. This is another example of FHWA and VDOT using numbers which are supportive of building the Bypass when an independent study by Black and Veatch clearly points out that the risk to the watershed in increased almost three times if the Bypass is built.
Response: Cannot determine what "figures on S-8" the commenter is referring to.

51. 2-9 (2.1) – DSEIS does not fully explain the anticipated habitat alteration, including that of the James spinymussel and other aquatic life.
Response: Habitat impacts are discussed in Section 4.3.7; habitat impacts to the James spinymussel were also considered as part of the biological assessment and Section 7 consultation with USFWS.

52. 2-9 (2.1) – DSEIS assumes data recovery at archaeological sites will produce nothing significant despite the fact that the Phase III Study has not been completed.
Response: The referenced paragraph makes no such assumption. Rather, it states that "Data recovery operations conducted in accordance with a plan that has been reviewed and approved by VDHR will be undertaken prior to any land-disturbing activity related to Bypass construction."

53. 2-11 (2.3.1) – DSEIS again mistakenly assumes traffic diversion of 10,600 – 14,000 vpd from Route 29 to Bypass in 2010. These traffic figures incorrectly assume the construction of interchanges on the Bypass at Hydraulic and Barracks Roads.
Response: Issue not germane to the SEIS; no response needed.

54. 2-11 (2.3.1) – DSEIS includes negative impacts of Alt. 11 and 12 that were not included in the FEIS; however, DSEIS does not include those same negative impacts for Alt. 10. For example, the DSEIS omits that Alt. 10 takes over one acre of agricultural-forestal land and 12.4 acres of Section 4(f) school recreation property. Furthermore, it does not include Alt. 10's negative impact on the state and federally endangered James spinymussel.
Response: Findings regarding the James spinymussel are included in Section 4.3.7. Other portions of the comment are nonsubstantive and do not require a response.

55. 2-13 (2.3.2) – DSEIS states that VDOT must comply with state law in the taking of agricultural-forestal district land. However, VDOT is not in compliance with this law since Alt. 10 takes more than one acre of agricultural-forestal district land. This has never been acknowledged by VDOT.
Response: Issue not germane to the SEIS; no response needed.

56. 2-13 (2.3.2) – DSEIS states, "Any alternative between existing Route 29 and the current design of the Selected Alternative would pass through the most densely developed part of Albemarle County, causing considerable community disruption." This is exactly what Alt. 10 does.
Response: Issue not germane to the SEIS; no response needed.

57. 2-13 – 2-14 (2.3.2) – Alt. 10 poses an actual and a constructive use of 12.4 acres of Section 4(f) property.
Response: Issue not germane to the SEIS; no response needed.

58. 2-14 (2.3.2) – DSEIS states concern for downstream population of James spinymussel when the crossing of Tributary K is within 500' of the confluence with Ivy Creek. However, no such concern is stated when the selected Alt. 10 crossing of Tributary K is within 1,000' of the confluence.
Response: The potential impacts on James spinymussel for the proposed alignment within 1,000 feet of Ivy Creek were fully evaluated and discussed.

59. 2-14 (2.3.2) – DSEIS states that the impact to the historic Schlesinger Farm property's 1930's era barn is "considered more severe than the impact on the School Complex by the Current Design because the historical significance of the site is intrinsic to the property and cannot be replicated elsewhere." This is, in effect, stating that a barn is more important than a school complex that houses several thousand students. Also, if the "historical significance of the [barn's] site is intrinsic to the property and cannot be replicated elsewhere," does this same standard not also apply to the mid-Archaic (6000-2000 B.C.) period

archaeological sites at the Northern Terminus? Furthermore, historical buildings all over the country have been carefully disassembled and moved to more suitable sites.
Response: Archaeological resources differ from architectural resources in that the historic significance of the archaeological sites rests in the data contained in them, and is not intrinsic to the property containing the sites when those sites are historically important only for the information they contain. When architectural resources are relocated, they typically are no longer considered eligible for the National Register because their setting has been compromised. Although the "importance" that one attaches to a resource is subjective, the reality is that there are more laws that grant protection to historic resources than schools.

60. 2-15 (2.4.1) – All traffic figures cited in relation to other alternatives are suspect because there have been no new traffic studies (origin-destination) since those reported in the 1990 DEIS.
Response: Issue not germane to the SEIS; no response needed.

61. 2-16 (2.4.1) – DSEIS states, "Construction of [Alt. 9 Expressway] alternative now would require complete demolition of the Base Case improvements that were completed recently at an estimated cost of $32 million." This is a disingenuous statement because, had Alt. 9 been constructed, the Base Case improvements would have been a part of that project with a total cost of $161 million. This is much less than the projected cost of the improved Base Case plus the Bypass, which, at that time was estimated to be $180.5 million. The Alt. 9 Expressway provided the quickest travel time of all of the alternatives studied, despite the fact that the DSEIS states that the speed would be slower and the level-of-service lower on the Expressway. The distance of the Expressway alternative is 1.1 miles less than Alt. 10.
Response: Issue not germane to the SEIS; no response needed.

62. 2-16 (2.4.1) – DSEIS erroneously states that the City of Charlottesville opposed the Expressway. The City has never stated an official position on the Expressway.
Response: Issue not germane to the SEIS; no response needed.

63. 2-16 (2.4.1) – DSEIS does not acknowledge that Albemarle County requested VDOT to designate right-of-way for grade-separated interchanges at time of construction of Base Case improvements. VDOT refused.
Response: Issue not germane to the SEIS; no response needed.

64. 2-18 (2.4.1) – DSEIS acknowledges the benefits of constructing grade-separated interchanges on Route 29 in terms of improvement to flow of through traffic and overall average travel speed in the Route 29 corridor, but does not explain the political reasons that they were eliminated from the plan. (See comment on S-5.)
Response: Issue not germane to the SEIS; no response needed.

65. 2-18 (2.4.1) – DSEIS states, "The Base Case with Grade-Separated Interchanges Alternative would have no Section 4(f) involvement and therefore represents a total Section 4(f) avoidance alternative as well as an avoidance alternative to the involvement at the Albemarle County School Complex. However, it is not a feasible and prudent avoidance alternative because it would not satisfy the identified transportation needs." The DSEIS does not acknowledge that the primary purpose stated in the FEIS was to provide for transportation improvement on the 3-mile stretch of Route 29 North for local traffic needs and that the secondary purpose was for through traffic improvement. The Base Case with Grade-Separated Interchange alternative has no impact on the SFRR watershed, homes, schools, Section 4(f) property, or agricultural-forestal district property. According to VDOT's own studies, this improvement would raise the level of service on Route 29 from "F" to "B", regardless of whether or not the Bypass is built – thereby fulfilling the primary stated purpose of the FEIS. If the Bypass is built and the grade-separated interchanges are not, the level of service on Route 29 would remain "F" according to VDOT's own studies. Concerning through traffic travel time, a VDOT document of July 1990, obtained under the FOIA, indicates that approximately only 1 minute of travel time is saved by Alt. 10 as compared to the improved Base Case with interchanges. VDOT has never released this information publicly. By all logical and practical standards, the improved Base Case with grade-separated interchanges is a prudent and feasible alternative.
Response: Issue not germane to the SEIS; no response needed.

66. 2-18 (2.4.1) – DSEIS states that the Bypass alone would reduce average delay for vehicles remaining on Route 29 by approximately 23%. This is an erroneous statement because it assumes interchanges would be built on the Bypass at Hydraulic and Barracks Roads.
Response: Issue not germane to the SEIS; no response needed.

67. 2-18 (2.4.1) – DSEIS figures for delay times on Route 29 North do not consider the 12/94 report of VDOT consultant Tom Smith who concluded that a grade-separated interchange at Hydraulic Road would reduce delay time by 80% with or without the Bypass. This report was obtained under the FOIA and has not been publicly released by VDOT. This 80% reduction

in delay times for 60,000-70,000 vpd saves considerably more time than the overall time saved by the Bypass traffic level of 24,000 vpd.
Response: Issue not germane to the SEIS; no response needed.

68. 2-18 (2.4.1) – Citizen comment is cited as a reason that the grade-separated interchanges were eliminated. However, citizen comment is only cited when it agrees with the CTB and VDOT agendas. Overwhelming citizen opposition to the Bypass is never cited in the DSEIS (see previous comment in paragraph 2 of the introduction).
Response: Issue not germane to the SEIS; no response needed.

69. 2-18 (2.4.1) – Cost is cited as a reason that the grade-separated interchanges were eliminated. The 1995 cost of $15 million per interchange, or $45 million for the entire grade-separated-interchange project, pales in comparison to the $200 million + cost of the Bypass.
Response: Issue not germane to the SEIS; no response needed.

70. 2-18 (2.4.1) – The DSEIS cites the need to reconstruct more than 60% of the Base Case improvements as a reason to eliminate the grade-separated interchanges. However, in 1993, the Albemarle County Board of Supervisors requested VDOT to purchase right-of-way for the grade-separated interchanges at the same time that VDOT purchased right-of-way for the Base Case widening project. The Board of Supervisors also requested that VDOT consider grade-separated interchanges during the widening project in order to minimize further construction impacts. VDOT rejected both of these requests.
Response: Issue not germane to the SEIS; no response needed.

71. 2-19 (2.4.1) – DSEIS states that the construction of grade-separated interchanges would result in a "minimal" improvement in the ultimate level of service on Route 29. According to the FEIS that improvement would be from "F" to "B," which is a considerable improvement.
Response: Issue not germane to the SEIS; no response needed.

72. 2-19 (2.4.1) – DSEIS states that the construction of the grade-separated interchanges would leave 8 traffic signals in place, but fails to mention that the traffic signals are coordinated to facilitate the free flowing movement of through traffic.
Response: Issue not germane to the SEIS; no response needed.

73. 2-19 (2.4.1) – DSEIS states, "Construction of the interchanges will displace at least 11 business and possibly as many as 23…" The Kulash interchange design disputes this fact since it takes no businesses at Hydraulic Road. Further, according to VDOT interchange design consultant Tom Smith, VDOT did not request a tight design of the interchanges. The interchanges were overdesigned to facilitate their rejection.
Response: Issue not germane to the SEIS; no response needed.

74. 2-20 (2.6.1) – Since through traffic is so minimal (2,204 vpd through north-south in 2010), by far the most cost efficient and least environmentally damaging alternative is either the construction of the grade-separated interchanges on Route 29 or Alt. 9.
Response: Issue not germane to the SEIS; no response needed. But see response to comment #38 regarding definitions of "local" and "through."

75. 2-21 (2.6.1) – New traffic analyses performed by VDOT consultant Parsons Brinckerhoff Quade & Douglas (PBQD) in 1997 did not include a new origin and destination study, therefore, their projections are suspect. They also did not perform a new level of service analysis.
Response: Issue not germane to the SEIS; no response needed.

76. 2-21 (2.6.1) – Chart has an error in the last 2 items. Two different figures are given for the same section of Route 29.
Response: The chart has been corrected; the last line represents traffic <u>north</u> of the northern terminus of the Bypass.

77. 2-22 (2.6.1) – DSEIS makes assumption of truck percentages remaining 6%-8% without a study to support this.
Response: Issue not germane to the SEIS; no response needed.

78. 2-24 (2.6.2) – DSEIS states that "lands farther to the west of the study area have major terrain limitations…" Stillhouse Mountain presents a major terrain limitation in the chosen route with a 1997 projected cost of approximately $28 million to traverse less than one mile.
Response: Issue not germane to the SEIS; no response needed.

79. 2-24 (2.6.3) – As previously noted, the Albemarle County School Board contracted to purchase the Agnor-Hurt Elementary School property in July 1990, prior to the selection of Alt. 10 by the CTB on November 15, 1990. VDOT recommended this alignment after the County selected and purchased this property for an elementary school site.
Response: Issue not germane to the SEIS; no response needed.

80. 2-26 (2.6.3) – DSEIS draws a very premature conclusion about the mid-Archaic site at the Northern Terminus before it has been assessed.
Response: See response to comment #28.

81. 3-3 (3.2.2) – Regarding the James spinymussel, see comments on S-2 and S-7.
Response: See responses to comments #4 and #16.

82. 3-3, 3-4, 3-7 (3.2.2, 3.3.1) – Percentages of developed land in the watershed are listed inconsistently as 1.8%, 4%, and 12 ½%.
Response: Land use data has been corrected and reconciled based on information contained in the recent report prepared for the Rivanna Water and Sewer Authority: *South Fork Rivanna Reservoir Reflecting on 35 Years Anticipating 50 Years*, 1/16/02 draft, by Stephen Bowler, Watershed Manager. See Section 3.2.1.

83. 3-7 (3.3.1) – DSEIS omits measures taken by Albemarle County from 1975-1995 to reduce adverse impacts on the SFRR by controlling development in the watershed. This included downzoning 1/3 of County land in 1981 in an effort to protect all of the watersheds in the County, including that of the SFRR.
Response: The downzoning and other measures the County has undertaken to protect the watershed are included in Section 3.2.3 and C.7.

84. 3-7 (3.3.1) – DSEIS states that the "County has approved new residential subdivisions in the areas surrounding the proposed project." In fact, several such subdivisions have been approved, and, in each case, the County had no legal authority to reject them due to existing zoning. No construction has occurred.
Response: Despite the clarification, the statement remains true.

85. 3-9 (3.3.3) – See comment on 3-7 about DSEIS's omission of major downzoning of 1/3 of Albemarle County for protection of all of its watersheds.
Response: See response to comment #83.

86. 3-10 (3.3.3) – Text and Table 3-4 completely omit that Albemarle County downzoned 1/3 of the watershed in 1981 to control development and its impacts on the watersheds and SFRR.
Response: Reference to the downzoning has been added.

87. 3-10 (3.3.4) – Table 3-5 [Table 3-3 in FSEIS] does not indicate the distance of road crossing of water bodies to the SFRR intake, an important omission since impacts are highly related to this distance.
Response: A column has been added to the table.

88. 3-11 (3.4) – DSEIS states, "According to the RWSA, the Reservoir supplies approximately 54% of the current daily water demand to the estimated 76,000 consumers of water supplied by the RWSA in the City of Charlottesville and Albemarle County…" In fact, this 54% figure is correct only when all reservoirs are full, but in drought conditions such as currently exist, the SFRR supplies 90-95% of this daily water demand.
Response: The figures now in Section 3.3 of the FSEIS have been adjusted to those provided in a recent report by the Watershed Manager.

89. 3-11 (3.4.1) – DSEIS states, "The University of Virginia (UVA) has undertaken more recent water quality analysis," without citing date of such study (Table 3-6). This statement implies that UVA has lent its support and prestige to such a study. In fact, VDOT contracted with UVA employees to consult on such a study. VDOT hired its own water consultant, Dr. Shaw Yu of the UVA faculty, to work with the Bypass design consultant regarding reservoir and watershed issues. VDOT represents him as an independent, unbiased consultant. This is misleading since Dr. Yu is under a contract with the Virginia Transportation Research Council (VTRC), which provides 40% of his salary. The VTRC is an arm of VDOT, and VDOT uses his services on this as well as several other projects. In late 1998, VDOT awarded him $211,498 for the project "Stormwater Management for the Route 29 Bypass Project." Therefore, Dr. Yu is essentially an employee of VDOT and can hardly be considered a disinterested observer he portrays himself as such. Unfortunately, in his role as consultant to this project, Dr. Yu made several misstatements in a presentation to the CTB in April 1997. One included that the total Bypass right-of-way in the watershed was

102 acres (noted as 219 acres in the DSEIS) and that there are hundreds of homes on the shore of the reservoir. According to David Hirschman, Albemarle County Resources Manager, there are only 33 homes within 300 feet of the reservoir.
Response: Clarification on Dr. Yu's affiliation and other pertinent information from his studies has been added. Dr. Shaw Yu is a professor at the University of Virginia with long experience and research expertise in the areas of surface water hydrology, computer applications for water resources problems, stormwater management, and watershed modeling and management. Dr. Yu also works as a Faculty Research Engineer for the Virginia Transportation Research Council. The Research Council is one of the nation's oldest state-sponsored centers for the study and development of advanced transportation-related engineering technology and improved management and operational practices. Since its inception in 1948, the Research Council has operated under the terms of a joint agreement between the University and VDOT. This arrangement permits each organization to utilize the resources of the other and has resulted in many mutually beneficial endeavors over the years. The Research Council accomplishes its mission by conducting a broad-based program of applied and basic research, providing technical consulting, supporting technology transfer activities, and sponsoring technical education and training programs. Dr. Yu's work on the Bypass studies was initiated to help develop more effective stormwater management and pollution control features for the proposed project. The commenter's concerns and insinuations about Dr. Yu's objectivity are completely unfounded and without merit. Based on this commenter's reasoning, it could be inferred that the objectivity of the consultants hired by project opponents and the conclusions they reached, and indeed the conclusions of this commenter himself, a vocal opponent of the project, would be equally suspect.

90. 3-12 (3.4.1) – DSEIS states that the SFRR is suffering from eutrophication. Therefore, all measures (including not constructing the Bypass) should be taken to protect the SFRR and reduce its eutrophication.
Response: Existing eutrophication is the result of existing activities in the watershed and will continue without the Bypass. Failing to build the Bypass will not "reduce its eutrophication."

91. 3-12 (3.41) – DSEIS states, "Inflows for Ivy Creek also contribute to dilution of higher pollutant loads in the upper reaches of the Reservoir." This is the greatest contributor of pollutants to the Reservoir.
Response: The referenced statement has been deleted.

92. 3-12 (3.4.2) – DSEIS states, "Several bathymetric studies have shown loss of storage capacity in the Reservoir." Therefore, any additional loss of storage capacity due to the construction of the Bypass is unacceptable.
Response: Unsubstantiated conclusion; no response needed.

93. 3-14(3.4.3) – The information on this page underscores the fragility of the SFRR and the need to take all measures to protect it and to minimize eutrophication and sedimentation.
Response: Measures to protect the Reservoir and minimize impacts are documented in Section 4.8 of the FSEIS.

94. 3-18 (3.5.2) - Table 3-9 omits exotic materials (such as carbon tetrachloride) that have the potential to shut down the water treatment plant.
Response: Carbon tetrachloride is encompassed in the synthetic organics listing in the table. The table was intended to be general and not an encyclopedic listing of all exotic materials.

95. 3-18 (3.5.2) – The MPO hosted a public forum on Water Resource Protection and the Proposed Route 29 Bypass in 1999. Panel member Dr. James Lamb, environmental engineer, stated that the problem of toxic spills is compounded by the fact that there are thousands of chemicals being transported, of which just a few pounds permeated into the water system could cause a shutdown. A system would not be designed to stop these types of chemicals because of the low risk of this happening. It is a low risk, but it has happened elsewhere and could happen here.
Response: No human activity is without risk, and FHWA and VDOT have acknowledged that the Bypass could pose an incremental risk of hazmat spills. However, as noted by the commenter, it is a low risk, and FHWA and VDOT believe it to be an acceptable risk in view of the precautions taken in designing the roadway.

96. 3-18 (3.5.2) – Table 3-9 underscores the difficulty of treating contaminants with existing processes at a water treatment plant, once again arguing against the construction of this Bypass.
Response: Subjective comment, no response needed.

97. 3-19 (3.5.4) – DSEIS incorrectly states, "The Observatory WTP currently provides a safe yield of approximately 4.1 to 4.8 mgd." However, this only occurs when the Sugar Hollow Reservoir is full. Currently, it is providing approximately 0.5 mgd. DSEIS should provide the actual historic data for the water treatment plants' yields, including highs, lows, and annual averages.
Response: The safe yield figures are from RWSA documents. Providing detailed historic data for plant yields is beyond the scope of these studies and would not be germane to the discussion of impacts of the Bypass.

98. 3-19 (3.6) – DSEIS states that the average annual rainfall at Charlottesville is 45 inches; however, this amount has not been achieved in the past several years.
Response: An average, by definition, represents a range of historical values; deviations lower and higher than the average would be expected over any given time period.

99. 3-21 (3.6) - DSEIS incorrectly states, "Albemarle County has exhibited no known groundwater pollution from waste disposal sites." (the Ivy Landfill) is currently being monitored in Albemarle County.
Response: Section 3.6 of the DSEIS is now Section 3.5 of the FSEIS. A statement referring to the Ivy Landfill situation has been added.

100. 3-21 (3.6) – DSEIS discusses the importance of groundwater protection in Albemarle County since almost one-half of the County's residents rely on wells. This again argues against the construction of the Bypass since 50% of the right-of-way of the Bypass traverses areas where residents depend on private wells.
Response: Subjective comment, no response needed.

101. 3-22-3-23 (3.7.1 – 3.7.3.) – See comment on 3-14 concerning fragility of water supply at SFRR and need to take all measures possible to protect it.
Response: See response to comment #93.

102. 3-24-(3.7.3.) (table 3-12) DSEIS does not analyze the effects of four-foot crest controls that are planned within the next 5 years.
Response: The effects of the planned higher crest controls are discussed in Section 4.4.

103. 3-26 (3.8) – DSEIS does not include comments and recommendations from the Phase II Archaeological Investigations – Sites 44AB428, 44AB429, and 44AB430 – Route 29, dated September 1994. See comment on S-10.
Response: The DSEIS included sufficient descriptions of the sites and a detailed data recovery plan that specifies in detail the research questions to be answered about Sites 44AB428 and 44AB430. Site 44AB429 was determined not eligible for the National Register and no further work is required for it. The detailed report on the sites is incorporated by reference because it was completed 8 years ago in conjunction with the Environmental Assessment that was prepared for the revisions to the termini at either end of the project that were requested by the city and County. It was available for review at the public hearing along with the EA and copies were provided to interested individuals and to City and County officials at that time.

104. 3-26 (3.8) – Information is not mentioned concerning a thorough description of the archaeological sites and possible activities at the sites (e.g., manufacturing).
Response: See response to comment #103.

105. 3-26 (3.8) DSEIS states, "The modification from an at-grade intersection to a larger grade-separated interchange has prompted additional field survey work to cover the expanded footprint of the interchange." This is not true. The additional field survey work was ordered by the U.S. District Court in 2001.
Response: The referenced statement remains true.

106. 3-26 (3.8) – See comment on 2-26 concerning archaeological sites.
Response: See response to comment #28.

107. 4-2 (4.1) – Table 4-1 states, "Elapsed time from occurrence to response can be a factor in the effectiveness of containment and cleanup efforts, as well as the potential need for treatment plant shutdown or implementation of special treatment procedures." However, Table 4-1 omits the fact that the nearest hazardous materials response teams are located in Harrisonburg, Fredericksburg, and Henrico County, each of which are a minimum of an hour away from the SFRR.
Response: The nearest hazardous material incident responders are actually located in Charlottesville and Albemarle County (i.e., local fire and rescue emergency services). Information about response times has been added to Section 4.3.10.

108. 4-2 (4.1) – Table 4-1 states, "...interruption of Reservoir water supplies for more than several days is unacceptable to the community." In fact, interruption of Reservoir water supply to the community for any length of time is unacceptable due to an insufficient storage capacity.
Response: Subjective comment, no response needed.

109. 4-2 (4.1) – Table 4-1 states, "Local and regional officials see full public disclosure and participation as very important." This document does not fulfill the required full public disclosure.

Response: Subjective comment, no response needed.

110. 4-4 (4.2.1) – DSEIS states, "The technical approach for assessing the potential water quality impacts for the Route 29 Bypass included... Assess[ing] the potential for impacts using assumptions that would result in the most conservative results..." The DSEIS absolutely fails to do this, particularly since the Black and Veatch Study used a much more thorough and conservative model than that employed in the DSEIS.
Response: Subjective comment, no response needed.

111. 4-5 (4.2.1) – DSEIS states, "... the stormwater management measures proposed for this project are comparable to, or better than, those required for New York projects," but provides no data to support this.
Response: Subjective comment, no response needed.

112. 4-10 (4.3.3) –Table 4-7 "Oil and Grease" not referenced by FHWA as a constituent loading. See comment 4-4; FHWA should have used the most conservative figures supplied by Black and Veatch for this category.
Response: The figures in the "FHWA" column are from the 1990 *Aquatic Resources and Water Quality Technical Memorandum* prepared for the Route 29 Corridor Study. The Black & Veatch numbers are reported in a separate column. This table has been modified, and is now Table 4-8 in the FSEIS.

113. 4-11 (4.3.3) – DSEIS states, "MtBE is a greater threat to groundwater than to surface water..." A large subdivision (Key West) on private wells in Albemarle County recently experienced such MtBE contamination in its private well system. As a result, the system had to be closed and public water made available at great expense. The DSEIS does not address whether or not VDOT would assume the expense of supplying public water in the event of a similar contamination to groundwater caused by the Bypass.
Response: VDOT would not assume the expense of supplying public water in the event of groundwater contamination; if necessary, those costs would be borne by the party directly responsible for the contamination.

114. 4-11 (4.3.3) – DSEIS states, "... potential threat of Reservoir contamination by MtBE is remote." However, MtBE is transported by trucks passing through this area and, therefore, posing a potential threat of contamination to the Reservoir.
Response: Subjective comment, no response needed.

115. 4-13 (4.3.6) – DSEIS does not give the source for groundwater maps.
Response: Maps and groundwater information in Albemarle County's Comprehensive Plan were consulted during preparation of the Draft SEIS.

116. 4-13 (4.3.6) – DSEIS states that in certain areas, "...construction could alter the drainage patterns... but could interface with groundwater flow and may decrease the amount of groundwater available to wells..." Impacts from the Bypass on the groundwater could cause well to go dry. The DSEIS does not address whether or not VDOT would assume the expense of supplying public water in such an event.
Response: Subjective comment, no response needed.

117. 4-13 (4.3.6) – DSEIS states, "... the impacts of the proposed Bypass on groundwater quality and quantity would be minimal on a regional scale...50% of the proposed Bypass right-of-way may potentially contain private wells..." See comment on 4-11 regarding the quality and comment on S-6 regarding the quality of groundwater.
Response: Subjective comment, no response needed.

118. 4-15 (4.3.7) – DSEIS states, "...the proposed Bypass was 'not likely to jeopardize the continued existence of the James spinymussel and is not likely to destroy or adversely modify its critical habitat...' There are documented occurrences of 11 other populations of James spinymussel outside the Ivy creek watershed." Certified ecologist Phil Stevenson stated the Bypass "poses a significant threat of extinction to the James spinymussel." Consequently, the DSEIS acknowledges that VDOT is willing to destroy 10% of the habitats of this most highly rated category of federal and state endangered species.
Response: The DSEIS acknowledges no such thing. The DSEIS acknowledges that the U.S. Fish and Wildlife Service, the agency with authority to make all determinations regarding endangered species, determined that the proposed Bypass is not likely to jeopardize the continued existence of the James spinymussel and is not likely to destroy or adversely modify its critical habitat because no critical habitat exists for the species. To conclude that the small population of the mussel found in the Ivy Creek watershed represents 10% of the species that still exists is gross exaggeration. As already documented by USFWS, the existing population in the watershed is limited and has been stressed by livestock operations resulting in excess nutrient runoff, waste disposition directly into the streams, erosion of soils, and the physical disturbance and siltation of the stream bottom from livestock wading in the streams. In light of this clearly visible evidence of the degraded environment in the area from

surrounding development and a limited population, the objectivity of an individual paid by the project opponents who would then conclude that the Bypass alone poses a significant threat of extinction to the entire species is questionable at best.

119. 4-17 (4.3.9) – DSEIS states, "VDOT uses herbicides and plant regulators to manage roadside vegetation. Use of these chemicals generally is more cost-effective than mowing and other more labor intensive practices." This indicates that VDOT is more concerned with saving money than protecting the SFRR.
Response: Subjective comment, no response needed.

120. 4-17 (4.3.9) – DSEIS states, "...the high dilution factor precludes any impact to the watershed." This is an example of VDOT's reliance on dilution instead of proper prevention controls.
Response: Subjective comment, no response needed.

121. 4-17 (4.3.9) – DSEIS incorrectly states that the impact from the use of sodium chloride to de-ice the Bypass would not be "substantial." There is no quantitative analysis to support this statement, especially since VDOT's anticipated annual use of sodium chloride for de-icing is approximately 35,000 lbs. This is another example of VDOT's relying on dilution to counter the impacts of sodium chloride loading, and this is not an acceptable method of protecting the SFRR.
Response: Subjective comment, no response needed.

122. 4-19-4-20 (4.3.10) – Table 4-10 includes only hazardous materials that are used in Albemarle County; it does not consider any more exotic Class 9 hazardous materials, such as carbon tetrachloride, one gallon of which could pollute the entire SFRR, that may be transported through the area on the Bypass.
Response: Additional information has been added to Section 4.3.10 to discuss materials not generated locally.

123. 4-20 (4.3.10) – DSEIS's "Likelihood of a Spill Occurrence" does not address the fact that the risk of a hazardous materials spill in the SFRR watershed is zero for Base Case with grade-separated interchanges, Alt. 9, and all eastern alternatives.
Response: This is not true. There will always be a risk from the existing transportation system in the watershed from hazardous materials such as home heating oil, home pest controls, and lawn care fertilizers, pesticides, and herbicides.

124. 4-21-4-24 (4.3.10) – Figures 4-4A-4-4D do not accurately depict the steep topography of the area.
Response: The figures have been checked and are accurate.

125. 4-25 (4.3.10) – DSEIS states, "Sixty-five percent of all vehicle accidents in Virginia occur during clear weather. Truck accidents are even more likely to occur in clear weather..." This ignores the ratio of accidents on wet days to accidents on clear days. As an example, a national Highway Safety Administration Report (NTSB Number: HSS-80/1) states, "... forty percent of accidents of the West Virginia interstate system occurred on wet pavement. The report estimated that the roads in West Virginia were not wet more than 15 percent of the time." Thus, 40% of the accidents occurred during 15% wet-road condition.
Response: This project is not part of the West Virginia interstate system.

126. 4-25 (4.3.10) – DSEIS states that there are other roads, which cross the SFRR. With the exception of I-64, which is more than 7 miles from the WTP intake, and Route 250 West, which is approximately 5 miles from the intake, all of the other roads are secondary roads, which do not carry the heavy through tractor-trailer traffic anticipated for the Bypass.
Response: Subjective comment, no response needed.

127. 4-26 (4.3.10) – The DSEIS uses unrealistic "Existing Roads" data in its risk analysis. For example, this category in Table 4-13 is comprised of four roads, two of which, Barracks/Garth Road and Route 250 West, are more than 3.5 and 5 miles respectively from the WTP intake, thus allowing a very long spill transit time and time for mediation remedies to take place. Black & Veatch considered five nearby roads and pertinent associated lengths, which could "...generate or convey drainage that may reach the WTP intake in 8 hours or less." The DSEIS also uses the same four roads for its "Other Roads" category in conjunction with the Bypass. Two of these roads, Earlysville Road and Woodlands Road, show greatly reduced vpd traffic counts, from 8,000 to 1,000 vpd and from 3,000 to 1,740 vpd, with no assumption or explanation given. To illustrate the inadequacies of the DSEIS model, the same type calculations were performed for "Existing Roads" with the elimination of Barracks/Garth Road and Route 250 West, which are both greater than 3.5 miles from the intake. Then, instead of a return frequency for a truck accident/release for hazardous materials in the watershed of 39.3 years for the "Existing Roads", the return frequency would be 182 years.
Response: Subjective comment, no response needed.

128. 4-26 – 4-27 (4.3.10) – The DSEIS does not present any data or risk of the community's main concern with a hazardous materials spill – the probability of a shutdown of the WTP.

Response: Additional information has been added to Section 4.5.3.

129. 4-26 (4.3.10) – Table 4-13 shows the estimated truck accident rates/release probabilities for hazardous materials in the reservoir watershed, which uses the same data for all categories of roads. This appears to be incorrect and misleading.
Response: Subjective comment, no response needed.

130. 4-26 (4.3.10) – The DSEIS risk analysis omits statistical information about truck safety. According to the Virginia State Police, Motor Safety Teams conducted 39,125 inspections in 1997 on heavy commercial vehicles. Twenty-one percent were immediately removed from service for violations of safety regulations and transportation of hazardous materials. Of the total number of vehicles inspected, 59% were found to have equipment defects. There were 61 hazardous materials spills or incidents in Virginia in 1997. *The Washington Post* reported in October 1998 that Virginia statistics are in line with national figures, which show that 22% of all trucks inspected by State Highway Police have defects so serious that they must be taken out of service. In March 1987, the Insurance Institute for Highway Safety state that 30% of truck drivers showed evidence of drugs. In April 1987, the Virginia Motor Carrier Safety Team reported that, in 1986, 43% of the 3,600 trucks stopped had severe mechanical defects. In January 1988, the Virginia State Police records showed that 18% of trucks on Virginia roads might be carrying hazardous materials. The DSEIS risk analysis states only 8% of trucks on Virginia roads might be carrying hazardous materials.
Response: Subjective comment, no response needed.

131. 4-27 (4.3.10) – DSEIS states, "An accident resulting in a spill release on the Bypass anywhere within the Reservoir watershed is projected to occur once every 65 years. In contrast, under the no-build alternative, a hazmat-releasing accident is predicted to occur every 40 years on existing roads within the Reservoir watershed." (See comment on 4-26.) The Black and Veatch Study indicated (in a more crucial scenario of a water treatment plant shut-down) that these events occur every 45 and 16 years, respectively, for an increased risk of 2.75. The DSEIS's increased risk of 1.6 obviously does not use the most conservative assumptions, which is required for a full analysis in predicting these risks. A more detailed analysis and comparison of the Black and Veatch study with the DSEIS assumptions is necessary.
Response: Additional information from the Black & Veatch study has been added to Section 4.3.10.

132. 4-27 (4.3.10) – The DSEIS risk analysis presents a very simplistic methodology using average traffic statistics, while the Black and Veatch study appears to include much more comprehensive research of risks. The DSEIS only addresses the probability of a hazardous materials spill in the SFRR watershed; it does not address the probability of the shut-down of the WTP due to a hazardous materials spill as presented by Black and Veatch.
Response: The conclusions of the Black & Veatch analysis were presented in the DSEIS along with the findings from our "simplistic methodology." Thus, both the general probability of hazmat spills in the watershed and the more specific probability of a spill that might cause a water treatment plant shutdown have been presented.

133. 4-28 (4.3.10) – See comment on 4-2 concerning spill management.
Response: Additional information from the Black & Veatch study has been added to Section 4.3.10.

134. 4-28 (4.3.10) – DSEIS does not state who enforces "compliance with applicable permitting, erosion and sediment control, and hazardous waste regulations by VDOT and the construction contractor [to] minimize the potential for hazardous materials to adversely impact water quality."
Response: VDOT construction inspectors would enforce compliance with applicable permitting, erosion and sediment control, and hazardous waste requirements.

135. 4-29 (4.3.10) – DSEIS does not indicate who would pay for emergency planning, preparedness activities, the actual man-hours involved in the clean-up of a spill, and the overall cost of a hazardous material spill cleanup in the SFRR.
Response: Localities, with assistance from the Virginia Department of Emergency Management (VDEM), are principally responsible for emergency planning and preparedness activities. Several other state agencies, including VDOT, also perform certain planning and preparedness activities, as outlined in VDEM's *Emergency Operations Plan*, Volume 4, *Oil and Hazardous Materials Emergency Response*. Man-hours and costs involved in cleaning up hazardous material spills can vary greatly, depending on the nature of the incident and type of material involved, so it is not possible to give an estimate here.

136. 4-30 (4.3.10) – See comment on 4-2 concerning response to spills.
Response: Cannot determine what is being referred to here, therefore, no response is possible.

137. 4-30 (4.3.10) – DSEIS does not address the response time for the State On-Scene Coordinator.
Response: This information has been added to Section 4.3.10.

138. 4-30 (4.3.10) – DSEIS acknowledges that there are "no guidelines regarding chemical or oil spills over water." This is of great concern since the Bypass has 15 crossings of tributaries to the SFRR in the watershed.
Response: The referenced statement is discussing the local *Emergency Operations Plan*.

139. 4-31 (4.3.10) – See comment for 4-27 concerning risk analysis.
Response: Cannot determine what is being referring to here, therefore, no response is possible.

140. 4-31, 4-34, 4-37, 4-39 (4.4.1) – DSEIS inconsistently states percentages of sediment load due to Bypass.
Response: Where there are differences in percentages, they are due to differences in predictive methodologies used by the different researchers.

141. 4-32 – Table 4-15 (4.41) – Annual Accumulation loadings are based on 1982 figures, which are outdated. Since 1982, Albemarle County has instituted many controls, which would make these annual loadings lower. The 1982 figures are based on actual load measurements. The Black and Veatch and the UVA models obviously overestimate the annual subwatershed sediment loadings, which would consequently increase the impact of the Bypass on the SFRR watershed.
Response: The county may have instituted controls, but the amount of development has also increased.

142. 4-32 (4.4.2) – DSEIS Run-off Contaminants analysis for effects of first-flush fails to account for the potential addition of approximately 19,000 vpd if Route 29 is converted to limited access as the Corridor Study recommends.
Response: There is no corridor study recommending converting Route 29 to limited access. VDOT has no plans to pursue such an upgrade, and the MPO has not programmed any such upgrade in its long-range transportation plan.

143. 4-32 (4.4.3) – DSEIS does not address nitrogen as a major factor in eutrophication of SFRR.
Response: See response to comment #25.

144. 4-33 (4.4.4) – See comment on 4-29 concerning who pays for clean-up activities.
Response: See response to comment #135.

145. 4-34 (4.5.3) – DSEIS misstates risk of hazardous material spill occurring on "Existing Roads" and on the Bypass. See comments on 4-26, 4-27, and 4-32. Black and Veatch states that the recurrence interval would drop to 10 years with a traffic count of 36,000 vpd. The addition of 19,000 vpd if Route 29 became limited access would increase the total traffic count on the Bypass to 43,000, further reducing the recurrence interval. Furthermore, VDOT is calculating risks by directly adding risk factors, according to Black and Veatch, which is not correct methodology without establishing that the separate simulations are independent variables.
Response: Black & Veatch's scenario using a traffic volume of 36,000 vpd was purely hypothetical. There are no plans or studies to make Route 29 limited access.

146. 4-35 (4.5.3) – DSEIS states, "...RWSA has estimated that it could supply water to the Urban Service Area...for approximately three days in the event that the South Fork Rivanna water treatment plant intake had to be shut down." This is incorrect because, with a storage capacity of approximately 12 million gallons per day in the distribution system, this would furnish approximately one day's water supply. The combined production capacity from the other treatment plants (Observatory and North Rivanna) cannot satisfy the average daily demand. Normally, these plants serve different pressure zones, and use of water may be limited in some areas, due to pumping capacities and pressure reducing valves. DSEIS does not address what the community will do if a hazardous material spill cannot be removed or mitigated before the reserve water supply is depleted.
Response: During preparation of the Draft SEIS, a meeting was held between VDOT's consultants and RWSA staff. At that time, RWSA staff indicated that three days was the maximum that demand could be met if the South Fork Water Treatment Plant had to shut down. If a plant-closing event were to occur as a result of a spill on the Bypass, and cleanup or pass-by could not be attained within the three days, then, presumably, RWSA would do the same things they would do in a similar event in the absence of the Bypass. That is, it would implement conservation measures and water use restrictions, as it has done during the recent drought, and tap alternative supplies to the extent possible. At the time of this document preparation, RWSA is working on a so-called "Doomsday Water Supply Plan" to identify alternative courses of action to respond to future water shortages. Those same actions would be applicable in the event of a plant shutdown resulting from whatever cause.

147. 4-35 (4.5.3) – DSEIS does not state who is financially responsible for implementation of continuous water quality monitoring stations, which could provide advance warning of contaminants.
Response: VDOT has committed to monitoring water quality in the Reservoir during construction and for a period after construction. It has not at this time committed to installing "continuous" monitoring stations that would be capable of providing

advance warning of trace contaminants. Because the Bypass would not be the sole potential source of contaminants of concern within the watershed, VDOT does not perceive a basis for bearing sole responsibility for such monitoring stations.

148. 4-37 (4.7.1) – DSEIS states, "More stringent drinking water regulations, coupled with an increase in turbidity, would necessitate a higher state of treatment preparedness at the water treatment plant during the construction period," but does not indicate who would pay for this.
Response: The quoted statement was based on information in the Black & Veatch study indicating that water treatment plant operators generally must be prepared during storm events to increase coagulant doses to deal with the higher levels of turbidity associated with storm events. It was not meant to imply that substantially greater levels of effort or cost would be required to deal with sediment loads from the Bypass during construction. With the implementation of turbidity curtains in the Reservoir and other erosion and sediment controls during construction, the increase in turbidity at the treatment plant intake attributable to the Bypass are not expected to be substantial.

149. 4-37 (4.7.1) – DSEIS does not contain explanation of or assumptions for AnnAGNPS pollutant model used by UVA.
Response: A brief description was provided in Appendix E. Additional information has been added to Section 4.7.1 and the description in Appendix E has been expanded.

150. 4-37 (4.7.1) – DSEIS states that the UVA model (AnnAGNPS) predicts a worst-case sedimentation load during construction of 672,000 lbs. The Black and Veatch Study's RUSLE model predicts variable amounts approximately 100 times greater than the UVA model. Because of this, the sedimentation load predicted by the UVA model appears to be understated since the typical proposed control measures eliminate only 50 – 60% of predicted sediment load.
Response: Additional discussion has been added to Section 4.7.1 to explain the different methods used and the findings of the two studies.

151. 4-37 (4.7.1) – DSEIS fails to show on Table 4-17 that other alternatives to the Bypass have no sediment loading effect on the SFRR. Comparisons with other alternatives should always be given.
Response: Nonsubstantive comment, no response needed.

152. 4-37 (4.7.1) – DSEIS uses average annual rainfalls instead of actual rainfall events. See chart below of rainfall history summarized from data from the Virginia State Climatology Office.
Response: Because it is impossible to predict what level of storm event may coincide with the construction period, it is more useful and appropriate to base calculations on long-term averages. In addition, although single-storm events may cause more or less soil loss at any given moment, the aggregate loss over a longer period, one year, allows one to better consider the long-term effects than would a wide range of results from a range of different storm sizes.

RAINFALL HISTORY OF MAJOR STORMS --- ALBEMARLE COUNTY
1961 – 1997

					McC. Obsv.	Free Union		Storm Category			
	Year	Month	Day	Event	Rainfall	Rainfall	Rainfall	2-year	10-year	25-year	100-year
					(inches)	(inches)	(2" to 4")	(> 4 in.)	(> 6 in.)	(>7 in.)	(> 9 in.)
1	1961	8	5		4.61	4		*			
2	1961	10	21		6.24	4.7			*		
3	1964	7	13		4.37	4.75		*			
4	1967	8	25		0.89	4.73		*			
5	1969	8	20	Camille	4.68	3.75		*			27" Nel. Co.
6	1971	5	30		4.37	0.6		*			
7	1972	6	22	Agnes	7.49	6.3				*	14" Bl.Rdg Mtns.
8	1972	10	6		4.86	6.0			*		
9	1979	6	3		4.17	0.27		*			
10	1979	9	22		4.22	3.7		*			
11	1982	5	28		4.75	2.54		*			
12	1987	9	8	Hugo	9.2	2.39					*

13	1987	9	9	Hugo	0.9	6.87			*		
14	1989	6	7		4.22	2.64		*			
15	1992	4	22		Missing	4.07		*			
16	1993	11	28		4.69	4.33		*			
17	1994	7	28		5.02	2.09		*			
18	1997	7	24		4.15	3.06		*			
	36 Year Span: 1961 - 1997					Total # Events =	121	13	3	1	1
	10 Year Span: 1987 - 1997					Total # Events =	42	5	1	0	1

Source: Va. State Climatology Office

153. 4-38 (4.7.1) – DSEIS does not analyze worst-case scenario (100-year storm) during construction, in terms of sediment load into the SFRR.
Response: This comment contradicts the preceding one, for 100-year storms are not actual rainfall events, but are statistical constructs used primarily in the National Flood Insurance Program. The term "100-year storm" is used to define a rainfall event that statistically has a 1-percent chance of occurring in any given year, or, stated another way, it would be expected to occur once every 100 years (hence, the 100-year storm). The intent of the analysis is to consider the effects of the most frequent, most regular, most likely events, not the most extreme events. Moreover, the 100-year storm would not necessarily be the worst-case scenario. Why not a 500-year storm? A 1,000-year storm? A 1,000-year storm immediately after a forest fire that denudes the entire watershed? And *ad infinitum*. This is why the Council on Environmental Quality (CEQ) eliminated consideration of worst-case scenarios from the NEPA regulations, because someone can always think of a slightly worse case that was not analyzed.

154. 4-39 (4.8.1) – DSEIS states, "A full-time Erosion and Sediment Control Inspector certified by the Virginia Department of Conservation and Recreation would be assigned to this project during construction." Paid by VDOT, this Inspector's primary concern must be protecting the SFRR and not promoting the Bypass project.
Response: Subjective comment, no response needed.

155. 4-39 (4.8.1) – DSEIS states, "UVA researchers applied a 50% sediment removal rate by proposed controls..." and "...the anticipated performance of all controls applied at the site should, in aggregate, reduce sediment runoff by more than 80% from the uncontrolled state." These statements are inconsistent.
Response: The 50% figure was for the stormwater ponds only. The 80% figure takes into account the multiple other control measures to be implemented during construction.

156. 4-39 (4.8.1) – DSEIS states that there is a temporary sediment pond located south of Barracks Road at the foot of Stillhouse Mountain, but does not clarify where run-off from this area would be collected and controlled after construction.
Response: Cannot find the referenced statement.

157. 4-43 (4.8.1) – DSEIS does not state how many inches of rainfall can be handled by the wet ponds, i.e., for 2, 5, 10, or 100 year storms.
Response: Water surface elevations in the stormwater ponds have been calculated for the 2-year, 10-year, and 100-year storms.

158. 4-44 (4.8.1) – DSEIS does not address nitrogen as one of the two major causes for eutrophication of SFRR. FHWA reports removal for Total Nitrogen as only 48%.
Response: See response to comment #25.

159. 4-44 (4.8.1) – DSEIS states, "The drainage and stormwater treatment system for the Bypass is designed to capture and treat 100% of the runoff originating from the road surface and right of way, as well as some off-site runoff." DSEIS does not state the rainfall amount or storm event on which this statement is predicated.
Response: Not germane, no response needed.

160. 4-44 – 4-47 (4.8.1 – 4.8.2) – DSEIS proposes additional potential mitigation measures for controlling run-off, sedimentation, erosion, and hazardous material spills. However, on page 4-47, DSEIS states, "A final decision on these additional potential mitigation measures will be made following the public hearing and will be documented in the Final DSEIS."

The perception is that VDOT will determine what additional protection measures for the SFRR are to be installed, based on public comment rather than on scientific fact and the necessity to preserve the public safety. The cost of additional mitigation measures should be made available in the final DSEIS and added to the overall cost of the project.
Response: Comment noted.

161. 4-45 (4.8.1) – See comment on 4-2 concerning response time in case of hazardous materials spills.
Response: Response time information has been added to Section 4.8.1.

162. 4-47 (4.8.2) – DSEIS does not agree with the RWSA's opinion that VDOT should "fund the construction of a new drinking water intake upstream of the area potentially impacted by the proposed Bypass." This was a key component in RWSA's comments in 2000.
Response: No response needed.

163. 4-48 (4.9.1) – DSEIS description of archaeological sites 44AB428 and 44AB430 is extremely brief and non-specific as to information contained in the Phase II Archaeological Study in 1994. See comment on S.10.
Response: See response to comment #28.

164. 4-52 (4.10.1) – DSEIS states, "...a highway might improve mobility, thereby reducing travel time..." VDOT has never published a comparison of travel times of all of the alternatives. However, a 7/90 VDOT document obtained through FOIA states that the Bypass (Alt. 10) saves only approximately 1 minute compared to the Base Case with grade-separated interchanges alternative. According to this same document, the Alt. 9 Expressway had the shortest travel time of all of the alternatives. Therefore, it is disingenuous for the DSEIS to state a reduction in travel time for the Bypass as a criterion for its approval.
Response: The subject quote is taken out of context. Section 4.10.1 makes no such statement regarding reduced travel time and its use as a criterion in approving the bypass. Rather, the statement was made in the general context of explaining the possible relationship that exists between highways and indirect effects.

165. 4-53 (4.10.3) – Albemarle County has never adopted the Eastern Planning Initiative.
Response: Comment acknowledged.

166. 4-53 (4.10.3) – The DSEIS outlines Albemarle County's efforts to preserve, protect, and restrict development in the watershed. The irony is that these very efforts by the County to protect the watershed have provided a corridor that VDOT has now chosen for the Bypass.
Response: No response needed.

167. 4-54 (4.10.3) – DSEIS states, "Because there will be no interchanges at any other point along the Bypass, the project will not induce development in the area of the Reservoir or its watershed..." This statement cannot be guaranteed, especially given the fact that VDOT designed an interchange for Hydraulic Road in 1996 without Albemarle County's knowledge or approval, that the current CTB representative from the Culpeper District strongly recommends it, and that a future Albemarle County Board of Supervisors could vote to allow interchanges on the Bypass.
Response: There are no plans for interchanges along the Bypass as part of this project in the MPO's long-range transportation plan or VDOT's Six-Year Plan. Therefore, the scenario of interchanges is highly speculative and cannot be considered reasonably foreseeable. Accordingly, they and their associated impact have not been considered in the SEIS.

168. 4-55 (4.10.3) – Albemarle County is required to note the possible construction of the Bypass in all of its official planning documents, including the Comprehensive Plan. The inclusion of the Bypass in these plans does not indicate the County's approval of the project. In fact, the County's passed a strong resolution against the Bypass in April 1997 and, in February 2002, sent a letter to Governor Warner requesting that the Bypass be eliminated from the state's transportation plan.
Response: No response needed.

169. 4-55 (4.10.3) – DSEIS statement that "...the Route 29 Bypass would help accommodate future development that the County already is planning on, not induce unwanted construction" is an editorial comment totally without factual basis.
Response: Subjective comment, no response needed.

170. 4-57 (4.11.1) – DSEIS's narrative on history of SFRR underscores the need to protect it.
Response: Subjective comment, no response needed.

171. 4-58 (4.11.1) – See comment on 2-1 concerning date of purchase of Agnor-Hurt Elementary School property.
Response: No response needed.

172. 4-59 – 4-60 (4.11.1) – Table 4-18 and Table 4-19 are misleading because most of the transportation projects listed on them are not in the watershed. Projects not in the watershed should be identified as such.
Response: The cumulative effects discussion pertains both to the watershed (watershed and Reservoir impacts) and to the area surrounding the northern interchange of the Bypass (archaeological impacts at the northern interchange area). All of the transportation projects listed in the referenced tables are either in the watershed or have potential to affect activities in the vicinity of the northern interchange of the Bypass.

173. 4-60 – 4-61 (4.11.1) – Table 4-20 is very misleading since it fails to present adequate data to identify the projects. Several of these projects are not in the watershed, and many of those that are in the watershed are minor additions to existing structures.
Response: Projects not in the watershed have been removed from the table.

174. 4-61 (4.11.1) – The Northside Library and Hollymead are not in the SFRR watershed.
Response: They are, however, in the vicinity of the northern interchange, which is why they were included.

175. 4-62 (4.11.1) – Table 4-21 has errors. Albemarle High School has been occupied since the early 1950's. Agnor-Hurt Elementary School is not in the SFRR watershed.
Response: The occupancy date for Albemarle High School has been corrected. Agnor-Hurt Elementary School itself is not in the watershed; however, its construction forced a shift of the Bypass alignment, which incrementally increased its encroachment into the watershed. Furthermore, the school has induced traffic on Woodburn Road, which borders the watershed.

176. 4-63 (4.11.2) – Table 4-23 is extremely misleading. Eight of the 12 water and sewer projects listed – Four Seasons, Berkeley, Peyton Drive, Commonwealth Drive, Buckingham Circle, Hessian Hills, Greenbrier Drive Extended, Wynridge, Ednam Forest, Bellair, and Buckingham Circle – are not in the SFRR watershed as stated in the Table 4-23 title.
Response: The projects not in the watershed have been removed from the table.

177. 4-64 – 4-67 (4.11.2) – Table 4-24 shows "the cumulative effect of development activity on watershed resources." At least 12 of the listed projects are not in the SFRR watershed. See comments on 4-62 and 4-63.
Response: Those not in the watershed have been deleted.

178. 4-67 (4.11.2) – DSEIS states, "...waterfront development pressure is likely to continue..." This is an editorial statement, unsubstantiated by fact.
Response: Subjective comment; no response needed.

179. 4-67 (4.11.2) – DSEIS states, "Recreational boating, rowing, and fishing on the Reservoir also are problematic." DSEIS fails to note that these activities are restricted.
Response: Section 11-304 of the Albemarle County Code prohibits use of internal combustion engines, except by RWSA and Virginia Department of Game and Inland Fisheries for official purposes and as may be authorized by permit from RWSA. Fishing conducted in compliance with applicable state statutes and regulations, canoeing, boating with boats not operated by internal combustion engines, hiking, birdwatching, and picnicking are all authorized within the boundaries of the Reservoir.

180. 4-67 – 4-68 (4.11.2) – DSEIS states, " Assuming that development continued at this rate [40% from 1977 to 1979] for the next 20 years, developed land in the watershed would have increased by 67% and watershed population by 100% by 1995." This is an editorial comment. Actual data should have been used.
Response: This portion of the discussion has been revised.

181. 4-69 (4.13) – DSEIS states that Bypass could be converted to another use if it becomes unnecessary without giving any factual basis for such a statement or any examples of other roads for which this has occurred.
Response: The referenced statement is simply acknowledging that the Bypass right of way <u>could</u> be converted to other uses, however, there is no reason to believe that it ever <u>would</u>.

182. 4-69 (4.13) – See comment on 4-52 concerning savings in time.
Response: See response to comment #164.

183. 7-1 (7.2.1) – DSEIS does not list the Monacan Indian Nation as a consulting party as required by Section 106 regulations, 36 CFR Part 800.2(a)4 and 36 CFR Part 800.2(c)2.

Response: The Section 106 regulations do not require the Monacan Indian Nation to be a consulting party. The Monacan Indian Nation is not a "tribe" for purposes of Section 106 because it is not a federally recognized tribe under the definition at 36 CFR 800.16(m).

184. 7-2 (7.2.1) – DSEIS fails to note the significance of periwinkle growing at one of the archaeological sites (44AB483) within the right-of-way. Periwinkle found on 19th and early 20th century property is usually an indication of the site of a graveyard – not always recorded. Records should be searched and a ground radar scan performed to investigate the possibility of grave sites.
Response: The presence of periwinkle was noted during the field archaeological work and was fully investigated. In Virginia, periwinkle has been, and still is, commonly used in domestic landscaping as an ornamental ground-cover (e.g., the State Capitol in Richmond). Periwinkle's popularity in landscaping is due to its ivy-like growth pattern and the blanket of small, light blue flowers that it produces in the spring. Because it is not indigenous to North America, the presence of periwinkle normally is associated with historic occupations (i.e., post-1607). While periwinkle often is planted in cemeteries, none of the evidence encountered during the identification survey (e.g., shovel test profiles, extant structures and features, ground relief, etc.) suggested the presence of a cemetery. Instead, all of the evidence suggested that the presence of periwinkle was due to its use as an ornamental plant in domestic landscaping associated with either the early-twentieth century dwelling or the later cinderblock structures at the site.

185. 7-5 (7.4) – DSEIS fails to note that the Design Advisory Committee passed a resolution opposing construction of the Bypass.
Response: Issue not germane to the SEIS; no response needed.

L.3.2 Southern Environmental Law Center

The Southern Environmental Law Center (SELC), based in Charlottesville, is a non-profit, 501(c)(3) organization funded by tax-deductible contributions and grants. Through legal challenges, publications, lobbying, and other activities, its stated goal is to promote broad-based regional conservation initiatives that strengthen environmental protection laws and policies, primarily in the southeastern U.S. SELC filed the lawsuit on behalf of the Piedmont Environmental Council and the Sierra Club that led to the Court's ruling requiring this SEIS, and has been actively pursuing various avenues of having the project canceled.

Southern Environmental Law Center (SELC) letter from Deborah M. Murray, Senior Attorney, dated April 16, 2002, as amended by corrected pages submitted by letter dated April 18, 2002, to Edward Sundra of FHWA (comments on behalf of SELC, Piedmont Environmental Council, and Virginia Chapter of the Sierra Club).

The first five pages of the letter contain unsupported subjective statements (e.g., "The draft SEIS is wholly inadequate.") and assertions of unspecified faulty assumptions and ignored critical factors, along with nonsubstantive discussions of alternatives, NEPA regulations, traffic data, and purpose and need. No responses are needed for these comments and legal opinions and interpretations. The following substantive comments are contained in the letter.

1. The Draft SEIS fails to consider the growth-inducing impacts of the Bypass. VDOT is on record as supporting access points at Hydraulic [Earlysville] and Barracks Roads, which would further open up the countryside and watershed to sprawl development. The reports of Ed Risse and Walter Kulash give an indication of the growth-inducing potential of the proposed bypass.
Response: Clearly, the commenter has overlooked the nearly five pages of discussion in Section 4.10 on indirect impacts of the Bypass. VDOT's Commonwealth Transportation Board is on record as eliminating the mentioned interchanges when it originally adopted the Selected Alternative. FHWA too is on record in its Record of Decision as eliminating the mentioned interchanges. The proposed Bypass design does not include interchanges at these locations, and there is no reason to believe it ever will because the MPO has not included them in its long-range transportation plan. We have reviewed the referenced reports and found no substantiated data indicating the indirect impacts would be different from those described in the SEIS.

2. Other significant impacts on the Reservoir are ignored or seriously understated. For example building the Bypass may foreclose or undermine the option of raising the water elevation of the Reservoir by 4 or 8 feet. In addition, hazardous materials not generated locally have not been taken into account.
Response: Discussion on the Reservoir height issue has been added to Section 4.4. Nonlocal hazardous material information has been added to Section 4.3.10.

3. Polycyclic aromatic hydrocarbons have not been discussed.
Response: Additional information on this compound has been added to Section 4.3.3.

4. The assertion that the two archaeological sites are important only for the information they may contain is at odds with the descriptions of the sites, which indicate that the sites may represent major archaeological discoveries. The Phase III data recovery survey must be undertaken, and the results presented to the public for comment, before the SEIS is finalized. Moreover, the information gathered so far strongly indicates that the sites must be preserved in place.
Response: The descriptions of the sites do not indicate that they may represent major archaeological discoveries. As explained in response to comments from others, the data recoveries are to mitigate effects that already have been determined, not to further evaluate the importance of the sites or potential effects on them. As such, it is not required that they be implemented prior to finalizing the SEIS, just as other mitigative measures committed to would not be implemented prior to completion of the SEIS. FHWA and VDOT have committed in the SEIS to implementing the data recoveries prior to construction in accordance with the plan that is summarized in the SEIS, and that was approved by VDHR and supported by Albemarle County's Historic Preservation Committee. The determination that sites 44AB428 and 44AB430 are important chiefly for the information they contain was based on the Phase II evaluation survey (Botwick, Bradford, 1994, *Phase II Archaeological Investigations, Sites 44AB428, 44AB429, and 44AB430, Route 29, Albemarle County, Virginia*, prepared for the Virginia Department of Transportation by Louis Berger and Associates, Inc., Richmond, Virginia), which met all applicable Secretary of the Interior's standards. Based on the information gathered to date, VDHR concurred with the determination that the sites are important only for the information they contain and are not worthy of preservation in place.

SELC hired Community & Environmental Defense Services to review the DSEIS. The resulting report prepared by Richard D. Klein, entitled *A Review of the Draft Supplemental Environmental Impact Statement, U.S. Route 29 Bypass - City of Charlottesville & Albemarle County*, was attached to SELC's letter, and also is reproduced in its entirety following SELC's letter at the end of this appendix. After reviewing Mr. Klein's report, we have made revisions or expanded discussions in some sections of the SEIS.

Oral comments from Bruce Appleyard, Transportation/Land Use Planner for SELC, presented at the March 14, 2002 public hearing.

Mr. Appleyard asserted that the DSEIS does not adequately discuss threats to drinking water for 80,000 people; does not adequately assess alternatives; and does not update traffic projections, which is necessary to accurately portray risk of catastrophic spills, sedimentation, and erosion, since these risks are directly correlated to the number of vehicles on the Bypass. He also stated that construction of overpasses on existing Route 29 would be a better alternative. These are all subjective and nonsubstantive comments that do not require responses.

L.3.3 Piedmont Environmental Council (PEC)

The Piedmont Environmental Council is a non-profit organization whose stated mission is to promote and protect the Virginia Piedmont's rural economy, natural resources, history and beauty. Headquartered in Warrenton, Virginia, PEC operates in Loudoun, Clarke, Fauquier, Rappahannock, Culpeper, Madison, Orange, Greene, and Albemarle Counties. PEC opposes the Bypass and was one of the plaintiffs in the suit filed by SELC.

Oral comments from Cathy Link presented at the March 14, 2002 public hearing.

1. The DSEIS does not account for risk to the watershed and Reservoir; does not sufficiently discuss spill mitigation measures; does not thoroughly examine potential for increased risk emanating from accidents in wet weather.
Response: These are all subjective comments that do not require response.

2. DSEIS does not account for impacts to Reservoir if the dam is raised to increase storage capacity.
Response: Discussion of this issue has been added to Sections 3.7, 4.4, and 4.6.

3. DSEIS does not account for impacts to private wells or groundwater.
Response: Section 4.3.6 has been expanded to discuss these issues in greater detail.

4. DSEIS does not adequately discuss first flush effects.
Response: Although this topic was presented in Section 4.4.2, we have decided to expand the discussion to present more details about this phenomenon and its applicability to the project.

5. DSEIS does not adequately analyze erosion and sedimentation from sample storm events.
Response: It is not clear what the commenter means by "sample storm events," and therefore we cannot respond.

6. DSEIS does not fully evaluate potential impacts on the significant archaeological sites at the northern terminus because Phase III data recovery has not been undertaken yet, and thus the public has not had sufficient information to adequately comment.
Response: As explained previously, the data recoveries are to mitigate effects that already have been determined, not to further evaluate the importance of the sites or potential effects on them. As such, it is not required that they be implemented prior to finalizing the SEIS, just like other mitigative measures. FHWA and VDOT have committed in the SEIS to implementing the data recoveries prior to construction in accordance with the plan that is summarized in the SEIS, and that was approved by VDHR and supported by Albemarle County's Historic Preservation Committee. All information developed on the sites was available for review and comment at the Public Hearing, as well as the Public Hearing held in 1994. The public has been provided with the same information that was provided to VDHR and to Section 106 consulting parties. This information was consistent with the Section 106 requirements and sufficient for those who reviewed it to provide meaningful comments and to concur with the data recovery plans.

7. No additional archaeological investigation has been completed since the court's ruling.
Response: This is incorrect; additional archaeological investigations did take place in the footprint of the northern interchange per the court's ruling. Copies of the report on these investigations were forwarded to VDHR and representatives of the City of Charlottesville and Albemarle County. Copies also were available to the public for review at the Public Hearing. No additional National Register-eligible archaeological sites were identified as a result of the supplemental survey.

8. The PEC is committed to opposition of the bypass and VDOT is reminded, if it chooses to move forward with it, that there are still substantial issues that have not been addressed.
Response: Presumably, the commenter is referring to the foregoing issues that PEC believes have not been addressed to its satisfaction and not something PEC has yet to bring forth.

L.3.4 Sierra Club

The Sierra Club is an environmental advocacy group supported by non-tax-deductible contributions, gifts, dues, publication sales, and other business endeavors. Its stated mission is to explore, enjoy, and protect the wild places of the earth. Its activities include publishing, lobbying, and legal challenges. The Sierra Club opposes the Bypass and was one of the plaintiffs in the suit filed by SELC.

Oral comments from Audrey Dannenberg, Chairperson of Sierra Club's Piedmont Group, presented at the March 14, 2002 public hearing.

1. DSEIS did not address effects of hazardous material spills during wet weather.
Response: See Section 4.3.10.

2. DSEIS did not address effects on private wells.
Response: See Section 4.3.6.

3. DSEIS did not address costs of cleaning up spills.
Response: See Section 4.3.10.

4. DSEIS did not use updated traffic projections in judging the effect of the Bypass on the Reservoir.
Response: No response needed. The commenter has provided no basis as to why the traffic projections need to be updated.

5. DSEIS did not discuss impact of single storms on erosion and sedimentation into the Reservoir, particularly during construction.
Response: See Section 4.7.

6. Additional general comments regarding how project is unnecessary, wasteful, and destructive; comments about nonsubstantive issues (home displacements, noise, air pollution, schools).
Response: Subjective and nonsubstantive comments and comments not germane to the SEIS; therefore, no response needed.

L.3.5 Citizens for Albemarle

Citizens for Albemarle is a local environmental advocacy group dedicated to preserving the unique character of Albemarle County and to representing citizen concerns. The group has consistently opposed a western bypass in Albemarle County.

Oral comments from DeForest Mellon, Vice President, presented at the March 14, 2002 public hearing.

1. Bypass poses significant risk to the watershed; much of the roadway would be above steep slopes that drain into Reservoir or its tributaries; toxic spill will occur at some point; sedimentation and pollution by contaminated runoff also will occur; DSEIS does not adequately discuss continuing stream of pollutant wash-off from the Bypass.
Response: Subjective comments lacking supporting information; no response needed.

2. Major chemical spill also could affect groundwater and private wells.
Response: Discussion on these issues has been expanded in Section 4.3.6.

3. Vehicular traffic will emit aerosols and particulates, such as polycyclic aromatic hydrocarbons, which are toxic to human biology.
Response: Additional information about polycyclic aromatic hydrocarbons has been included in Section 4.3.3.

L.3.5 North Charlottesville Business Council

The North Charlottesville Business Council, affiliated with the Charlottesville Regional Chamber of Commerce, represents the interests of its member businesses in Albemarle County along existing Route 29 north of Charlottesville. The Council seeks to maintain an active role in determining the future of transportation, land use planning, zoning, and other issues it believes critical to the corridor's future vitality. A key Council concern relates to the flow of traffic along Route 29 and commercial and customer access throughout the corridor. The Council supports the Bypass.

UNITED STATES DEPARTMENT OF COMMERCE
The Deputy Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

March 12, 2002

MAR 25 2002

Mr. Mark Wittkofski
Department of Transportation, Virginia
1401 East Broad Street
Richmond, Virginia 23219-2000

Dear Mr. Wittkofski:

Enclosed are comments on the Draft Environmental Impact Statement for U.S. Route 29 Bypass City of Charlottesville and Albermarle County, Virginia. We hope our comments will assist you. Thank you for giving the opportunity to review this document.

Sincerely,

Margaret R. McCalla

for Scott B. Gudes
Deputy Under Secretary
for Oceans and Atmosphere

Enclosure

MEMORANDUM FOR: Margaret McCalla
Acting Director, Office of Policy and Strategic Planning

FROM: Charles W. Challstrom
Director, National Geodetic Survey

SUBJECT: DEIS-0202-06 U.S. Route 29 Bypass City of Charlottesville and Albermarle County, Virginia

The subject statement has been reviewed within the areas of the National Ocean Service (NOS) responsibility and expertise and in terms of the impact of the proposed actions on NOS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in the subject area is contained on the National Geodetic Survey's home page at the following Internet World Wide Web address: http://www.ngs.noaa.gov After entering the this home page, please access the topic "Products and Services" and then access the menu item "Data Sheet." This menu item will allow you to directly access geodetic control monument information from the National Geodetic Survey data base for the subject area project. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

1 If there are any planned activities which will disturb or destroy these monuments, NOS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation(s) required.

For further information about geodetic control monuments, please contact Rick Yorczyk; SSMC3 8636, NOAA, N/NGS; 1315 East West Highway; Silver Spring, Maryland 20910; telephone: 301-713-3230 x142; fax: 301-713-4175, Email: Rick.Yorczyk@noaa.gov.

DEPARTMENT OF THE ARMY
NORFOLK DISTRICT, CORPS OF ENGINEERS
FORT NORFOLK, 803 FRONT STREET
NORFOLK, VIRGINIA 23510-1096

REPLY TO ATTENTION OF:

April 16, 2002

Eastern Virginia Regulatory Section
02-4518-15

Mr. Edward S. Sundra
Senior Environmental Specialist
Federal Highway Administration
400 North 8th Street
Richmond, Virginia 23240-0249

Dear Mr. Sundra:

This letter provides the comments of the Norfolk District Corps of Engineers on the Draft Supplemental Environmental Impact Statement (DSEIS) prepared for the proposed Route 29 Bypass in the City of Charlottesville and Albemarle County. The Federal Highway Administration (FHWA) and the Virginia Department of Transportation (VDOT) are preparing the SEIS, and the Corps of Engineers is a cooperating agency in the preparation of documents for this project. The SEIS is being prepared pursuant to a court order, to more fully consider the effects of the Selected Alternative on the South Fork Rivanna River Reservoir and its watershed and the effects of the project's northern terminus on archaeological resources.

Our primary consideration in reviewing the document is the analysis of the impacts to waters of the United States, including wetlands, and the potential impacts to water quality of the public water supply. It is difficult to ascertain from the information provided the extent of our permit area and whether impacts proposed with Corps jurisdictional areas may effect water quality in the reservoir. The document clarifies in the errata notice (1) that 15 of the 24 stream crossings are located in the reservoir watershed. However, the nature of those stream crossings is not specified.

It is recommended that bridges or bottomless arches be used to the maximum extent practicable in crossing streams and wetlands in order to minimize impacts to the water contributing to the reservoir. Stream (2) relocation should be avoided, and perpendicular crossings should be utilized. Unavoidable stream relocations should incorporate natural stream design that replicates stream length, meanders, and riparian features. Clearing of streambanks/riparian zones should be minimized. Compensatory mitigation may be required for stream impacts, depending on the extent and nature of the impacts.

The document discusses at length the stormwater management facilities planned to minimize impacts to water quality of the reservoir. However, it (3) does not indicate whether those facilities are planned for construction in streams or wetlands. The illustrations in Figures 4-6 and 4-7 suggest that the stormwater ponds may be in streams or wetlands, based on the contour lines

shown. While we recognize the importance of maximizing treatment of stormwater runoff in the reservoir watershed, it is recommended that the ponds not be located in waters of the U.S. It is understood that water moves downhill and that an over-engineered stormwater system that counters natural water movements is not desirable, but the goal should be to place the ponds outside of the stream/wetland system. Any request for authorization to place ponds in waters of the U.S. must include an alternatives analysis demonstrating for each pond why its purpose cannot be served with placement in an upland area.

Table 4-5 summarizes wetland and stream crossing information for the various alternatives. The selected alternative is shown to have by far the (4) greatest number of wetland sites impacted, 43 versus 1 to 5 for the other alternatives. A footnote to the table states that the higher number is a reflection of the more intensive inventory of wetlands performed for the selected alternative. While it is understood that the more thorough field examination may explain the substantially higher number of wetland sites impacted by the selected alternative, it could mean that the preferred alternative actually impacts far more wetlands than the other alternatives (and not just be a product of the level of review). When an application is submitted for Department of the Army permits to construct this project, we will conduct an alternatives analysis to identify the least environmentally damaging practicable alternative (LEDPA). Without comparable wetland impact information, we cannot conclude that the selected alternative is LEDPA, unless information is submitted to substantiate that none of the other alternatives is practicable.

As noted above, it is not clear whether the stormwater ponds are planned for siting in waters of the U.S. It is therefore also not clear whether all (5) wetland impacts proposed have been presented in the DSEIS, since the stormwater plans were apparently developed subsequent to the Corps field reviews of wetland impact areas.

Compensation must be provided for all unavoidable impacts to wetlands, (6) and the functions as well as the types of wetland areas impacted should be considered in the mitigation proposal. It is stated on page 4-17 that the primary function of the wetlands to be impacted by the selected alternative is "predominantly limited to groundwater discharge." Since many of the wetlands are riparian fringes and in-stream bars, it is likely that they also function as habitat for wildlife and fish. Any wetlands located along streams through agricultural areas, particularly if livestock are present, also likely serve to improve water quality through the uptake of nitrogen and phosphorus.

We appreciate the opportunity to review and comment on the DSEIS. Should you have any questions concerning our comments, you may contact Alice Allen-Grimes at 757-441-7219.

Sincerely,

Nicholas L. Konchuba
Chief, Eastern Virginia
Regulatory Section

Copies Furnished:

Virginia Department of Transportation, Richmond
U. S. Fish and Wildlife Service, Gloucester
Environmental Protection Agency, Reston
National Marine Fisheries Service, Oxford
Virginia Department of Environmental Quality/Water Division, Richmond

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

APR 29 2002

Mr. Edward Sundra
Federal Highway Administration
400 North 8th Street
Richmond, Virginia 23240-0249

Dear Mr. Sundra:

In accordance with the National Environmental Policy Act (NEPA), and Section 309 of the Clean Air Act, the Environmental Protection Agency (EPA) offers the following comments regarding the Supplemental Draft Environmental Impact Statement (SDEIS) for the U.S. Route 29 Bypass in Charlottesville and Albemarle County, Virginia. Our review of the SDEIS raises several important questions regarding impact of the bypass on pollutant loadings to the South Fork Rivanna River Reservoir. EPA believes that due to these potential environmental concerns a rating of EC-2 (Environmental Concerns- Insufficient Information) is warranted. We have provided specific information requests in the attached technical comments regarding the information that should be provided in the Supplemental Final Environmental Impact Statement (SFEIS).

Prior to the development of the current SDEIS, the proposed Rt 29 Bypass was the subject of several Federal studies, including a 1993 Environmental Impact Statement for the Rt 29 Corridor that established the purpose and need and selected Alternative 10 as the preferred alternative (EPA rated the DEIS EC-2). The DEIS established that the Rt. 29 Bypass is intended to relieve congestion on the heavily developed portion of existing Rt. 29 north of Charlottesville and to serve as an upgraded highway section consistent with the overall Rt. 29 National Highway Corridor plan. Subsequent studies included a 1995 Environmental Assessment, a 1996-2000 Reevaluation, and finally, a year 2000 Section 4(f) Evaluation all of which discussed changes to Alternative 10's design and impacts since issuance of the Record of Decision.

Alternative 10 is a 4-lane bypass on new location west of the existing Rt 29 and passes through a scenic and historical area of rural residential housing, woodlands and farmlands located northwest of the city of Charlottesville, Virginia. Alternative 10 impacts approximately 2.8 acres of wetlands, the highest of any alternative. Over 3 miles of its 6.2-mile length located in the watershed of a public water supply (South Fork Rivanna River Reservoir) and approximately 1/4 mile of roadway (the "critical segment") is located within 600 to 1300 feet of the reservoir.

In 2001, local environmental groups filed a lawsuit against VDOT, the Federal Highway Administration and the Virginia Secretary of Transportation. The basis of the suit was that the parties named did not adequately study the potential effect of Alternative 10 on inducing suburban sprawl or the potential impact to the South Fork Rivanna River Reservoir as well as

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other issues. As a result of the suit the U.S. District Court for the Western District of Virginia, in August 2001, directed the Virginia Department of Transportation (VDOT) to prepare the Supplemental Draft Environmental Impact Statement (SDEIS) that is the subject of this comment letter. The court upheld much of the past study as adequate and directed VDOT to prepare a SDEIS that would focus on two issues; the effect of the selected alternative on the South Fork Rivanna River Reservoir and the effect of the project's northern terminus on archaeological resources.

In response to the court order, VDOT prepared a SDEIS with additional information covering the effect of the selected alternative on the South Fork Rivanna River Reservoir and of the project's northern terminus on archaeological resources. The comments provided by the EPA on this SDEIS are focused on the documentation and scope of potential impacts to the South Fork Rivanna River Reservoir. However, given the need to balance a safe and efficient transportation system with that of a safe public water supply, EPA recommends that the traffic studies be updated to determine if the recently completed improvements to the existing Rt. 29 have addressed the purpose and need for the Rt. 29 Bypass and have increased the feasibility of non-reservoir watershed alternatives.

Current land use within the proposed highway right-of-way is predominately undeveloped forest. The construction of the impervious surface highway and the removal of the groundwater recharging forest cover will be a polluting element in the watershed for the foreseeable future (longer than the year 2020 as studied in SDEIS). In the "critical segment" of the Alternative 10, highway runoff will have only a short distance to flow (600-1300 feet) before entering the South Fork Rivanna River Reservoir. The storm water management system is the primary safeguard for the reservoir in the advent of a hazardous waste spill and for treating other highway runoff. EPA believes the construction of a major highway transportation corridor adjacent to a public water supply may have an irreversible impact with long-term human health and environmental risk and consequences.

The attached technical comments provide detailed information regarding our questions on the potential effects of the bypass on pollutant loadings to the South Fork Rivanna River Reservoir. In addition we have suggested information that should be included in the SFEIS.

Thank you for this opportunity to comment on the SDEIS. If you have any questions regarding our comments, please contact Mr. Peter Stokely of my staff at 703-648-4292.

Sincerely,

William Hoffman, Director
Office of Environmental Programs

Enclosure

2

EPA Region 3 Technical Comments
Rt. 29 Bypass, Albemarle County and Charlottesville, Virginia:

Reservoir loadings versus watershed pollutant loadings:

1 Although the SDEIS discusses generic pollutant loadings from highways and other land uses, it does not provide data for the South Rivanna watershed. Specifically, the loadings from the Rt. 29 road segment and from the existing and future land uses for Rivanna watershed are not provided. The SFEIS should include a discussion of the cumulative-long term pollutant loading from the Rt. 29 Bypass and the land use in watershed as a whole. The discussion should not stop at year 2020 but should be projected for at least as long as the projected life of the reservoir.

2 The SDEIS includes data on typical or predicted pollutant loadings (Table 4-6, Table 4-7, Table 4-15, Table 4-16) or information on actual conditions (Table 4-8). The SFEIS should include a table showing the actual pollutant loading from the existing, and modeled future land use both with and without the by-pass. This table should be broken down by pollutant type and watershed area. Only in this manner can the relative contribution of the by-pass to pollutant loadings be determined. For example, in Table 4-16 a phosphorus export rate in lbs per acre is estimated for various watersheds and for that of the proposed bypass. A quick calculation (not provided in the SDEIS) using the data from this table indicates that between 30-200 lbs per year of phosphorus will be exported from the proposed bypass (33-219 acres X 0.90 lbs/acre/year). However, the value for phosphorus for the entire watershed was not included in the SDEIS, so a determination of the relative contribution of the highway to the total phosphorus loadings could not be completed.

3 The FSEIS should include estimated total highway pollutant loadings for key pollutants and a discussion of how these numbers compare to the watershed pollutant loadings as a whole. A discussion of pollutant uptake rates along streams and wetlands should be provided. Include a discussion on how the pollutant uptake opportunity from highway runoff in the "critical segment" will be limited due to the close proximity to the reservoir. Provide a comparison of the pollutant uptake opportunity for highway runoff in the critical area to the pollutant uptake opportunity in the rest of the watershed.

4 To determine the relative effect on the drinking water reservoir, the total estimated loading to the reservoir from the proposed bypass should be provided in the SFEIS. These numbers should be converted to total loadings per year based on the bypass right of way and watershed acreage and compared in a table such as Table 4-17. The FSEIS should also include the results of Part II of the University of Virginia (UVA) Study, which will model the effects of selected contaminates on reservoir water quality. This information should be made available prior to a Record of Decision.

Storm Water Management:

The proposed project would place approximately 219 acres (3.4 miles) of highway right-of-way in close proximity to the South Fork Rivanna River Reservoir. Of the total of 3.4 miles of highway in the watershed 0.28 miles are considered to be the "critical segment", a section of highway that lies between 590 and 1332 feet from the reservoir with direct runoff to the reservoir.

The SDEIS concludes that the bypass will not impact the water quality of the reservoir based on the presumed water treatment capabilities of the storm water management system. Yet the SDEIS does not actually estimate the final pollutant loading (lbs, lbs/ac) to the reservoir with the storm water management system in place. In addition, a review of the storm water management plan by the Center for Watershed Protection (Mr. Thomas Schueler) raises several questions regarding the assumptions used in determining the treatment efficiencies and of the design of the facilities themselves. Particularly relevant is his discussion of the pollutant removal rates used in the SDEIS. His review also contained several recommendations that should be followed for Alternative 10. Evaluation of the potential impacts of the storm water management units on streams or wetlands should be discussed in the SFEIS in more detail.

5 (6)

Specifically, the SFEIS should include a discussion of revised pollutant removal rates based on the input received from the Center for Water Protection. Clearly indicate the actual amount of pollutants that will not be removed, and therefore will reach the reservoir. A review of the Center for Water Protection recommendations for innovative storm water management design should be included in the SFEIS, including the applicability and potential benefit of those recommendations for the Rt. 29 bypass. Finally, FSEIS should include the impacts to wetland and streams that are the result of the storm water management system and how these impacts were avoided and minimized. The location of these features should be outside of wetland areas and located offline from the natural stream. The analysis of avoidance alternatives should include a discussion of the feasibility of routing all or some of the highway runoff out of the reservoir watershed.

4 (7)

Format of Storm Water Management and Hazardous Waste Discussions

The SDEIS spreads the discussion of the critical issue of highway runoff, hazardous waste spills and mitigation measures into several sections of Chapter 4 (Sections 4.3,4.4, 4.5, 4.7 and 4.8). This makes it difficult to get a clear understanding of the whole issue.

7 (8)

We recommended that the SFEIS structure the discussion around the following topics:

1) The specific contaminates and nutrients likely to be produced by this roadway segment without mitigation as compared to the loading of the same contaminates and nutrients from the watershed as a whole. This will give an understanding of the magnitude of the potential impact of highway relative to the watershed as a whole and frames the problem for the reader.
2) The methods by which contaminates and nutrients will be controlled during construction and operation.
3) The removal rates of the containment methods (SWM) and what the mitigated pollutant loading to the reservoir will actually be both during construction as well as long term operation.
4) The issue of hazardous materials transport, the likelihood of a spill and the containment plans for a spill discussed in one section.

8 (9)

The discussion of hazardous waste transport in the SDEIS focuses on locally transported hazardous waste and did not mention long distance shipments or the potential for nuclear shipments. We suggest that the SFEIS should include information on the characterization of out-of-state or long-distance transport of hazardous waste on Rt. 29 including nuclear material.

9 (10)

Finally, the SFEIS should include and analysis of the potential of trucks diverting (especially hazardous and solid waste haulers) to the Rt. 29 corridor once it is upgraded.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
6669 Short Lane
Gloucester, VA 23061

April 26, 2002

Mr. Roberto Fonseca-Martinez
Federal Highway Administration
1504 Santa Rosa Road
Richmond, Virginia 23229

Attn: Mr. Edward Sundra, FHWA

Re: Route 29 (Charlottesville Bypass) - VDOT Project #: 6029-002-F22-PE 101; RUVA-002-001, PE 101

Dear Mr. Fonseca-Martinez:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Supplemental Environmental Impact Statement for the U.S. Route 29 Bypass to be located in the City of Charlottesville and Albemarle County, Virginia. The roadway would extend from Route 250 Bypass and the North Grounds of the University of Virginia to existing Route 29 north of the South Fork Rivanna River. The project would consist of a four-lane divided, limited access highway on new location. It would be approximately 6.2 miles in length. This letter constitutes the comments of the Service on the proposed project and is submitted in accordance with provisions of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

As you are aware, the Federal Highway Administration (FHWA) and the Service completed formal Section 7 consultation on this project with the Service's completion of a biological opinion dated June 5, 1998. Reinitiation of formal consultation by FHWA with the Service is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may impact listed species or critical habitat in a manner or to an extent not considered in the biological opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

(1) Since the footprint of the preferred alternative has been changed and the federally endangered James River spinymussel (*Pleurobema collina*) occurs in the vicinity of the proposed project, FHWA must determine whether the modification to this project would trigger reinitiation of formal Section 7 consultation. An updated biological assessment pursuant to Section 7(c) would therefore be required for this project. General recommendations for the preparation of a biological assessment are enclosed. We will be pleased to discuss the consultation process with you.

We appreciate the opportunity to comment on this project. If you have questions, please contact Mr. William Hester of this office at (804) 693-6694, extension 134.

Sincerely,

Susan Lingenfelter
for Karen L. Mayne
Supervisor
Virginia Field Office

Enclosure

cc. Mr. Mark Wittkofski
VDOT Headquarters, Richmond, VA

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION
203 Governor Street
Richmond, Virginia 23219-2010
(804) 786-2291

MAR 2 2002

24 March 2002

Mr. J. Mark Wittkofski
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219-2000

Re: U. S. Route 29 Bypass, City of Charlottesville and Albemarle County, " Draft Environmental Impact Statement" and " Final Environmental Impact Statement Section 4(f)/106 Evaluation", Project Numbers: (State) 6029-002-F22, PE101; RUVA-002-001, PE101; (Federal) NH-037-2 (130)

Dear Mr. Wittkofski:

The Department of Conservation and Recreation (DCR) has searched its Biological and Conservation Data System (BCD) for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the project crosses the Ivy Creek-Montvue Stream Conservation Unit. Stream Conservation Units (SCUs) identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. Stream Conservation Units are also given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain. A rank is a rating of the significance of the site based on presence and number of natural heritage resources; on a scale of 1-5, 1 being most significant. This site has been ranked as a B2 conservation site, which indicates it is of very high significance. The natural heritage resource associated with this site is:

Plenrobema collina	James spinymussel	G1/S1/LE/LE

1 The James spinymussel (*Plenrobema collina*, G1/S1/LE/LE), endemic to the James River watershed, occurs in a variety of substrata ranging from sand and silt mixtures to gravel and sand mixed with rubble and in a variety of flow regimes (Clarke & Neves, 1984; Hove & Neves, 1994). It is now

Biological Assessment Guidelines

If a Federal agency determines a project to be a major Federal construction activity significantly affecting the quality of the human environment (i.e., one requiring an environmental impact statement under the National Environmental Policy Act), Section 7(c) of the Endangered Species Act, as amended, requires that the agency prepare a biological assessment to determine the effects of the project on listed and proposed species that may occur in the project impact area. The biological assessment shall be completed before any contract for construction is entered into and before construction is begun. Biological assessments are recommended, but not required, for other Federal actions that may result in significant impacts to threatened or endangered species and their critical habitats, but which do not require the preparation of an EIS. The contents of the biological assessment depend on the nature of the Federal action. In general, the U.S. Fish and Wildlife Service (Service) recommends the following steps be taken:

1. Conduct a scientifically sound on-site inspection of the area affected by the action, which must in most cases include a detailed survey of the area to determine if listed or proposed species are present or occur seasonally and whether suitable habitat exists within the area for either expanding the existing population or potential reintroduction of populations.

2. Interview recognized experts on the species at issue, including those within the Service, State conservation agencies, universities, and others who may have data not yet found in scientific literature.

3. Review literature and other scientific data to determine the species' distribution, habitat needs, and other biological requirements.

4. Analyze the effects of the action on individuals and populations of each species and its habitat, including indirect and cumulative effects of the action.

5. Analyze alternative actions that may provide conservation measures.

6. Conduct any studies necessary to fulfill the requirements of (1) through (5) above.

7. Review any other relevant information.

If the Federal action agency determines that the proposed action may affect any listed species or critical habitat, the agency must request, in writing, formal consultation with the Service pursuant to Section 7(a)(2). If the action agency determines that the action is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat, the agency must confer with the Service.

If the determination is "no effect," neither consultation nor conference is necessary, unless requested by the Fish and Wildlife Service. A copy of the biological assessment document should be provided to the Fish and Wildlife Service.

restricted to small headwater streams of this watershed (Neves, 1991). Threats to this species include competition with the exotic clam (*Corbicula fluminea*), erosion and sedimentation from logging, road construction, and livestock grazing, sewage effluent, and water quality degradation (Neves, 1991). Please note that the James spinymussel is currently classified as endangered by the United States Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF).

Due to the legal status of the James spinymussel DCR recommends coordination with the USFWS and VDGIF to ensure compliance with protective legislation. To avoid adverse impacts to the aquatic habitat as a result of the construction activities, DCR also recommends the implementation of an erosion and sediment control plan.

2 In addition, the green floater (*Lasmigona subviridis*, G3/S2/NF/SC) has historically been documented in the South Fork of the Rivanna River. However, this record has not been verified since 1968.

3 Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

Any absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. New and updated information is continually added to BCD. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

4 For appropriate erosion and sediment control and stormwater management on this project be aware that, all Virginia Department of Transportation (VDOT) projects on state-owned lands that involve a land-disturbing activity of 10,000 square feet or more must comply with (1) the most current version of the VDOT annual specifications for erosion and sediment control (ESC) approved by DCR's Division of Soil and Water Conservation (DCR-DSWC) Central Office, and (2) project-specific ESC plan. All regulated land-disturbing activities associated with the project, including on or off site access roads, staging areas, of spoil or borrow areas, must be covered by approved specifications/plan. Further, specifications and plans must be prepared in accordance with the most current version of the *Virginia Erosion & Sediment Control Handbook*, Virginia Erosion & Sediment Control Law (VESCL) and Regulations (VESCR). VDOT is required to prepare an individual project-specific plan for all projects involving a regulated land-disturbance, however, these plans need not be submitted to DCR-DSWC for approval. *[Reference: VESCL §10.1-560, §10.1-564; VESCR §4VAC50-30-30, §4VAC50-30-100]*

Similarly, all VDOT projects on state-owned lands that involve a land use conversion activity of 1 acre or more must comply with the (1) most current version of the VDOT annual specifications for stormwater management (SWM) approved by DCR-DSWC Central Office, and (2) project-specific SWM plan. All regulated land-disturbing activities associated with the project, including on or off site spoil or borrow areas, must be covered by approved specifications/plan. Further, specifications and plans must be prepared in accordance with the current version of the Virginia Stormwater Management Law (VSWML) and Regulations (VSWMR). As with ESC, VDOT is required to prepare a project-specific SWM plan for all projects involving a regulated activity, however, these

5 plans need not be submitted to DCR-DSWC for approval. It is recommended that this project be considered with any other existing or proposed land use conversion or expansion plans for the property in order to adequately address the cumulative impacts on the receiving drainage or environmental systems, as well as, to identify the most appropriate strategy for reducing nonpoint source pollution from the developed and developing areas of the property. *[Reference: VSWML §10.1-603.5; VSWMR §4VAC3-20-210 - 245]*

A copy of the guidance document titled, DCR *Urban Programs Contact Information*, is available at http://www.dcr.state.va.us/sw/e&s.htm for use in directing project-specific technical and regulatory inquiries to the appropriate DCR Watershed Office for consideration.

6 For your records, at this time, the proposed project is not anticipated to have any adverse impacts on existing or planned recreational facilities. Nor will it impact any streams on the National Park Service Nationwide Inventory, Final List of Rivers, potential Scenic Rivers or existing or potential State Scenic Byways. Please contact DCR for an update on this information if a significant amount of time passes before it is utilized.

Thank you for the opportunity to offer comments on this project.

Sincerely,

Derral Jones
Planning Bureau Manager

CC: Ray Fernald, VDGIF
Eric Davis, USFWS

Literature Cited

Clarke, A.H. and R.J. Neves. 1984. Status survey of the James River spinymussel, *Canthyria collina*, in the James River, Virginia. Unpublished report on file with the United States Fish and Wildlife Service, Newton Corner, Massachusetts.

Hove, M.C. and R.J. Neves. 1994. Life history of the endangered James spinymussel *Pleurobema collina* (Conrad, 1837). American Malacological Bulletin 11:29-40.

Neves, R.J. 1991. James spinymussel. In Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia.

Definition of Abbreviations Used on Natural Heritage Resource Lists of the Virginia Department of Conservation and Recreation

Natural Heritage Ranks

The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHR's," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The primary criterion for ranking NHR's is the number of populations or occurrences, i.e. the number of known distinct localities. Also of great importance is the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals. Other considerations may include the quality of the occurrences, the number of protected occurrences, and threats. However, the emphasis remains on the number of populations or occurrences such that ranks will be an index of known biological rarity.

S1	Extremely rare; usually 5 or fewer populations or occurrences in the state; or may be a few remaining individuals; often especially vulnerable to extirpation.
S2	Very rare; usually between 5 and 20 populations or occurrences; or with many individuals in fewer occurrences; often susceptible to becoming extirpated.
S3	Rare to uncommon; usually between 20 and 100 populations or occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
S4	Common; usually >100 populations or occurrences, but may be fewer with many large populations; may be restricted to only a portion of the state; usually not susceptible to immediate threats.
S5	Very common; demonstrably secure under present conditions.
SA	Accidental in the state.
S#B	Breeding status of an organism within the state.
S#1	Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.
S#N	Non-breeding status within the state. Usually applied to winter resident species.
SU	Status uncertain, often because of low search effort or cryptic nature of the element.
SX	Apparently extirpated from the state.
SZ	Long distance migrant whose occurrences during migration are too irregular, transitory and/or dispersed to be reliably identified, mapped and protected.

Global ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note that GA and GN are not used and GX means apparently extinct. A "Q" in a rank indicates that a taxonomic question concerning that species exists. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity.

These ranks should not be interpreted as legal designations.

Federal Legal Status

The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

LE	Listed Endangered - threatened with extinction throughout all or a significant portion of its range		
LT	Listed Threatened - likely to become endangered in the foreseeable future		
PE	Proposed Endangered	E(S/A)	Treat as endangered because of similarity of appearance
PT	Proposed Threatened	T(S/A)	Treat as threatened because of similarity of appearance
C	Candidate - enough information is available to propose for listing, but listing is "precluded by other pending proposals of higher priority"		
SOC	Species of Concern -- species that merit special concern (not a regulatory category)		
NF	No federal legal status		

State Legal Status

The Division of Natural Heritage uses similar abbreviations for State endangerment.

LE	Listed Endangered	PE	Proposed Endangered
LT	Listed Threatened	PT	Proposed Threatened
C	Candidate		
SC	Special Concern -- animals that merit special concern according to VDGIF (not a regulatory category)		
NS	No state legal status		

For information on the laws pertaining to threatened or endangered species, contact
U.S. Fish and Wildlife Service for all FEDERALLY listed species
Department of Agriculture and Consumer Services Plant Protection Bureau for STATE listed plants and insects
Department of Game and Inland Fisheries for all other STATE listed animals
3/99

Wittkofski, J. Mark

From: Narasimhan,Kotur [ksnarasimhan@deq.state.va.us]
Sent: Monday, March 04, 2002 8:48 AM
To: Mark.Wittkofski@VirginiaDOT.org
Subject: SUPPLEMENTAL EIS FOR ROUTE 29

This has reference to Memorandum dated February 11, 2000 on the above subject. Thank you for giving DEQ an opportunity to review the Environmental Impact Statement applicable to US Route 29 bypass applicable to City of Charlottesville and Albermale County.

Only comment we have is to draw your attention to the following Virginia State Air regulations need to be followed during the construction phase.

1. 9 VAC 5-40-5600 et seq. - Open Burning
2. 9 VAC 5-50-60 et seq. Fugitive Dust Emissions

1

Please do not hesitate to contact us if you need any further assistance.

Kotur S. Narasimhan
Office of Air Data Analysis
Department of Environmental Quality
Commonwealth of Virginia
Phone: (804) 698-4415
FAX: (804) 698-4510

4/23

From: Susan Douglas [mailto:Sdouglas@vdh.state.va.us]
Sent: Tuesday, March 12, 2002 7:40 AM
To: Mark.Wittkofski@VirginiaDOT.org
Subject: Supplemental EIS - Route 29 Bypass

The proposed Route 29 bypass project as described in the "US Route 29 Bypass, City of Charlottesville and Albemarle County, Virginia, Draft Supplemental Impact Statement" dated approved Jan 28, 2002, is located downstream of the existing South Fork Rivanna River Reservoir raw water intake for the Rivanna Water and Sewer Authority's South Rivanna WTP. As such, this project will not impact raw water quality entering the treatment facility.

1

Susan E. Douglas, P.E.
Technical Services Engineer
Division of Drinking Water
Dept. of Health

COMMONWEALTH of VIRGINIA

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Kathleen S. Kilpatrick
Director

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www.dhr.state.va.us

April 9, 2002

Mr. Edward S. Sundra
Senior Environmental Specialist
Federal Highway Administration
400 North 8th Street
Richmond, Virginia 23240

Re: Draft Supplemental Environmental Impact Statement
Route 29 Bypass
City of Charlottesville and Albemarle County
VDOT Project Number 6029-002-F22, PE101
DHR File Number 1990-0396

Dear Mr. Sundra:

1 Thank you for requesting our comments on the Route 29 Draft Supplemental Environmental Impact Statement. The Draft EIS fully addresses the Section 106 responsibilities of the FHWA and the VDOT and effects to historic properties.

2 As stated in the Draft EIS, our department has concurred that archaeological sites 44AB481, 44AB482 and 44AB483 are not eligible for listing in the National Register of Historic Places (NRHP). We have further concurred that sites 44AB426 and 44AB430 are eligible for listing on the NRHP and have subsequently reviewed and approved the data recovery plans submitted by the VDOT.

3 We look forward to continuing to work with the FHWA and the VDOT on the successful completion of the Section 106 process for this project and to receiving the data recovery reports for sites 44AB426 and 44AB430.

Thank you again for continuing to coordinate this project with our department. If I can be of any further assistance, do not hesitate to contact me at (804) 367-2323 ext. 140 or lrichards@dhr.state.va.us.

Sincerely,

Lily A. Richards
Archaeologist and Historian

c. J. Mark Wittkofski, VDOT

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FEB 2 2002
ENVIRONMENTAL DIV.

COMMONWEALTH of VIRGINIA

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Marine Resources Commission
2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

William A. Pruitt
Commissioner

February 25, 2002

Mr. J. Mark Wittkofski
Virginia Department of Transportation
1401 East Broad St.
Richmond, VA 23219-2000

RE: Draft Supplemental Environmental Impact Statement: U.S. Route 29 Bypass
City of Charlottesville, Albermarle County

Dear Mr. Wittkofski:

We are in receipt of the above-referenced document and request for comments, and would like to offer the following.

1 As stated on page S-11 of the Summary, permits will be required from the Virginia Marine Resources Commission for any encroachment over State-owned subaqueous stream bottoms associated with the project. It has been the policy of the Marine Resources Commission, however, to exert jurisdiction only over the beds of perennial waterways which have an upstream drainage of five (5) square miles or greater. The Draft SEIS indicates that the selected alternative, Alternative 10, will cross 24 streams, 15 of which are in the South Fork Rivanna Reservoir Watershed (page S-6 and pare 2-2, as corrected). However, page I-9 of the Summary of Reevaluation section lists 25 streams within the proposed construction limits of the selected alternative. While most of the streams are described as small, unnamed, intermittent or perennial tributaries, it would assist our review if a table were prepared for inclusion with the permit application which identifies the waterways to be crossed, their individual drainage areas, width and depth measurements, and other relevant information for review by this office so that we may determine which stream crossings will require authorization from this office.

An Agency of the Natural Resources Secretariat
Telephone (757) 247-2200 (757) 247-2292 V/TDD Information and Emergency Hotline 1-800-541-4646 V/TDD

February 25, 2002

2 For the streams over which VMRC will take jurisdiction, we recommend that, if possible, the entire waterway be spanned, thus avoiding any in stream structures. If this is not possible, as may be the case with the South Fork Rivanna River, we recommend minimizing the number of in stream piers to the greatest degree practicable and keeping the abutments and any associated scour protection measures which may be necessary above the elevation of ordinary high water. For culverts or pipe structures on smaller jurisdictional streams, we recommend counter-sinking the structures to allow fish passage during low flow conditions.

3 For all jurisdictional crossings associated with the project, we recommend conducting instream work in the dry within cofferdams of nonerodible material, blocking no more than 50% of the stream flow at any one time, conducting the work during low-flow conditions, and upon completion of the project, removal of the cofferdams in their entirety, restoration of the stream beds to their preconstruction conditions, and stabilization of the stream banks to minimize the water quality impacts associated with the construction of the crossings themselves. We would defer to the Department of Environmental Quality for comments regarding the potential impacts to water quality associated with runoff from the proposed roadway.

Thank you for the opportunity to comment on the Draft SEIS for this project. Should you have any questions or if we may be of further service, please don't hesitate to contact us.

Sincerely,

Jay M. Woodward
Environmental Engineer

JMW/bac
HM

Charlottesville-Albemarle Metropolitan Planning Organization
of the Thomas Jefferson Planning District Commission
POB 1505, 300 E. Main St, Charlottesville, VA 22902 www.tjpdc.org
Phone: 434-979-7310; Fax: 434-979-1597; Email: tjpd@tjpdc.org

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APR 15 2002
ENVIRONMENTAL DIV.

Mr. Edward Sundra
Federal Highway Administration
P.O. Box 10249
Richmond, VA 23240-0249

Dear Mr. Sundra:

1 The Charlottesville-Albemarle Metropolitan Planning Organization's (MPO) jurisdictional area covers all of the households and businesses that depend on the South Fork Rivanna Reservoir for their drinking water. Thus, the MPO is vitally interested in the Draft SEIS for the Proposed Route 29 Bypass. The MPO is responsible for long range transportation planning and is required to look at the environmental impact of its plans. Though the MPO staff doesn't duplicate the expertise of Albemarle County and Rivanna Water and Sewer Authority's (RWSA) watershed managers, it works with those agencies and respects their high level of professional knowledge and experience. Therefore, attached for your review are the following statements regarding the Draft SEIS for the Proposed Route 29 Bypass: comments developed on behalf of Albemarle County, comments developed on behalf of RWSA, and an analysis and endorsement of the Albemarle County and RWSA comments by the Thomas Jefferson Planning District Commission's (TJPDC) Senior Environmental Planner. Additionally, a public comment submitted to the MPO on behalf of Jerry McCormick-Ray and Carleton Ray, UVA Department of Environmental Sciences, has been included for consideration.

We therefore endorse the attached statements, from Albemarle County, RWSA, the TJPDC, and suggest consideration of the comment from Jerry McCormick-Ray and Carleton Ray, regarding the Draft SEIS for the Proposed Route 29 Bypass. In summary, we find that the Draft SEIS for the Proposed Route 29 Bypass is dangerously inadequate in its engineering and environmental methods and analyses, too quick to downplay the probability of and the impacts of accidental spills, too limited in its traffic projections, too sanguine in its faith in our local ability to respond to a hazardous material spill; we also find that it does not create a document that will lead VDOT to accept and fund its responsibilities for mitigating the proposed roadway's probable impacts on prime drinking water supply, if that roadway were to be constructed.

Sincerely,

Meredith Richards
Chair

Cc: Mark Wittkofski
Patricia Napier
Enclosures

Memo

Date: 4/5/02

To: Larry Hagin, Senior Transportation Planner, TJPDC

Cc: Harrison Rue, Executive Director, TJPDC

From: Rochelle Garwood, Senior Planner – Environment, TJPDC

RE: Comments on Draft SEIS

I have reviewed the comments made by Rivanna Water and Sewer Authority and Albemarle County staff on the Virginia Department of Transportation's draft Supplemental Environmental Impact Statement for the proposed Rt. 29 bypass. They seem well-thought-out and thorough, and include many points with which I completely agree. Some of the most important points to my mind include:

1 • The risk probability assessment in the SEIS for a catastrophic spill is very limited. Only the probability of a haz/mat spill in a small stretch of roadway is considered. The analysis done by Black & Veatch in their 2001 report was much more thorough, factoring in spills along other stretches of road and considering the probability of the largest concern of a haz/mat spill, the likelihood that the water treatment plant would need to be shut down.

2 • It is calculated in the SEIS that it would take a contaminant plume 2-4 days to pass the water treatment plant intake under normal flow conditions, and that RWSA can supply three days' worth of water in the event of a plant shutdown. What would happen on the fourth day, and what would happen if flow conditions are not "normal" (as has been not uncommon in recent years) is not addressed.

3 • Little analysis or concern is given to the planned use of herbicides, plant growth regulators, or road salts in close proximity to the reservoir. Both a more thorough analysis and greater consideration of the use of alternatives would be desirable.

4 • The SEIS does not take into account RWSA's plans to increase the reservoir height by 4', let alone the possibility that the reservoir height may eventually be increased to 8'.

In all, I am in agreement with RWSA and Albemarle County staff that the SEIS is incomplete, and both further analysis and a greater commitment from VDOT to take financial responsibility for the potential impacts on the drinking water supply are needed.

---

lhagin [redacted]
From: TJPDC [tjpdc@tjpdc.org]
Sent: Wednesday, March 06, 2002 11:31 AM
To: lhagin@tjpdc.org
Subject: Fwd: 29 Bypass

Delivered-To: m101500-tjpd@tjpdc.org
X-Sender: cr@unix.mail.virginia.edu
Date: Wed, 6 Mar 2002 11:22:06 -0500
To: MPO <tjpd@tjpdc.org>
From: Jerry McCormick-Ray <cr@virginia.edu>
Subject: 29 Bypass
Cc: rme5g@virginia.edu, krhobbs@cstone.net, wolivier@cstone.net, tb6d@virginia.edu, dm8d@virginia.edu, jzc6j@virginia.edu, JCMartin1@aol.com, eec@avenue.org, MillMoore@aol.com

Metropolitan Planning Organization;

We care about our future, our water, and the impact of the 29 Bypass. Please do not allow the Bypass to be approved and to poison our water supply, devastate the neighborhood, degrade local schools, remove homes, bring major noise pollution, and cost us a minimum $200 million when our state is already in debt.

Please remove the proposed Route 29 Bypass from the Transporation Improvement Plan.

1 The impact of sprawl and associated traffic on water and reservoirs is documented. A U.S. Geological Survey study published in ENVIRONMENTAL SCIENCE & TECHNOLOGY , on Oct. 1 2001 that polycyclic aromatic hydrocarbons, a notable carcinogen and endocrine disrupter that bioaccumulates, and comes from fossil fuel combustion (cars) is fostered in air deposition from sprawl and traffic. In their study of six states and 10 sites, six reservoirs were polluted with PAHs that exceeded Canada's estimates of the sediment concnetrations expected to poison aquatic life. And one site to exceeded Canadian threshold 12-24 times. The authors conclude that the data "not only indicated that sprawl can increase PAHs pollution in local waters" but it also poses "an ecological concern."

Please consider these findings in your deliberations on the 29 Bypass. Thank you.

Yours sincerely,

Jerry McCormick-Ray
Carleton Ray

G. Carleton Ray & Jerry McCormick-Ray
Department of Environmental Sciences, Clark Hall.
University of Virginia
Charlottesville, VA. 22903
Tel: (804) 924-0551: Fax: (804) 982-2137: E-Mail cr@virginia.edu

RIVANNA WATER & SEWER AUTHORITY
P. O. BOX 16 • CHARLOTTESVILLE, VIRGINIA 22902-0016 • (434) 977-2970

March 29, 2002

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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. J. Mark Wittkofski
Commonwealth of Virginia
Department of Transportation
1401 East Broad Street
Richmond, VA 23219-2000

Re: Rivanna Water & Sewer Authority
Testimony and Comments On The
Draft Supplemental Environmental Impact Statement
Proposed U. S. Route 29 Bypass

Dear Mr. Wittkofski:

The Rivanna Water & Sewer Authority appreciates the opportunity to provide comments on the draft Supplemental Environmental Impact Statement for the proposed U.S. Route 29 bypass.

The Rivanna Water & Sewer Authority provides drinking water for our community which is then distributed to individual customers by the City of Charlottesville and the Albemarle County Service Authority. We thus have a significant interest in any activity which occurs in the watershed serving our community water supply and in any activity which may potentially affect our reservoirs.

As we stated in our comments at the March 14, 2002 Public Hearing, it is the position of our Board of Directors that given other alternatives, the bypass should be located outside the public water supply area.

We are hereby offering specific comments on the potential water supply aspects and implications contained in the draft Supplemental Environmental Impact Statement.

Rivanna believes that the Virginia Department of Transportation must:

1 • Commit to providing the highest possible level of protection of our community water supply.

2 • Invest in the best possible measures to eliminate or minimize chemical introduction into our water supply.

3 • Use the Best Available Technology to reduce the risk of spills and ensure the best possible runoff control technology.

4 • Establish upfront funding for needed spill planning, monitoring systems, emergency operations, reservoir restoration, sediment removal and a myriad of other new costs which will otherwise have to be shouldered by RWSA and local government.

5 • Take into account the Authority's future water supply plan, especially the four-foot crest controls we plan to add on the South Fork Rivanna Reservoir.

6 • Fund the construction of a new upstream water supply intake on the South Fork Rivanna Reservoir.

We hereby request that the following materials be included in the formal hearing record:

- Public Statement of Executive Director, Mr. Lawrence C. Tropea, Jr., at the March 14, 2002 Public Hearing.
- Supplemental RWSA Comments on the water supply aspects of the draft Supplemental Environmental Impact Statement.
- Rivanna Water & Sewer Authority, Future Water Supply Recommendation (February 25, 2002).
- RWSA's November 27, 2000 comments on the proposed bypass.
- Copy of the Black & Veatch report of April 2001 which was funded by RWSA.

The Rivanna Water & Sewer Authority stands ready to meet with VDOT to discuss or supplement the materials we are hereby submitting to the hearing record. Please do not hesitate to contact me if we can be of any assistance.

Very truly yours,

Lawrence C. Tropea, Jr., P.E., DEE
Executive Director

LT:mgk

Enclosures

cc: Rivanna Water & Sewer Authority
Board of Directors

SERVING CHARLOTTESVILLE & ALBEMARLE COUNTY

STATEMENT OF LAWRENCE C. TROPEA, JR., P.E., DEE
EXECUTIVE DIRECTOR
RIVANNA WATER & SEWER AUTHORITY

PUBLIC HEARING ON DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT for PRPOSED U. S. ROUTE 29 BYPASS, CITY OF CHARLOTTESVILLE and ALBEMARLE COUNTY

MARCH 14, 2002

Good evening.

My name is Larry Tropea and I am the Executive Director of the Rivanna Water & Sewer Authority. Let me start by saying that the Authority appreciates the opportunity to testify at today's public hearing on the draft Supplemental Environmental Impact Statement for the U.S. Route 29 Bypass.

The Rivanna Water & Sewer Authority provides the areas drinking water that is then distributed to customers by the City of Charlottesville and the Albemarle County Service Authority. We thus have a significant interest in any activities that occur in the watersheds serving our community water supply.

Each and every day, 82,000 area residents wake up with confidence that the water they need, the water that is essential to their very life, will be there and will be safe to drink. The Rivanna Water & Sewer Authority is here today as a voice for the water supply, for the reservoir and its watershed, and for the environment.

A strong principle guides our comments today .... a safe and reliable water supply is NOT a luxury ... and we strongly believe that only our best efforts should be undertaken to eliminate or, to the maximum extent possible, reduce all risks to our water supply.

It remains the Rivanna Water & Sewer Authority's position that given other alternatives, the bypass should be located outside the public water supply area.

Let me now turn to specific comments on the draft Supplemental Environmental Impact Statement.

We believe VDOT has underestimated the risk of a spill adversely affecting our community water supply. While the experts can argue about the risk calculation, it is clear to our Authority that the proposed U.S. Route 29 bypass WILL increase the risk to our water supply. We do not take much comfort in VDOT's assertion that a 500-foot buffer provides adequate protection to our water supply. (7)

(8) Rivanna believes that VDOT must formally commit to providing the highest possible level of protection of our water supply. The draft statement is silent on this critical point. We find it unacceptable to read on page 4-17 that VDOT plans to use herbicides and plant growth regulators in the watershed since they are "more cost-effective than mowing and other more labor-intensive practices."

(9) Further, Rivanna believes VDOT needs to eliminate, or at least minimize, all chemical introduction into our water supply. In our view, VDOT has invoked the flawed principle that "the solution to pollution is dilution" in an attempt to argue away potential contamination, along with potential cumulative chemical impact, persistence and the untreatability of certain potential contaminants.

(10) We believe VDOT must make a clear commitment to use the Best Available Technology to reduce the risk of spills and to ensure the best possible spill control and runoff control technologies. We note that VDOT has identified a series of sophisticated mitigation measures (page 4-45) but we request that VDOT make a firm financial commitment to fund them for this project.

(11) Rivanna is also very concerned that VDOT expects the Authority and local governments to shoulder the primary responsibilities for spill planning, monitoring systems, spill clean-up, emergency operations of the water supply, and restoration of the watershed and reservoir. The Rivanna Water & Sewer Authority does not believe its customers should have to shoulder the significant on-going costs of protecting and rehabilitating the water supply. We look to VDOT to guarantee funding for these essential activities.

(12) We also ask VDOT to provide the Authority with upfront funding for the new manpower, transportation related dredging, physical improvements and perpetual maintenance that will be required. We also request that VDOT provide funding to the Authority to hire an independent environmental auditor, reporting to the Authority, to monitor all VDOT and contractor activities.

We have enclosed with this testimony a copy of RWSA's previous statement and a copy of the Black & Veatch study which we request be added to the hearing record.

Thank you.

RIVANNA WATER & SEWER AUTHORITY
SUPPLEMENTAL COMMENTS ON THE
DRAFT SUPPLEMENTAL ENIRONMENTAL IMPACT
STATEMENT
U. S. ROUTE 29 BYPASS

March 29, 2002

SUPPLEMENTAL RWSA COMMENTS

Background:

The Rivanna Water & Sewer Authority (RWSA) presented a statement at the March 14, 2002 public hearing on the draft Supplemental Environmental Impact Statement (draft SEIS) for the proposed Route 29 bypass. The RWSA statement reiterated our Board of Directors formal position that "given that other alternatives exist, the bypass should be located outside the public water supply area."

The RWSA believes that best available water supply protections must be incorporated into any proposed activity near our critically important water supply reservoir. Further, RWSA believes that only VDOT's best possible efforts to minimize risks and chemical introduction to our water supply will be satisfactory.

The RWSA hearing statement identified several concerns about potential impacts upon our community water supply based on the draft SEIS including:

- Failure to fund "Best Available Technology" to prevent spills or use advanced technology to abate spills and routine road-related runoff releases.
- Reliance on the flawed principle that the "solution to pollution is dilution" to minimize potential problems in our drinking water reservoir.
- Planned use of herbicides and plant growth inhibitors in the water supply watershed to save maintenance costs.

The RWSA is hereby submitting supplemental comments on the potential water supply aspects of the proposed Route 29 bypass as outlined in the draft SEIS:

1. RWSA believes VDOT must agree to fund the construction of a new emergency drinking water intake upstream of the area potentially impacted by the proposed bypass. This was a key component of RWSA's comments in 2000 and we request that VDOT reverse its decision not to fund this necessary safeguard.

(13) 2. We request that VDOT update the risk analysis included in the draft SEIS to include updated traffic flow data.

3. We request that VDOT also update the risk analysis to include RWSA's planned four foot increase in reservoir height and that VDOT assure the Authority that the construction of the bypass will not preclude, or adversely affect, RWSA's ability to further increase the South Fork Rivanna Reservoir (SFRR) height by four additional feet at some time in the longer range future, if deemed necessary.

(14) 4. We request that VDOT supplement its analysis to look at RWSA's ability to supply water during severe droughts if the SFRR were adversely affected by a spill.

(15) 5. We request that VDOT address in detail a plan on how our area (and who will pay) will provide needed drinking water if our main water supply reservoir is knocked out of service for longer than three days.

(16) 6. We strongly urge VDOT to minimize planned deicing chemical use in our drinking reservoir watershed. We are troubled in that VDOT itself recognizes that this will have a negative impact on water supply (page 5-6). Over the past few years, we have witnessed chloride levels rising in our reservoir and runoff from the bypass will only exacerbate this problem. RWSA notes that VDOT recognizes on page 3-18 that a conventional water treatment facility, like that operated by RWSA, has "no capability to remove road salts."

(17) 7. RWSA believes that VDOT must take financial responsibility to remove any increased sedimentation to the SFRR which occurs due to construction of the bypass. The projected 10-month reduction in the useful life of the SFRR, due to the proposed bypass, is significant especially given RWSA's plan for regular maintenance dredging. The cost of dredging bypass sediments should not fall upon the shoulders of RWSA and our local community.

(18) 8. RWSA would like the draft SEIS to clearly recognize that the pollution load (and spill potential) from the existing roads in the watershed are not comparable to what would be generated by the proposed bypass (page 5-8 and 3-11).

9. RWSA does not derive much comfort from VDOT's conclusion that a 500-foot "buffer" is satisfactory, particularly at the critical point where the proposed bypass will tower over the SFRR. We believe VDOT needs to take into account that this "buffer" will also be reduced by RWSA's plan to raise the SFRR height and the possibility that an eight foot increase in SFRR height is a longer range option.

(19) 10. On page 3-18, VDOT notes that powdered activated carbon may be needed to treat drinking water for synthetic organics and pesticides/herbicides from the

bypass. RWSA believes that VDOT must assume financial responsibility for any increased RWSA operating cost for this type of treatment.

20 11. RWSA requests that VDOT update Section 3.7 on "Water Supply and Future Needs" to reflect RWSA future water supply strategy, which is attached to these comments.

21 12. We request that VDOT alter its plan for anti-caking agents use and prevent the release into our drinking water reservoir of 350 parts per million of cyanide which is present as an anti-caking agent and corrosion inhibitor in the road deicing salts which VDOT plans to use on the bypass (pages 4-11).

22 13. We request that VDOT address and plan to mitigate any adverse impacts on the tributary streams (Ivy Creek and unnamed tributaries) feeding the SFRR. The cursory discussion on page 4-12 of the draft SEIS falls short in describing all the potential impacts and fails to provide assurance that applicable water quality standards, and antidegradation requirements, will be met under all conditions.

23 14. We believe the VDOT spill scenarios listed on page 4-27 are incomplete and do not accurately reflect the myriad of ways a spill could reach the SFRR and adversely affect the water supply.

24 15. RWSA believes that VDOT must keep in mind that the "1 in x" spill risk could translate into a spill in the first year, or even two spills or more during the first year.

25 16. VDOT states on page 4-35 that any spill would take two-four days to reach the RWSA water intake and that "dilution" plus natural degradation will solve all potential problems. VDOT does not provide any proof to their assertion that RWSA could close its SFRR intake and all potential problems will be gone in three days. Several of the chemicals potentially entering the SFRR from the bypass do not degrade in three days, are persistent in the environment, and may actually bioaccumulate.

26 17. RWSA believes VDOT is correct in its position that continuous water quality monitoring stations on the reservoir (and key watershed streams) would be desirable (page 4-35). Here again, RWSA asks that VDOT provide upfront funding to RWSA to implement the VDOT recommendation.

27 18. RWSA is unclear as to what VDOT specifically has in mind in identifying the need for (page 4-37) a "higher state of treatment preparedness at the water treatment plant during the construction period." RWSA believes that VDOT must commit to using the best available technology and proven erosion and sediment controls in the construction phase. We do not find it acceptable for VDOT to rely upon RWSA water treatment plant operators to make up for deficiencies in VDOT's erosion and sediment control efforts. Specifically, we

believe VDOT needs to plan a more extensive erosion and sediment control plan than the somewhat elementary plan outlined in this draft SEIS.

28 19. RWSA questions VDOT's assertion that "enabling the natural processes" in storm water ponds will materially improve runoff water quality (page 4-43). The detention time in the ponds will be simply too short during storm events to achieve anything other than rudimentary sediment removal. Further, high intensity short duration storms will quickly move through the treatment system, and no appreciable removal of dissolved contaminants will occur under any conditions.

29 20. RWSA believes VDOT is correct in saying that 100 percent of road runoff can be captured and can be routed through sediment removal. The effectiveness, and the degree of contaminant removal, is however driven by many factors. In the case of high intensity rains or snowmelts, or if events occur back to back, or if the storm event exceeds the pond design criteria, little, if any removal (other than rudimentary sedimentation) will occur and the SFRR will be negatively impacted

30 21. We note that VDOT has concluded that the "local ability to control spills other than petroleum is limited" (page 4-45). RWSA asks that VDOT therefore make a commitment to upgrading local emergency response capability to address the full range of spills which local resources will be expected to address. We see this as a critical part of VDOT's responsibility to help protect the local water supply.

31 22. The SFRR Report, referenced on page 4-67, is a draft report still under review by the RWSA Board of Directors.

FEBRUARY 25, 2002, Rev. 1

RIVANNA WATER & SEWER AUTHORITY
FUTURE WATER SUPPLY RECOMMENDATION

INTRODUCTION

We can all agree that our community must have a reliable and safe water supply. It is essential for human life and for achieving the desirable quality of life for which our community is envied.

Additionally, most would agree that a reliable water supply is essential to the economic health and prosperity of our local economy; however, we need to recognize that restricting or otherwise strategically restraining our future water supply should not be used to control local growth.

At the direction of its Board of Directors, the Rivanna Water & Sewer Authority (RWSA) has conducted a near six-year evaluation of future water supply needs and water supply alternatives. The goal of this study was to identify the actions required to ensure our community will have a reliable and safe water supply to meet all predicted needs in 2050.

During this process, many questions were answered and a few still remain for further evaluation and debate.

A great deal of credit is owed to the RWSA Board of Directors for having the foresight to authorize this study. Additionally, great credit is due to the local government leaders, citizens and community organizations that took time from their busy schedules to offer comments or otherwise participate in the evaluation of the future water supply alternatives. The input from the public, and from elected officials and others, has been extremely valuable in helping to shape the draft strategy being recommended to the Board.

A MULTI -STEP, INTEGRATED SOLUTION IS NEEDED
Including Infrastructure And Water Conservation and Watershed Management

RWSA does not believe that the best solution to our future water supply needs rests solely upon the construction of new infrastructure improvements. Instead, RWSA advocates an integrated, multi-step strategy to meet our future water supply needs. This strategy has many clear advantages. Today's reservoir shortages and drought conditions illustrate our community's vulnerability to a lengthy and severe drought. Thus, RWSA believes we need to take action now to address our immediate water supply needs by implementing several recommended water supply improvements. We simply cannot

afford to delay moving forward on certain actions. The multi-step solution advocated by RWSA, also gives the RWSA Board, local elected officials and the community, time to consider some longer term issues in which additional data, and experience, would be helpful:

- actual evolution of growth and the validity of the 2050 water demand projections (after gaining additional years of actual water supply experience),
- actual demand reduction achieved by citizens practicing better water conservation; and, the
- evolution of new technologies especially regarding the science supporting water reuse.

The RWSA recommended water supply strategy is also an integrated strategy which recognizes that management activities in the watershed, and in the distribution system, are just as important as new concrete and rebar. If one carefully examines the opportunities, they will conclude as RWSA has that watershed management must be an integral part of RWSA's future water supply strategy. Additionally, water conservation, and the continued control of distribution system losses, will play an important role in our future planning in that every gallon we can reduce is one less gallon we need to withdraw from the resource.

WATER SUPPLY NEEDS

RWSA SYSTEM DESCRIPTION

The Rivanna Water & Sewer Authority has two customers, the City of Charlottesville and the Albemarle County Service Authority. RWSA takes raw water from its supplies and delivers potable water to its two customers who are responsible for the transmission and distribution to their ultimate customers. The University of Virginia buys water from the City and operates its own distribution system.

The focus of RWSA's future water supply recommendation is the urban water service area and not the Scottsville or Crozet systems which do not share similar pressures at this time.

WATER SUPPLY PLANNING HORIZON

The RWSA recommendation addresses a fifty-year planning horizon in two discrete steps. RWSA believes that it is essential that a flexible strategy be established and fine-tuned over time, as new information becomes available; however, we do not advocate a monthly or yearly upheaval in overall strategy. The RWSA is therefore advocating a multi-step strategy with the initial planning horizon being approximately 2002 to 2029 and the final planning horizon being about 2030 to 2050.

PROJECTED WATER SUPPLY NEEDS

RWSA commissioned VHB to look at projected water supply needs in the year of 2050. VHB looked at this through four lenses including historical metered raw water as a predictor of future demand and population trends and per capita consumption as a predictor of future demand.

The VHB predictions using the various methods compare very closely to each other. The VHB projections for 2050 water demand fell between 17.75 MGD to 20.51 MGD. VHB reports that these figures allowed for current unmetered water use and the addition to the urban service area of certain identified water users currently not supplied by the urban water system.

VHB recommended that the projected 2050 water demand be established at 18 MGD to 21 MGD. VHB made no allowance in its demand projections for reduced demand due to water conservation or for a reduction in unaccounted for water.

Some members of the public have disagreed with the VHB demand analysis and called upon local elected officials to define the amount of growth that will be allowed in our community. They feel that RWSA, or its consultants, should not determine how much growth should be planned for 2050. Further, some commenters voiced concern about VHB's failure to adjust the expected demand by the positive aspects of water conservation. One commenter cautioned "build it and they shall come."

RWSA RECOMMENDATION ON WATER SUPPLY DEMAND

The RWSA believes that VHB has done a credible job of projecting the future water needs in 2050. The various methodologies they employed confirmed that the expected water demand in 2050 is expected to be 18 MGD to 21 MGD.

The RWSA has recently projected the future water demand using a more current data set than was available to the contractor when they performed their study. The recent projection, using actual water supply data through 2001, showed a projected water demand of approximately 19.4 MGD in 2050. For the purposes of this report, RWSA has selected 20 MGD as the projected water demand in 2050.

For the year 2030, based on the projections of VHB, the water demand would be about 16.5 MGD. The recently completed RWSA analysis, using a more complete data set, confirms this projection and predicts a 2030 water demand of about 16.3 MGD.

For the purposes of this analysis, RWSA believes that a reasonable demand reduction can be achieved through water conservation. Different than VHB, RWSA believes the benefits of water conservation are better illustrated as a demand reduction than a water supply alternative. While we can hope for outstanding water conservation results, we cannot afford to be overly optimistic until we see a demonstrated water demand reduction

by City and ACSA customers. One could debate it, or research it to death, but RWSA has elected to assume that our community will embrace water conservation and thereby reduce demand by 3 percent. Frankly, RWSA hopes that our community does much better and can sustain a water demand reduction of 10 percent or more. But it would be imprudent to assume we can achieve such a success, and we will have time to actually determine, with real data, how well water conservation is implemented.

A 3 percent demand reduction through water conservation would represent well over 500,000 gallons of water a day in 2050, and over 50 years, would represent a reduction in our water taking of over 25,000,000 gallons of water ... a tremendous sum.

VHB estimates the current "Unaccounted For Water Loss" to be 13 percent. Both the City and ACSA have, and are, working diligently to reduce these losses. While some further reductions may occur, RWSA believes we cannot count on a significant reduction in this area of loss since the current loss fits within the values for well maintained systems. Continued diligence and investment will, of course, be required to prevent this loss from increasing as the distribution system continues to age and deteriorate.

The projected water demands, in 2030 and in 2050, have been adjusted below to account for a three (3) percent reduction due to water conservation:

2030	16 MGD
2050	19.5 MGD

WATER SUPPLY AVAILABIILTY

CURRENT SAFE YIELD

The RWSA obtains raw water from the South Fork Rivanna Reservoir (SFRR), the Sugar Hollow Reservoir (SH), the Ragged Mountain Reservoirs (RM) and the North Fork Rivanna River.

The SFRR is progressively filling due to high sediment load from the watershed. The Sugar Hollow reservoir lost 17 percent of its capacity in the terrible storm of June 1995.

The current safe yield of RWSA reservoirs will fall each year unless action is taken to reduce sediment load to the reservoirs. VHB predicts that the reservoirs' safe yield, which was nearly 16 MGD in 1973, will fall to about 5 MGD in 2050. VHB further predicts that water demand currently exceeds safe yield which is a major short-term system reliability issue. Further, they predict that the water supply deficit will be roughly 7 MGD by 2050 just due to sedimentation in our reservoirs.

The short-term deficit is particularly troublesome given that we are in the throes of a major drought and have been so for several years. RWSA believes it is critical that we take action now to address our immediate water supply needs.

FUTURE WATER SUPPLY ALTERNATIVES

EVALUATION OF ALTERNATIVES

As a part of the multi-year study process, a myriad of water supply alternatives, many of which were suggested by the public, have been evaluated. A significant amount of funds were spent to ensure that these alternatives were given fair consideration.

RWSA PRINCIPLES UNDERPINNING OUR STRATEGY

First, some RWSA principles which underpin our recommended strategy.

- It is clear that RWSA reservoirs, particurly the South Fork Rivanna Reservoir, will fill unless the RWSA proactively takes preventive or corrective action. The reservoirs represent a significant investment by our community and like any asset they need to be "maintained." RWSA believes we cannot allow the reservoirs to fill with sediment and then, under pressure, launch an expensive, and perhaps uncertain effort to permit a new reservoir. RWSA does not believe that our local elected officials, or the community, would be pleased to see the SFRR become clogged with sediment and possibly cause a downstream sediment impairment on the river.

- RWSA believes that a great deal of opportunity exists if we take a watershed approach as part of our future water supply strategy. We recognize that the sediment causing much of our reservoir problems is generated in the watershed. RWSA believes that is more effective and less costly if we can reduce sediment at the source rather than dredge it from the reservoir at a later date.

- RWSA believes that protection of our long-term water supply interests requires us to become more active watershed stewards. A good case can be made that no other organization shares the RWSA interest in protecting this watershed. The future of our water supply is inextricably tied to the job RWSA, and others do, protecting our watershed. RWSA is therefore recommending that we actively assume a watershed stewardship role and incorporate modern watershed thinking into our overall strategy and daily activities.

- As previously stated, water conservation must continue to be advocated and promoted. The RWSA believes that the City and ACSA are well focused and

active in seeking new ways to reduce future demand through water conservation. It is recognized that it is not a short journey, however, since the challenge before the City and ACSA is to modify human behavior. But like recycling, our community has proven that they will embrace environmental needs particularly when the benefits are made clear.

- RWSA believes the Board must keep the Buck Mountain property as a potential future water supply alternative.

- RWSA believes that protecting the environment is an integral part of our business mission. In a crisis, the supply of drinking water must ultimately take precedence over all other uses; however, we believe that there is room to incorporate the environment into our daily water supply activities.

IMMEDIATE WATER SUPPLY STRATEGY

The RWSA recommends that we immediately proceed with the engineering, permitting and construction/implementation of the following actions to ensure an adequate and safe water supply for our customers until approximately 2030.

1. TAKE A WATERSHED APPROACH

Become More Active Watershed Stewards

RWSA needs to increase its role in the active stewardship of the watersheds serving our system. We need to recognize that we have the most to gain through active stewardship and protection of our basic source of water. We need to work as partners with responsible individuals and organizations to protect and preserve our water supplies. We should have no higher priority than the protection of our watersheds.

Address Sediment Load From The SFRR Watershed

RWSA, working with others, needs to identify the significant sources of sediment currently entering the SFRR reservoir. It is thought to be mainly sourced from bank and stream erosion during high flows but we need to understand our watershed better and investigate to identify the actual sources of sediment entering the SFRR. RWSA needs to look at investments in watershed improvements and studies as an integral part of our mission to provide a reliable and safe water supply. We need to actively offer funding support where we identify watershed problems which are adversely affecting our reservoirs. We need to seek other partners and possible grant funds and become visible watershed leaders.

Investments in source control of the sediment will be wise in that it will maintain or extend reservoir life and minimize the amount of sediment that must be removed through more expensive dredging.

2. GENERATE BETTER DATA FOR DECISIONS

Good decisions require good data. Good data on stream flows and water quality is lacking and we must address this fault.

At one time, there were four stream gauging station on the SFRR watershed. Sadly, they were all discontinued due to federal/state funding or manpower shortages and, in some cases, a fifty-year plus continuous stream record was lost. Through the joint efforts of DEQ, and the RWSA, a station was recently restored on the Mechums River. It is a start.

The construction of a flow balance for the SFRR, and RWSA system, is frustrated by the lack of stream gauging stations. It is in RWSA's best interest to invest in re-establishing stream gauging stations for the SFRR watershed. Our first priority should be to re-establish the stream gauging station below the SFRR. RWSA believes that as we move into the future we will need a complete system of stream gauging stations to ensure scientifically based decisions.

We also need to resume reservoir sampling and characterization which was discontinued several years ago.

3. WATER CONSERVATION BY ACSA AND THE CITY

RWSA will continue to support the City of Charlottesville and the ACSA in their efforts to institutionalize water conservation. We believe in our citizens and believe that they will embrace water conservation with the same enthusiasm they have recycling. Specific details on future water conservation actions fall within the purview of the ACSA and the City.

4. ADD FOUR FOOT CREST CONTROLS ON THE SFRR

RWSA believes we should immediately proceed with the engineering, and construction, of four-foot crest controls on the SFRR. This would increase useable system storage by 600 million gallons and provide an increase in safe yield of 6 MGD in 2050. VHB estimates the cost of this improvement to be $5 to 7 million. RWSA believes this is an important part of our immediate water supply strategy.

5. MATCH DOWNSTREAM SFRR STREAMFLOW RELEASE TO RESERVOIR INPUT

As part of its immediate strategy, RWSA recommends that we match SFRR releases to the actual input received by the reservoir during critical drought events. As such, only

during severe, extended droughts would RWSA constrain the release of 8 MGD or more from the SFRR.

RWSA understands that it would be highly desirable to maintain a minimum release of 8 MGD at all times; however, under serious drought conditions we must protect the local water supply as our first priority. VHB had estimated that the downstream release would be unaffected approximately 99 percent of the time. VHB estimates that this action will increase the safe yield by 1.6 MGD in 2050.

6. SEEK IMPROVEMENTS IN DROUGHT PREDICTION AND RESERVOIR MANAGEMENT

RWSA will work constructively with the City and the ACSA to identify and implement improvements in drought prediction. Additionally, RWSA will strive to incorporate further improvements in reservoir management into its daily operating procedures.

7. PERFORM MAINTENANCE DREDGING ON THE SFRR

A great deal of the public comment and debate which occurred concerned dredging the SFRR. Some of the costs advanced by RWSA contractors were extremely large and RWSA experts also identified a myriad of significant logistical challenges.

While there are clearly issues and unknowns about dredging, RWSA looks at the SFRR as an asset for which we have a responsibility to our customers and community.

RWSA believes that yearly maintenance dredging of the SFRR should be part of our future water supply strategy. Having said that, we must recognize that many questions about dredging and its costs must be further researched.

As part of its watershed approach, the RWSA believes that source control in the watershed will be the most cost effective method of maintaining storage capacity. This will minimize the amount of material needed to be dredged from the SFRR each year.

We believe that a yearly maintenance-dredging program is needed to maintain (or re-gain) reservoir capacity. Questions about methods, costs and logistics need to be answered through a study that RWSA will commission as part of its recommended strategy.

8. EXPAND WATER SOURCES TO INCLUDE THE MECHUMS RIVER

A pump station formerly existed on the Mechums River. The pump station formerly captured Mechums River water and pumped it to the RM reservoir or the Observatory water treatment plant. This alternative was considered to some degree during the evaluation of alternatives but questions still exist concerning its viability, costs, benefits and environmental impact.

RWSA recently offered to participate in a study to better define the costs and true benefits of reestablishing the Mechums River pump station. RWSA had identified several environmental questions which must be addressed as part of this analysis.

The restoration of flow in the Moormans River was a major component of public comments. Many expressed the view that a Moormans River solution should be included as a part of the future water supply strategy and they pointed to the environmental value and beauty of the Moormans River.

RWSA does not currently possess the technical information to determine the water supply benefits provided by sourcing water from the Mechums River. The RWSA has offered to assist in pulling together a complete technical evaluation of the water supply benefits, the costs and environmental impact of this proposal and then make a formal recommendation to the Board on how this should be addressed in our future water supply strategy.

LONGER TERM WATER SUPPLY ALTERNATIVES TO MEET PROJECTED 2050 WATER DEMAND

As part of its two-step strategy, the RWSA believes that the following strategies constitute viable 2050 water supply options which we should consider more fully after we have gained additional experience and additional water demand data. We believe that by fully implementing our immediate strategy we will earn additional time to further evaluate several of the water supply alternatives to meet 2050 needs. RWSA is not recommending that immediate action be undertaken to implement these alternatives but we regard them as part of the likely strategy to meet 2050 needs.

1. CONSTRUCT DAM AND RESERVOIR ON BUCK MOUNTAIN CREEK

The RWSA believes that the Buck Mountain Creek Reservoir must be retained as a potential 2050 water supply alternative for our community. The RWSA recommends that the Authority retain the land since this reservoir might be needed to meet local water supply needs.

2. OBTAIN RAW WATER FROM THE JAMES RIVER

The RWSA has the option to take water from the James River to supply our area needs.

3. OBTAIN RAW WATER FROM CHRIS GREENE LAKE

The RWSA may consider the option of taking raw water from Chris Greene Lake to supply our area needs.

4. UPSTREAM BASE FLOW AUGMENTATION WITH HIGHLY TREATED WASTEWATER

The RWSA believes that a potential water supply option is using highly treated wastewater to supplement upstream flow and eventually serve as a raw water source. We believe that the views of state health officials and public acceptance will need to evolve before this could be considered to be a viable alternative.

RECOMMENDATION TO THE RWSA BOARD OF DIRECTORS

RWSA recommends that the Board of Directors authorize a public hearing to solicit further public input on the RWSA recommendations for our future water supply.

RWSA offers to meet with local elected officials and civic organizations to answer questions and receive input.

RWSA plans to re-schedule this item for a later Board meeting for a final decision.

DRAFT
SUMMARY OF RWSA RECOMMENDED STRATEGY

February 25, 2002

IMMEDIATE WATER SUPPLY STRATEGY (meet needs through 2030)

- Take A Watershed Approach.
- Generate Better Data For Decisions.
- Water Conservation By City and ACSA customers.
- Add Four-Foot Crest Controls On The SFRR.
- Match Downstream SFRR Release To Reservoir Input.
- Make Improvements In Drought Prediction And Reservoir Management.
- Perform Maintenance Dredging On The SFRR (Conduct Feasibility & Cost Study First).
- Study Expansion of Water Sources To Include The Mechums River.

LONGER TERM WATER SUPPLY STRATEGY(meet needs through 2050)

- Reexamine Projected 2050 Water Demand Based On Additional Data Base And New Information.
- Obtain Additional Safe Yield As Needed From The Following Options:
  - Construct Dam And Reservoir On Buck Mountain Creek.
  - Obtain Raw Water From The James River.
  - Obtain Raw Water From Chris Greene Lake
  - Augment Upstream Baseflow With Highly Treated Wastewater

ii

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April 15, 2002

Ms. Patsy Napier
Special Studies Section, Room 713
Virginia Department of Transportation
1401 East Broad Street
Richmond, VA 23219

Dear Ms. Napier:

Attached please find copies of our complete statements in response to the Virginia Department of Transportation's Draft SEIS on the U. S. 29 Western Bypass, specifically addressing the issues of archaeological resources and reservoir impacts. While these documents outline in detail our reaction to these two critical elements of the SEIS, I will summarize our response in a very general way.

First I would like to comment on the report entitled *Archaeological Identification Survey, Route 29 Bypass, Albemarle County, Virginia* (December 2001) and the accompanying VDOT and DHR documentation. The County's Subcommittee on Archaeological Resources agrees with the consultant's assessment that site 44AB428 (located within the proposed construction limits) and site 44AB430 (located outside the proposed construction limits but within the proposed right of way) are potentially eligible for inclusion in the National Register of Historic Places. We strongly urge further archaeological study of these two sites for possible inclusion in the National Register and to gain additional knowledge about the Archaic period in Albemarle County and the larger Piedmont area of Virginia.

We feel that Phase 3 should go forward and that any decisions as to the significance and appropriate disposition of the sites should not be made until Phase 3 is completed and the data is analyzed. We request that we receive the results of Phase 3 and we would like to reserve the right to comment further upon receipt of those results. Please find the details of our response to these issues in Attachments #1 and #2.

Second, I would like to summarize our comments regarding possible impacts to the reservoir. We feel that the draft SEIS demonstrates a lack of adherence to standard problem analysis approaches used in the engineering and environmental science fields that results in an incomplete

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Ms. Patsy Napier
April 15, 2002
Page 2 of 2

analysis of potential water quality impacts. We believe, for example, that VDOT carried out an incomplete and potentially misleading risk probability assessment for the catastrophic spill scenario. The draft SEIS provides no discussion of *alternatives beyond option 10* versus *no option 10* in the water quality sections of the report, which does not allow for a true comparison with alternatives proposed in the Environmental Impact Statement. VDOT also suggests a series of proposals for limiting the potential risks but does not assume responsibility for these proposals.

The SEIS does appear to commit VDOT to stormwater treatment strategies that would help to reduce the threat to drinking water and discusses some interesting new proposals for catastrophic spill containment, but we do not feel that the document represents a firm commitment to these measures. Please find the details of our response to water quality issues in Attachment #3.

I appreciate the opportunity to summarize for you the highlights of our response to the draft SEIS and appreciate your careful and thoughtful review of the attached documents.

Sincerely,

Sally H. Thomas

Sally H. Thomas, Chairman
Albemarle County Board of Supervisors

SHT/
02.004

Attachments

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Albemarle County Historic Preservation Committee
Subcommittee on Archaeological Resources

February 11, 2002

County of Albemarle
Department of Planning and
Community Development
401 McIntire Road, Room 218
Charlottesville, Virginia 22902

Attn: Margaret Maliszewski
Design Planner

Margaret:

1 The subcommittee on archaeological resources has thoroughly read Berger's Technical Proposal for Data Recovery and DHR's subsequent response. Given Berger's summary of the Phase I Identification and Phase II Evaluation findings, we believe that 44AB428 and 44AB430 are significant sites and clearly have the potential to be able to contribute to our knowledge of the Archaic Piedmont of Virginia, and in particular the prehistory of Albemarle. We agree with Berger's assessment and DHR's concurrence that both sites may potentially be eligible for inclusion on the National Register under Criterion D. We strongly recommend that Albemarle County agree with the consultant Louis Berger and DHR's recommendations to undertake Phase III (Data Recovery) investigations at these sites.

The subcommittee on archaeological resources bases its recommendations on the following criteria:

1) Few upland Archaic sites in Albemarle County and the Piedmont in general have been thoroughly excavated or studied. This fact has been verified by other regional professional archaeologists.

2) The locations of 44AB428 and 44AB430 overlooking a major cultural resource such as the Rivanna River, the relatively undisturbed context, the strong distribution of artifacts, and the potential for these sites to be lost due to construction of the Rte. 29 bypass also strongly argue for Phase III (Data Recovery) investigations.

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Berger's proposed methodology for Phase III investigations is an appropriately conservative approach. They propose to conduct additional soil analysis and use sophisticated artifact dating techniques. Their unit sampling proposal also appears to be sufficient to be able to determine whether there are in fact 'activity areas,' significant features if they can be defined. DHR has already approved the proposed methodology and we concur with their approval.

In terms of expectations, it is important to note that the proposed Phase III investigations will not fully excavate the sites but only sample additional portions of the project areas. This should be sufficient to answer the research questions that the consultant has posed. At this point, 44AB428 and 44AB430 are essentially important prehistoric 'lithic scatters' whose future research potential may be diminished once they have been mitigated by Phase III investigations. If however something particularly significant such as a burial or domestic complex is turned up during Phase III investigations, then the County could reasonably argue for full excavation of the sites.

Clearly we believe that 44AB428 and 44AB430 have the potential to contribute to our knowledge of prehistoric Piedmont Virginia. For this reason we recommend that VDOT allow the consultant Louis Berger to proceed with Phase III investigations. We also (2) believe that further data recovery is necessary before any consideration should be given to the sites' National Register nomination or special status designation, including site preservation.

Please let us know if you have any questions regarding the Technical Proposal or our comments.

Respectfully

Jane R. Berkely
Christine S. Devine
Benjamin P. Ford
Jillian E. Galle
Robert Vernon

Albemarle County Historic Preservation Committee
Subcommittee on Archaeological Resources

Albemarle County Historic Preservation Committee
Subcommittee on Archaeological Resources

April 9, 2002

County of Albemarle
Department of Planning and
Community Development
401 McIntire Rd., Room 218
Charlottesville, Virginia 22902

Attn: Margaret Maliszewski
Design Planner

Margaret:

The subcommittee on archaeological resources has thoroughly read the Louis Berger Group's Phase I report entitled *Archaeological Identification Survey, Route 29 Bypass, Albemarle County, Virginia* (December 2001) and the attached VDOT and DHR concurrence. Our understanding is that this research was carried out due to a revised VDOT right-of-way definition that was to include the proposed northbound and southbound Route 29 Bypass lanes, and the land between them. Based on the report's findings, we agree with Louis Berger Group's assessment and VDOT and DHR's concurrence that site 44AB428 may potentially be eligible for inclusion on the National Register under Criterion D, and that sites 44AB481, 44AB482, and 44AB483 are not likely eligible for inclusion in the National Register. We strongly recommend that Albemarle County agree with the consultant's findings and VDOT and DHR's concurrence.

The subcommittee on archaeological resources bases its recommendations on the following criteria:

<u>44AB428</u> The site has the potential to provide important information on the Archaic Piedmont in Virginia and the prehistory of Albemarle County. Few sites from this period have been thoroughly excavated or studied. The site's importance is enhanced by its proximity to a major cultural resource such as the Rivanna River, its generally undisturbed context, the presence of an intact site-wide sheet deposit of lithic material culture, and the possibility of an intact cultural feature (stone hearth).

<u>44AB481 and 44AB482</u> These two prehistoric sites contained small numbers of non-diagnostic artifacts. Based on the low density of material culture, the lack of intact cultural features, and the highly disturbed nature of the entire ridgetop, it is not likely that these sites will yield information important to the prehistory of Albemarle County and Piedmont, Virginia.

Albemarle County Historic Preservation Committee
Subcommittee on Archaeological Resources

44AB483 This historic site contains domestic trash, possibly a dump site, dating to the late twentieth century. While 44AB483 is clearly associated with nearby domestic structures, the lack of intact cultural features and the fact that it is not known to be associated with any significant historical context strongly argues that this site is not likely eligible for inclusion in the National Register.

Isolated Finds IA-1, IA-2 and IA-3 The three isolated artifact locations contained non-diagnostic artifacts. Shovel testing in radial transects surrounding the finds failed to recover any additional material culture. As such, the isolated artifact locations do not meet the minimal definition of an archaeological site and are therefore not considered for National Register eligibility.

We concur with Louis Berger's findings that 44AB428 (located within the proposed construction limits) and 44AB430 (located outside of the proposed construction limits but within the proposed right of way) are potentially eligible for inclusion on the National Register of Historic Places and have the ability to further our knowledge of the Archaic period in Albemarle County and larger Piedmont, Virginia. It is important to note that 44AB428 was a previously identified site that was relocated during the current Phase I identification survey. Previous reports had already recommended that 44AB428 (located within the proposed construction limits) and 44AB430 (located outside of the proposed construction limits but within the proposed right of way) might potentially be eligible for inclusion on the National Register. Essentially the findings of this report reinforce what was already recommended on previous Phase I (Identification) and Phase II (Evaluation) reports.

As we have previously recommended, our committee on archaeological resources strongly urges further archaeological study of 44AB428 and 44AB430. Please let us know if you have any questions regarding the above-mentioned report or our comments.

Respectfully,

Jane R. Berkely
Christine S. Devine
Benjamin P. Ford
Jillian E. Galle
Robert Vernon

Albemarle County Historic Preservation Committee
Subcommittee on Archaeological Resources

COMMENTS ON RESERVOIR IMPACT ELEMENTS OF VDOT'S DRAFT SEIS ON U.S. 29 WESTERN BYPASS

General Comment I

3 **In the draft SEIS VDOT and its consultants show a surprising lack of adherence to standard problem analysis approaches used in the engineering and environmental science fields. Applying standard professional procedures may or may not lead to dramatic changes in the findings, but until VDOT brings its analysis up to the standards of professional norms, the water quality impacts of the bypass will not have been properly considered.**

Example One

4 *VDOT carries out only an incomplete and potentially misleading risk probability assessment for the catastrophic spill scenario.* Essentially, the VDOT approach is like studying the chances of someone stealing money from your house by only studying one of several avenues a thief could take. To carry out the analogy, they have estimated chance the thief could get in through the solid front door with a dead-bolt lock without considering other obvious things like unlocked windows or the back door. Based on the low probability of a haz/mat spill in a very small stretch of roadway (equivalent to a front door break-in), VDOT concludes that no further analysis is necessary. By limiting the scope of the probability analysis, VDOT comes up with the lower probability of haz/mat spill on the proposed bypass than on the existing roads. However, the key question isn't the probability of a haz/mat spill but rather the probability of a water treatment plant shutdown resulting from a haz/mat spill. To look at this question one needs to recognize that there are windows and back doors to be considered when studying the bypass that don't exist for the other roads. These unique bypass characteristics include the facts that the bypass would be much closer to the raw water intake than the other roads and would be on steeper slopes than many roads near the reservoir. When the unique characteristics of the bypass (the windows and back door as well as the front door) are accounted for, the reservoir risk analysis should be quite different from VDOT's isolated haz/mat spill analysis as Black & Veatch found it to be. In fact, the Black & Veatch analysis stands as the only useful risk analysis that has been carried out. (In related example, VDOT bases its estimate of the time it would take for a pollutant plume to pass the water intake as 2-4 days, but this assumes normal flow conditions- the front door scenario. If the reservoir is low, particularly below the top of the dam as it has been in two of the last three summers, that time could become weeks or months- the window/back door scenario. While containment devices are more likely to work in dry weather, VDOT points out that most accidents also occur in dry weather.)

Example 2

5 *VDOT does not think through the implications (or hazard) associated with the worst case scenario.* While pointing out that under normal conditions it would take the plume 2-4 days to pass the intake, VDOT reports that RWSA estimates three days of reliable water supply in the Urban Service Area after a South Fork Rivanna Plant shutdown (under certain conditions and assuming emergency conservation measures). There is no discussion of what would happen on the fourth day. The spill/emergency response

discussion provides some detail on how this process works, but the fact that the nearest responders to the most serious spills (after local officials reach the conclusion that state resources are needed) would have to come from Harrisonburg, Richmond, or Fredericksburg is not reassuring. Also, laboratory testing time to be sure that the plume has pass the water intake is not considered. One doesn't come away from this report understanding the impacts of a spill as one might if a few worst case scenarios were included and analyzed.

Example 3

6 *VDOT studies phosphorus impacts by looking at concentrations rather than loads (the professional standard for such analyses).* VDOT compares the phosphorus concentration (mass per water volume) coming off the bypass to the existing concentration in the Ivy Creek Watershed instead of estimating the actual amount of phosphorus (total mass) that the bypass would add. It is a basic understanding in water quality research that the impact on receiving waters is best viewed first through the change in the load (total mass) delivered to the receiving waters. By using the only selected concentrations, VDOT avoids the issue of what will change between the pre and post condition. Note that while VDOT identifies the concentration coming from the pre-bypass Ivy Creek Watershed and the post-bypass new road area, the department avoids looking at the pre-bypass road area. It is the difference between the pre-bypass road area phosphorus load and the post-bypass road area phosphorus load that defines the potential impact on phosphorus delivery to the reservoir. Once VDOT properly reanalyzes the phosphorus load issue it can then move on to an analysis of whether the increase in phosphorus will have an impact on water quality. Blurring the issue with a discussion of selected concentrations is not a standard professional analysis.

General Comment II

7 **There is no discussion of alternatives beyond option 10 versus no option 10 in the water quality sections of the report. Tables and discussions should include the reservoir impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) and Alternatives 9-12 that provides a true comparison with alternatives proposed in the Environmental Impact Statement.**

General Comment III

8 **VDOT suggests a series of proposals for limiting the risk but does not take responsibility for these proposals. VDOT suggests that the Emergency Operations Plan be updated to address this catastrophic spill scenario and that RWSA install monitoring equipment between the new Bypass and the water intake without any commitment from VDOT to take responsibility for these needs. VDOT seems to endorse the idea of a boom to keep floating contamination away from the intake, but also supports the idea that local sources pay for such a boom.**

General Comment IV

9 **The substance of the SEIS is a small portion of the body of text. The extraneous information in the report should be moved the appendices. Then the appendices should be printed in a separate volume. Such adjustments would allow readers to see and feel that the actual analysis described is minimal.**

General Comment V

10 **On a positive note, the SEIS does appear to commit VDOT to stormwater treatment strategies that would help to reduce the threat to drinking water. Also, the SEIS does discuss some interesting new proposals for catastrophic spill containment including pre-treatment vaults or separators above ponds, sorbent materials, adjustable gates on the ponds, pond linings, and enhanced road design. However, at this point, these new proposals have the tone of musings rather than commitments.**

Point-by-Point Comments

11 a) 3- Most of chapter three is only vaguely relevant to the problems being studied and could be referenced or moved to the appendix.

12 b) 3.4.1, p. 3-11, par. 1- Why was the SEIS released before Dr. Yu's water quality analysis was complete? It seems like a critical study component that VDOT initiated exactly to get at questions like the SEIS is meant to address.

13 c) 3.4.3, p. 3-14, par. 1- Recent total P concentrations are more like 0.027 ppm than 0.04 ppm.

d) 4.3.1, p. 4-8, Table 4-4- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

e) 4.3.3, p 4-9, Table 4-5- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

f) 4.3.3, p. 4-10, Table 4-7- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

g) 4.3.4, p. 4-12, Table 4-8- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

h) 4.3.6, p. 4-13. Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in discussion.

i) 4.3.7, p. 4-13. Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in discussion.

j) 4.3.8, p. 4-13. Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in discussion.

14 k) 4.3.3, p. 4-11, par. 1- MTBE does reach this area even though it is not a non-attainment area under the Clean Air Act. Fuel transporters sometimes find it inconvenient to separate the fuel going to different parts of the state and put MTBE full on trucks going to both non-attainment and other zones.

15 l) 4.3.6, p. 4-13, Par. 2- I'd be interested to know what "groundwater maps" VDOT is referring to. I did not know these were available.

16 m) 4.3.7, p. 4-15, item 3- Is VDOT saying that existing impact to the endangered mussels is justification for further impacts?

17 n) 4.3.9, p. 4-17, par. 1- The herbicide discussion is not very thorough. What does this mean to likely herbicide concentrations in drinking water? Make a rough estimate rather than just waiving it away.

18 o) 4.3.9, p. 4-17, par. 1- It is shocking that VDOT wouldn't analyze the possibility of alternative vegetation control in a water supply watershed (as well as deicing). This could be a low cost way to reduce the impacts and must be studied.

19 p) 4.3.10, p. 4-20, Table 4-10. Fuel oil estimate seems low. The City has natural gas, but oil is common in the County.

q) 4.3.10, p. 4-26,27, Tables 4-13, 14, 4.3.7, p. 4-13. Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

20 r) 4.3.10, p. 4-27, par. 2- Estimate the chances of a plant shutdown, not just a truck crash. Such an analysis should combine the risks from different stretches of road that have different crash probabilities as well as different reservoir contamination and flushing probabilities. Splitting the probabilities this way seems deceptive. A full risk analysis, similar to B&V's is necessary. Partial probabilities (such as crash analysis without plant impact analysis) are meaningless.

21 s) 4.3.10, p. 4-30, par. 4- Provide examples of typical response times when the services of a "State On-Scene Coordinator" is required.

t) 4.4.1, p. 4-32, Table 4.15- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

u) 4.4.3, p.4-32- The issue isn't the export concentration from the watershed, it is the overall load to the reservoir. The bypass adds phosphorus load to areas that may currently have small loads (keeping the preexisting rate from being worse). Thus the bypass may increase the phosphorus load to the reservoir. The real question is unanswered while an extraneous question has been answered thus confusing the issue.

v) 4.4.3, p. 4-33, Table 4-16- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

w) 4.5.3, p. 4-35, par.1- What happens on the 4th day when the Urban System is past its 3-day emergency capability (described in the previous paragraph)?

22 x) 4.5.3, p. 4-35, par.1- How would the hydraulic residence time be affected by the likely addition of four feet to the reservoir pool? What other effects would this change have on VDOT's analysis? How about eight feet.

23 y) 4.5.3, p. 4-35, par.1- What would happen if the reservoir contamination occurred during a dry period, particularly when the reservoir pool was below the top of the dam (as has occurred in 2 of the last 3 years)? While a contaminant reaching the reservoir is less likely under these conditions would be less likely, dilution would be less and residence time could be weeks or months rather than 2-4 days. This is the kind of thing that could be analyzed in a complete risk assessment rather than the partial (incomplete) probability method chosen by VDOT.

24 z) 4.7.1, p. 4-37- Describe the AnAGNPS model. What explains the difference between the B&V finding and the Dr. Yu finding? Does VDOT view the findings as having the same meaning, or has VDOT chosen Dr. Yu's finding over B&V in making its conclusions. Without describing the analytical methods, how is the SEIS to be reviewed?

aa) 4.7.1, p. 4-37, Table 4-17- Include impacts of the base case with grade separated interchanges (at Rio, Greenbrier, and Hydraulic Roads) in table and associated discussion.

25 bb) 4.8.1, p. 4-43- Has mosquito control (in light of West Nile Virus) been taken into account in design of these wet ponds? Will they evolve into ecosystems that sustain mosquito predator populations or will VDOT need to use insecticides (in the reservoir watershed) for mosquito control?

26 cc) 4.8.2, p. 4-46, par. 3- Could the proposed gate systems include a bypass system to help with wet weather contaminant trapping? In dry weather the downstream gate would be closed to trap as much contaminant as possible. In wet weather the same downstream gate would be closed as the material approached the pond. Once as much of the material as possible was trapped in the pond, the pond could be bypassed using an upstream gate and an emergency channel to prevent flushing the contaminant out of the pond.

27 dd) D-20, par. 1- RWSA and VHB have determined that the 8mgd flowby is not currently a legal requirement. This entire discussion needs to be developed more fully. Start by discussing basic things like the intake elevations relative to bathymetric survey data.

A REVIEW OF THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, U.S. ROUTE 29 BYPASS - CITY OF CHARLOTTESVILLE & ALBEMARLE COUNTY

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INTRODUCTION

Community & Environmental Defense Services (CEDS) was retained by the Piedmont Environmental Council and the Southern Environmental Law Center (SELC) to review the "Draft Supplemental Environmental Impact Statement (SEIS), U.S. Route 29 Bypass - City of Charlottesville & Albemarle County," (FHWA-VA-EIS-90-02-DS). The Council and SELC asked CEDS to determine if the SEIS fully and accurately assessed all potential adverse aquatic resource impacts along with reasonable alternatives to mitigate negative effects.

Dr. Everett C. Carter reviewed portions of the SEIS relevant to the probability of an accident involving a truck transporting hazardous material within the South Fork Rivanna River Reservoir watershed.

Dr. Roy R. Gu, P.E., reviewed text from the SEIS relevant to how a spill of hazardous materials would affect the quality of the South Fork Rivanna River Reservoir.

Richard Klein, the president of CE DS, visited the proposed bypass right-of- way and the South Fork Rivanna River Reservoir. He also spoke with various local, state and federal officials regarding this project, and reviewed the entirety of the SEIS along with the following documents plus the references cited at the end of these comments:

Comments on the Proposed Route 29 Bypass on South Fork Rivanna Watershed, dated November 1, 2001, prepared by Mr. Thomas R. Schueler, of the Center for Watershed Protection (CWP).

Analysis of Water Quality & Quantity Impacts of Proposed Route 29 Bypass, dated April 2001, prepared by Black and Veatch Corporation (BV).

Resumes for all three reviewers appear in Appendix A of these comments..

EROSION & SEDIMENT CONTROL

Construction activity strips protective vegetation away exposing soil to the erosive effects of rainfall and runoff. Because soil is exposed to erosive forces for a longer period of time, the rate of erosion on a construction site can be 10- to 20-times greater than on a cropfield and a hundred to a thousand times that of forest lands (EPA 1999). In SEIS Table 4-1 bypass construction phase impacts are described as: "Increased turbidity could increase the level of treatment effort and cost. Increased sediment deposits would cause additional loss of Reservoir storage capacity." In addition to reservoir impacts, bypass construction will release eroded soil - sediment pollution - into reservoir tributaries, such as Ivy Creek. Stream dwelling organisms will suffer as well as downstream property owners.

Without effective control, the eroded soil released from a typical construction site, which is about 20-acres in area, can damage three miles of waterway below the site with recovery taking a decade to a century (Fox 1975). The bypass would disturb 330 acres.

Erosion and sediment control is the technology used to protect streams, reservoirs and other aquatic resources from the impact of construction phase soil loss. The technology is most effective in preventing aquatic resource damage when:

- the proposed construction site does not drain to highly sensitive aquatic resources and lacks an abundance of steep slopes or highly-erodible soils;

- site development is scheduled so that soils are exposed to erosive forces for no more than one or two weeks prior to the use of erosion control measures such as straw mulch and grass seeding;

- sediment control measures are installed along the downslope perimeter before full site clearance occurs; and

- an inspection-enforcement program is in-place which has a proven history of achieving a high level compliance with erosion and sediment control requirements.

SEIS Section 4.7.1 presents the measures which will be used to reduce soil erosion and sediment pollution on the bypass construction site. In this section it is stated that during the construction phase, soil erosion rates would increase by 160- to 450-fold compared to existing rates within the 330-acre area of disturbance. It is also stated in the SEIS that without application of erosion and sediment control measures the quantity of sediment pollution released from bypass construction would reduce reservoir storage capacity by 10.5 million gallons. Also, sediment pollution would increase reservoir cloudiness (turbidity), which would interfere with water treatment processes.

In SEIS Table 4-17 reservoir sediment loads are compared using two models: the RUSLE model presented in the Black & Veatch report and the AnnAGNPS model used in a poorly referenced University of Virginia study. Reservoir sediment loads predicted by the two models differ by a factor of a hundred. Nothing is provided in the SEIS to explain this difference. At a minimum, a table should have been included in the SEIS showing the input variables assumed in both models for each cell, each subwatershed, each reach, etc. Without this information it is impossible to determine which model more accurately estimates reservoir sediment inputs.

In 1998, the U.S. Fish & Wildlife Service (USFWS) issued a "Biological Opinion" on the potential effect of the proposed bypass on the James spinymussel, which is on the federal endangered species list. In the opinion USFWS determined that the siltation (sediment pollution) released from the proposed bypass would adversely affect James spinymussel populations located in Ivy Creek downstream of the project site.

HIGHWAY RUNOFF

In the context of the proposed Route 29 bypass, highway runoff is of concern due to the pollutants washed by stormwater from roadways and other impervious surfaces. Runoff pollution is also generated on the pervious surfaces along a highway, especially grass areas managed with fertilizers and herbicides. Highway runoff pollutants include obvious substances such as oil-grease and road salt along with a number of metals which are highly toxic to aquatic organisms, nutrients, sediment, pesticides, a long list of volatile and semi-volatile organic compounds, and other contaminants.

The potential impact of bypass runoff is analyzed in Section 4 - Environmental Consequences, of the SEIS. The analysis begins by presenting the following highway runoff related issues in SEIS Table 4-1:

> "Pollutant loads in highway runoff: Pollutant inputs could affect quality of water in Reservoir, with implications for levels of water treatment effort and expense. Loss of Reservoir storage capacity also could occur over time.
>
> Length of project in watershed: Greater encroachment into watershed is perceived as resulting in greater potential for water pollution from sedimentation and highway runoff.
>
> Proximity of project to Reservoir and water treatment plant intake: Affects potential for pollutants to reach intake before being dissipated. Affects time available to identify and react to hazmat spills.
>
> Public health: Potential for greater variety and quantity of pollutants entering water supply poses concerns for greater risk of toxicity or other ill health effects for consumers."

After presenting these four issues, SEIS Table 4-6 then provides a partial listing of the pollutants likely to be present in highway runoff. For most of the pollutants listed in the table, loading rates, in pounds per acre per year, are provided for 11 land use types. This table shows that highways generate the greatest stormwater loads for three of ten runoff pollutants. Construction, which would include highway construction, generates the highest load for a fourth pollutant - sediment. Highways are listed in Table 4-6 as generating the second highest amount of ammonia and zinc, and the third highest cadmium load.

SEIS Table 4-7 presents an estimate of loadings from the bypass for 18 pollutants using three different references as the basis for the estimates. Subsequently in the SEIS highway loads are compared with existing loads for just one of these 18 pollutants - phosphorus. This is a serious shortcoming which prevents the reader from assessing how the bypass will change loads for the other 17 pollutants. The absence of a thorough load analysis hampers an assessment of full project impacts to the reservoir and tributary streams.

In their comments on the Black & Veatch report, the Center for Watershed Protection cited this same shortcoming by stating:

> "The load analysis is extremely limited with respect to the highway pollutants of greatest concern to the drinking water utility. These pollutants include soluble metals (Cu, Pb, Zn) the family of PAHs compounds, MTBE, chloride, turbidity, pesticides, and total organic carbon. According to research, each of these pollutants is typically produced at higher levels in highway runoff (usually because of direct emissions from vehicles to the road surface). In addition, acceptable levels of these pollutants in drinking water are very low, and will become even lower in response to recent and future drinking water rules issued under the Safe Drinking Water Act. Third, the current mix of watershed land use is not expected to produce significant loads of these pollutants, given their highway origin. Lastly, nearly all of the pollutants in this list are extremely difficult to treat with conventional stormwater treatment practices."

On SEIS page 4-11, MTBE is dismissed as a concern based upon two unsupported assumptions: 1) the possibility that EPA will ban this gasoline additive, and 2) that MTBE use is limited in the Charlottesville area. As of this date EPA has not banned MTBE and it is not clear when (if) this will happen. So the bypass could be built and in use while MTBE continues in use. According to the most recent analysis by EPA (1998), 100% of the gasoline tested in the Richmond area contained MTBE. Of the gasoline tested in the Washington, D.C. area, 98% contained MTBE. Richmond is, of course, just east of Charlottesville on I-64 and Washington, D.C. is to the north on Route 29. It seems logical that a substantial portion of the vehicles traveling to the Charlottesville area are from Richmond and Washington, D.C. and would contain gasoline with MTBE. It is also logical to assume that gas stations in the greater Richmond and Washington, D.C. regions receive shipments of gasoline with MTBE. Hence tanker-trucks delivering MTBE gasoline could pass through the Charlottesville area. Neither factor is mentioned in the SEIS. Therefore, the potential for MTBE reservoir contamination was dismissed without adequate consideration.

Cyanide, a deicing compound additive, is also addressed in the SEIS (p. 4-11). Like MTBE, cyanide was dismissed as a significant concern. The reasons given in the SEIS for dismissing cyanide were: it is not persistent, does not bioaccumulate, and can be broken down by microbes. The scientific literature does not support the conclusion that cyanide derived from deicing compounds and snowmelt is benign. Novotny et al. (1998) showed that the concentration of cyanide in roadway snowmelt is sufficient to harm water quality and aquatic life. Therefore, cyanide does persist long enough to pose a threat to water quality.

In the last paragraph on page 4-11 it is asserted that lead poses the greatest threat to water quality. This assertion is based upon Table 1-6, in the Black & Veatch report, which shows that of 14 pollutants listed in the table, the bypass causes lead loads to increase to the greatest degree. The SEIS then goes on to impeach the Black & Veatch report with the following assumptions:

> "With the exception of copper and zinc, less than 1 % of the total loads of all other pollutants to the Reservoir could be attributed to operation of the Bypass. These predictions were based on data from the Nationwide Urban Runoff Program (NURP) collected between 1978 and 1983,

before the advent and widespread use of unleaded gasoline in automobiles. Since that time, concentrations of lead in urban and highway runoff have decreased dramatically. Due to this decrease, it is unlikely that the proposed Bypass would contribute more than 1% of the total lead load to the Reservoir."

There are several problems with these assumptions.

1. The bypass may not be the only road added to the reservoir watershed. As explained in the SELC overall comments, new highways, such as the bypass, induce growth to occur. Each new road increases reservoir lead inputs. If this same analytical approach were applied to all future watershed roads, then each would also seem insignificant. Project by "insignificant" project, lead loads to the reservoir would increase until water quality standards are exceeded. It is for this reason that prudent watershed management dictates setting resource based targets for lead loads, as well as all other pollutants, and examining a range of alternatives for meeting each target.

2. The assumptions ignore the impact of lead to the organisms inhabiting the streams which will receive bypass runoff. The increase in lead loads to these streams will be dramatically higher than for the reservoir watershed as a whole. Lead is quite toxic and can cause severe damage to aquatic communities in the receiving streams, including the federally endangered James spinymussel.

3. After dismissing lead, the SEIS fails to consider any other pollutant. Copper and zinc were mentioned, but no analysis was provided. This is a serious flaw in the SEIS for two reasons. First, the Nationwide Urban Runoff Program (NURP) cited in the SEIS found that no other runoff pollutant exceeded water quality criteria more frequently than copper (EPA 1983). Second, as will be shown later in these comments, copper is a very serious threat to the James spinymussel and other organisms inhabiting the receiving waters.

SECTION 4.3.4 WATER QUALITY IN TRIBUTARY STREAMS

This section provides very limited background data on water quality conditions in several reservoir tributaries. In this section it is also stated that runoff could impact Ivy Creek, but this issue is not taken any further - no analysis is provided.

As stated above, copper and lead are two of many toxic pollutants entrained in highway runoff. SEIS Table 4-5 indicates that the bypass will cross 24 streams. A number of these are small, headwater streams in which bypass runoff volume will greatly exceed stream volume. Thus dilution will not be sufficient to lower metal concentrations to meet aquatic life protection criteria.

Aquatic life protection criteria for toxics, such as copper, lead and zinc, are based upon the maximum concentration (EPA 1985). Specifically, EPA guidance establishs a maximum (acute) concentration which must not be exceeded more frequently than once every three years. For copper the maximum would be 18 micrograms per liter (µg/l) (EPA 1985 and 9 VAC 25-260-140B).

NURP data shows that the maximum three-year copper concentration in runoff from impervious surfaces is 114 µg/l (Table 1.3 and Appendix A in Schueler 1987). Yu and Langan (1999) reported a maximum copper concentration of 194 µg/l in ponds receiving runoff from the Route 17 Bypass near Warrenton, Virginia. This "maximum" was based upon two measurements. Thus the three-year maximum would be higher. To fully protect sensitive aquatic resources from toxic effects, the copper concentration in impervious surface runoff must be reduced from 194 µg/l to 18 µg/l. In other words, measures must be in place to reduce the copper entrained in impervious surface runoff by a minimum of 91%.

Later in the SEIS, a number of wet-retention pond control measures are proposed (Section 4.8.1 and Appendix D). These measures will only reduce the copper concentration by 57% (Winer 2000). Thus runoff discharged from the bypass, even after treatment, will contain copper at a concentration injurious to the organisms inhabiting downstream waters. The SEIS did not analyze this issue nor alternatives for resolving this impact. This is a very serious flaw in the SEIS.

SECTION 4.3.6 GROUNDWATER QUALITY & RECHARGE

This section focuses on the impact of the bypass on regional aquifer conditions and ignores the impact to headwater streams and wetlands. The water entering the wetlands and carried by these streams during dry-weather is composed of groundwater inflow. This inflowing water originates as precipitation falling upon the watershed. The precipitation soaks into the soil, travels through the earth and emerges as seepage or spring flow into a nearby wetland or stream.

Covering portions of a watershed with impervious surfaces eliminates groundwater recharge and reduces dry-weather stream flow (Klein 1979; EPA 1999). As watershed imperviousness increases, dry-weather stream flow becomes increasingly more depleted. Recharge and inflow depletion alone will severely degrade a headwater stream as well as affected wetlands. The failure of the SEIS to address this issue is a serious shortcoming.

SECTION 4.3.7 AQUATIC BIOTA

This section begins by stating that the federally endangered James spinymussel occurs in Ivy Creek downstream of the proposed bypass. The SEIS then presents the following assessment of potential effects upon the James spinymussel.

> "During formal Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS), FHWA recommended that the project would have no adverse effect on the mussel populations and would not pose a threat of extinction to the James spinymussel, based on the following points:
>
> 1. The 14 surveyed tributaries in the Ivy Creek drainage area that would be crossed by the project had no mussels and were unsuitable for mussels because of small size and insufficient flow.

2. Although live individuals were found in Ivy Creek, the proposed project involves no work in Ivy Creek and the nearest site of road work on the project would be more than 1,000 feet from Ivy Creek.

3. Few mussels, no snails, and evidence of allocthonous silt in Ivy Creek are indicative of some ongoing environmental degradation in the watershed.

4. There are documented occurrences of 11 other populations of James spiny mussel outside the Ivy Creek watershed.

5. Extensive stormwater management provisions and erosion and sediment control measures are incorporated into the project design to reduce impacts from highway runoff and construction.

USFWS issued its Biological Opinion that the proposed Bypass was 'not likely to jeopardize the continued existence of the James spinymussel and is not likely to destroy or adversely modify its critical habitat because no critical habitat exists for this species.' VDOT will impose several protective conditions during Bypass construction, including time-of-year restrictions on construction and specific erosion and sedimentation control measures."

There are serious flaws in all five points presented above and the assertion of no significant adverse impacts to the James spinymussel. While the first two points may be true, James spinymussels do occur downstream of where the bypass will cross Ivy Creek tributaries. The impact of bypass pollutants and loss of recharge will extend further than 1,000 feet downstream of the bypass. The thrust of the third point seems to be that since the Ivy Creek spinymussel population is already stressed, then more stress will not matter. In fact, this argument flies in the face of good environmental management principles. If this same logic were applied to the other 11 spinymussel populations, then eventually no mussels would remain. The proposed stormwater and sediment control measures will not be sufficient to protect spinymussels downstream of the bypass. In fact, the USFWS Biological Opinion concluded that mussels would be harmed by siltation from bypass construction.

The Biological Opinion did not consider other highway impacts which could be equally harmful to the James spinymussel. The Biological Opinion cited the sensitivity of this species to the elevated water temperature caused by impoundments (USFWS 1998). Specifically, the fish which serve as hosts for spinymussel larvae are harmed by elevated water temperature. But neither the Biological Opinion nor the SEIS looked at how the bypass might affect water temperatures in areas inhabited by spinymussels.

Several studies have shown that stormwater management ponds, identical to those proposed for the bypass, elevate runoff to a temperature in the high 80°F to 90°F range (Bahr 1996; Galli 1990 and 1992). The SEIS does address this impact. Furthermore, neither the SEIS nor the USFWS Biological Opinion addressed the loss of groundwater recharge and streamflow depletion on spinymussel

populations. Finally, all discussion of hazardous waste spills in the SEIS focused on reservoir impacts and ignored how such a catastrophic event would impact James spinymussel populations.

The effects of copper, lead, zinc and other runoff toxics to the spinymussel was not considered in the Biological Opinion or the SEIS. Virginia water quality standards and EPA guidance (9 VAC 25-260-5B; EPA 1985) set the freshwater acute standard for copper at 18 µg/l. EPA guidance for copper and other toxic metals states that the freshwater acute standard should not be exceeded more frequently than once every three years (EPA 1985). The data gathered through the Nationwide Urban Runoff Program (EPA 1983) show that the three-year maximum copper concentration is at least 114 µg/l (Table 1.3 and Appendix A in Schueler 1987). Yu and Langan (1999) showed that the copper concentration in ponds receiving highway runoff from the Route 17 Bypass, near Warrenton, VA, was 194 µg/l.

The safe copper level for molluscs, such as the James spinymussel, may be lower than the Virginia and EPA standard. Table 1, in Ambient Water Quality Criteria for Copper (EPA 1985), shows that mussels and other molluscs were harmed by a copper concentration as low as 5.3 µg/l. Although the mussels affected by lower copper concentrations are marine, this does point to the need for a thorough review of the scientific literature for data on the effect of copper (and other stressors) on the James spinymussel. This review is essential to accurately establishing target values for the protection of this species.

If a copper concentration of 5.3 µg/l were determined to be the safe level for protection of the James spinymussel, then the control measures serving the bypass would need to reduce the runoff concentration of 194 µg/l by 98% to reach this target. The wet-retention ponds presented in the SEIS will only reduce copper by 57% (SEIS Section 4.8.1 and Appendix D; Winer 2000). Again, the failure to analyze this issue is a serious flaw in the SEIS.

SECTION 4.3.8 WETLANDS

In this section the SEIS describes how the bypass will impact 43 wetlands. The SEIS states that these wetlands play an important role in groundwater discharge and the maintenance of dry-weather stream flow. The SEIS is unclear as to how the bypass will affect these wetlands. It appears that direct, physical effects are the only impacts considered. Discussion is not provided with respect to a reduction in wetland inflow due to recharge lost by rendering portions of each wetland watershed impervious. Also, no reference is made to runoff pollution damage to wetlands.

A number of studies have documented substantial damage when impervious surface runoff enters a wetland (Vedagiri 1989; Vedagiri and Ehrenfeld 1991; Ehrenfeld and Schneider 1991; Wilcox 1986). The SEIS fails to consider the impact of runoff to the wetlands. Because of this serious shortcoming, it is not clear how many of these wetlands will be lost or how VDOT will compensate for this loss.

SECTION 4.3.9
CHEMICAL USAGE DURING HIGHWAY OPERATIONS & MAINTENANCE

This section begins with a listing of the following herbicides which would be applied along the right-of-way: Roundup Pro (isopropalin), Vanquish (dicamba), Garlon 3A (triclopyr), and Krenite S (fosamine ammonium). Potential adverse effects are dismissed based upon reservoir dilution. No discussion is provided as to anticipated in-stream concentrations and toxicity thresholds for these herbicides. Furthermore, the SEIS should have included an analysis of potential herbicide effects upon reservoir submerged aquatic vegetation, particularly in the small coves which would first receive bypass runoff and where herbicide concentrations would be highest.

This section also contains a discussion of deicing compounds, such as road salt and sand. This portion of the SEIS concluded that deicing compounds would not adversely affect reservoir quality due to infrequent use, removal in stormwater facilities and dilution within the reservoir. However, no analysis was presented to quantify and substantiate these claims of no adverse effects.

Deicing compounds can adversely affect receiving water quality by elevating the concentration of chloride, cyanide or sodium (Cherkauer and Ostenso, 1976; Crowther and Hynes 1977; Ehrenfeld and Schneider 1991; Novotny et al. 1998;Rosenberry et al. 1999; Vedagiri 1989; Vedagiri and Ehrenfeld 1991; Wilcox 1986). Novotny et al. found that the cyanide concentration in snowmelt exceeded EPA criteria for the protection of aquatic life.

Most of the research into deicing compound effects has focused on chloride. Cherkauer and Ostenso reported on contamination of artificial lakes in Wisconsin. Road salt from the intensely developed watersheds collected at the bottom of the lakes due to the greater density of chloride-rich runoff. Rosenberry et al. reported on road salt contamination of a New Hampshire lake. Crowther and Hynes found that road salt runoff contains sufficient chloride to adversely affect sunfish. Several studies have documented an adverse impact when road salt contaminated runoff enters a wetland (Vedagiri; Vedagiri and Ehrenfeld; Ehrenfeld and Schneider; Wilcox).

Again, despite the well documented impact of road salt upon lake quality, stream biota, and wetlands, the SEIS did not contain any analysis of potential effects upon the reservoir, receiving streams or wetlands. This is a serious flaw in the SEIS. The claim that proposed stormwater facilities will resolve road salt impacts is unsupported in both the SEIS and the scientific literature (Novotny). Chloride is in a dissolved state when transported in runoff. Stormwater facilities are generally poor at removing dissolved pollutants (Schueler 1987; EPA 1999).

In their comments on the Black & Veatch report, the Center for Watershed Protection cited many of these same shortcomings by stating:

> "The BV load comparison makes no reference to the generation of pollutants as a result of snowmelt or application of deicing compounds. The EA, RE and 106 reports do not indicate

how VDOT will manage the bypass in response to snow or ice. While it is acknowledged that the region does not get much snow or ice every year, the frequency of snow/ice events is likely to be much greater than the predicted spill risk of 2 to 4% per year. Recent studies indicate that pollutant concentrations generated by even a few lane miles of treated highway can be significant from the standpoint of drinking water quality, particularly for pollutants such as cyanide, lead, chloride, and total organic carbon (Novotny et al, 1999). Road salt (chloride) contains impurities such as cyanide, and as might be expected, the drinking water regulations for cyanide levels are extremely low. In addition, chloride levels affect the taste and odor of drinking water, and are regulated as such. Novotny et al (1999) also noted that performance of stormwater ponds declines dramatically during winter conditions, which suggests that control of highway snowmelt will be problematic so close to the reservoir."

SECTION 4.4.2 RUNOFF CONTAMINANTS

In this section of the SEIS it is contended that:

> "According to Reed & Associates (1990), FHWA research suggests that runoff from highways with low to medium traffic volumes (less than 30,000 Average Daily Traffic [ADT]) does not have a serious effect on receiving waters, whereas highways with high traffic volumes (greater than 30,000 ADT) do have the potential to cause adverse 'first flush' effects. First flush is the acute pollutant concentrations experienced in the initial runoff at the start of a storm, when the highway contaminants are washed off. The segment of the proposed Bypass alignment that is within the Reservoir watershed has an estimated ADT of 24,400 for the year 2020. Given this maximum ADT, it is not anticipated that runoff from the proposed Bypass would greatly affect the water quality in the Reservoir."

Barrett et al. (1995) showed that the relationship between ADT and pollutant concentration is a continuum lacking specific thresholds. In other words, as traffic volume increases pollutant loads tend to increase as well. For example, Driscoll et al. (1990) initially reported that pollutant concentrations were higher from roads with an ADT >30,000, but further analysis of this same data used failed to yield a "strong or definitive" relationship between ADT and pollutant concentration (Barrett et al.). Hence, the SEIS is without foundation in dismissing concerns about bypass runoff effects because ADT may be less than 30,000.

As shown previously in these comments, the pollutant concentration from impervious surfaces, including highways, does exceed water quality protection criteria by a wide margin. Thus bypass runoff poses a substantial threat to water quality in the reservoir, the tributary streams and wetlands.

SECTION 4.4.3 EUTROPHICATION

Eutrophication occurs when excessive nutrient inputs to a water body cause algal growth to attain levels interfering with water treatment and aquatic life. This section of the SEIS begins by acknowledging that the Reservoir has been eutrophic and focuses upon phosphorus as the key nutrient. The SEIS then

analyzes how the bypass would affect phosphorus loads to the reservoir. In the SEIS it is contended that the analysis shows the by pass will not increase phosphorus inputs to the reservoir.

The SEIS analysis suffers from a serious flaw. The analysis is based upon the erroneous assumption that the phosphorus loading rate from the bypass is comparable to that of other watershed land uses, such as forest and cropfields. This assumption is counter to modern watershed management science. In fact, SEIS Table 4-6 shows that the phosphorus loading rate from highways is 30 times higher than the rate from forest (park).

In their comments on the Black & Veatch report, the Center for Watershed Protection cited this same shortcoming by stating:

> "The methods used to characterize the total load of pollutants from the watershed as a whole are seriously flawed. The method uses pollutant concentrations in watershed runoff that are essentially the same as used for highway runoff, despite the fact the watershed is 73% forested."

To develop a more accurate assessment of how the bypass would affect reservoir phosphorus inputs, I used the U.S. Environmental Protection Agency phosphorus loading rates for the James River watershed. These loading rates appeared in Tables 4.34 and 4.35 of "Chesapeake Bay Program Watershed Model Application To Calculate Bay Nutrient Loadings" (EPA 1994). The reservoir is, of course, located in the James River watershed.

SEIS Tables 4-3 and 4-4 provide existing and proposed land use within the 330-acre bypass right-of-way. I applied the Chesapeake Bay Program - James River loading rates to these land uses to compute phosphorus loads with and without the bypass. The results of this analysis are presented in Table 1, below, and show that the existing right-of-way generates 81 pounds of phosphorus per year. The phosphorus load will increase nearly four-fold to 271 pounds once the bypass is completed. Clearly phosphorus loadings from the proposed highway are not comparable to other land uses, as put forth in the SEIS. Clearly, SEIS Table 4-16 is incorrect and misleading. By increasing phosphorus inputs, the bypass will add to the eutrophication problem in the reservoir.

Table 1: Comparison of Phosphorus Loading Rates

LAND USE [1]		Acres	Phosphorus [2] Loading Rate (lb/ac/yr)	Phosphorus Load (lb/yr)
EXISTING LAND USE				
Forest & ungrazed pasture		249.62	0.09	22.47
5+-acre residences in woodlands:	Forest	10.41	0.09	0.94
	Impervious	0.32	1.22	0.39
Mowed lawns		0.51	0.68	0.35
1-acre residences:	Pervious	40.60	0.68	27.61
	Impervious	4.51	1.22	5.50
Grazed pasture lands:	Pasture	18.76	0.91	17.07
	Impervious	3.31	1.22	4.04
Mixed townhouses - 1/4 ac resid:	Pervious	0.18	0.68	0.12
	Impervious	0.14	1.22	0.18
Townhouses:	Pervious	0.21	0.68	0.14
	Impervious	0.21	1.22	0.26
Heavy commercial/industrial:	Pervious	0.12	0.68	0.08
	Impervious	1.12	1.22	1.36
	Total	330.02		**80.50**
WITH BYPASS				
Pervious (grass)		244.21	0.68	166.07
Impervious (paved)		85.81	1.22	104.68
	Total	330.02		**270.75**

1. Existing land use was obtained from SEIS Table 4-3. Pervious and impervious area with the bypass was obtained from SEIS Table 4-4.
2. Phosphorus loading rates were obtained from Tables 4.34 and 4.35 in EPA 1994

SECTION 4.5.2
WATER TREATMENT & DISTRIBUTION FACILITIES - EFFECTS OF HIGHWAY RUNOFF

In this section of the SEIS it is again contended that phosphorus loads will not change once the bypass is built. As shown in Table 1, above, this contention is false. It is also stated in Section 4.5.2 that a minor increase in eutrophication is within water treatment plant capabilities. This rationale ignores the fact that the bypass is one of a number of development projects that may take place in the reservoir watershed, particularly given the growth-inducing impacts of new highways. If each project cause a "minor" increase in phosphorus inputs and eutrophication, then the cumulative impact will be a very large increase nutrient loads and eutrophic conditions. Sound watershed management principles dictate that these cumulative impacts are best avoided by minimizing phosphorus releases from each land use change. To do this a specific phosphorus target must be established then various alternatives considered to meet the target. The SEIS contains neither a specific phosphorus target nor an analysis of how alternatives compare in meeting the target.

In their comments on the Black & Veatch report, the Center for Watershed Protection cited this same shortcoming by stating:

> "The proposed VDOT design for the stormwater treatment system [EA p.24] contains no specific numerical targets for performance consistent with its close proximity to a water intake. An enhanced design would utilize greater treatment volumes and employ innovative and redundant stormwater technologies to meet reliable treatment benchmarks, as described in recommendations 6 and 7 at the end of this memo."

SECTION 4.8.1
COMMITTED MITIGATION MEASURES - HIGHWAY RUNOFF CONTROL

In this section a description is provided of the facilities which will be used to control runoff pollution from the proposed bypass. Further detail is provided in SEIS Appendix D. The treatment facilities consist of six wet retention ponds sized to provide a water quality volume equivalent to 1.5-inches of runoff. Each pond will be preceded by a dry sump and a forebay. The dry sump will have a volume of 1,100 cubic feet, which is equivalent to the volume of a tanker-truck and was provided as part of the bypass spill control system. The forebay will have a volume equivalent to 10% of the volume of the wet pond each forebay serves.

On SEIS page 4-44 it is stated that:

> "In general, a higher level of nutrient removal and better stormwater quantity control can be achieved in wet detention ponds than with BMPs such as dry ponds, infiltration trenches, or sand filters."

Wet ponds are superior only to dry ponds (Winer 2000). Infiltration and sand filters are more effective than wet ponds in removing the pollutants entrained in runoff (NVPDC 1992; Winer 2000).

Furthermore, recent studies have shown that infiltration and sand filters are more effective in preventing thermal impacts (Bahr 1996; Galli 1990; MDE 2000). Additionally, wet ponds can accelerate erosion of the stream channels which receive the pond discharge (MacRea 1996; DER 1997; MDE 2000). Finally, wet ponds provide minimal groundwater recharge whereas infiltration measures can maintain recharge and stream-wetland inflow at predevelopment levels (Klein 1979; DER 1997; MDE 2000)

The second paragraph on SEIS page 4-44 presents the following description of wet pond pollutant removal efficiencies:

> "Numerous studies have shown wet detention ponds to be effective in removing TSS, nutrients, metals, and BOD/COD from stormwater. The Northern Virginia Planning District Commission (as cited in FHWA 1996) indicates that 90% removal can be expected for TSS. The median long-term sediment removal rate cited in numerous literature sources for wet ponds is 70%. Much of the particulate nitrogen and phosphorous also would be removed as sediment settles out in the ponds; FHWA reports 48% removal for Total Nitrogen and 65% removal for Total Phosphorous. The same removal rates are reported for metals. FHWA also found that approximately 30% of stormwater BOD/COD was removed in wet detention ponds. Other researchers have found similar results. The Center for Watershed Protection has developed a stormwater BMP database that is an excellent source of case studies demonstrating the pollutant removal efficiency of stormwater retention ponds that incorporate different design elements and operate under different local conditions. A literature summary of pollutant removal rates from conventional wet detention ponds is provided in Appendix B."

The Center for Watershed Protection database cited in the SEIS shows that wet ponds remove lower percentages of pollutants than claimed above: total suspended solids (TSS) 80%, total phosphorus 51%, total nitrogen 33%, and copper 57%. It is crucial to keep in mind that these pollutant removal efficiencies only apply to runoff captured within the water quality volume of the stormwater facilities. While preparing these comments, CEDS downloaded Charlottesville precipitation data for the entire period of record - 1948 to 2002. An analysis of this data showed that facilities designed to treat 1.5 inches of runoff would capture 73% of the total volume of bypass runoff for this 54-year period. The remaining 27% of the runoff would flow into the reservoir and tributary streams without treatment. The CEDS precipitation analysis appears in Appendix B of these comments.

SEIS Table D-2 states that of the 219 acres of bypass right-of-way in the reservoir watershed, 150 acres will drain to the wet ponds. The SEIS does not state whether any of the uncontrolled 69 acres will be impervious or if all 69 acres will be grass.

In Table 2, below, an analysis is presented of the amount of phosphorus retained in the proposed dry sumps, forebay, and wet ponds. This analysis begins with the phosphorus loads computed in Table 1, which appeared earlier in these comments. The analysis then factors in the 69 acres of pervious area not treated, the 27% of runoff not accommodated in the 1.5-inch pond water quality volume, and the median 51% median phosphorus removal rate given in Winer (2000) for wet ponds. Table 2 shows

that the bypass, with the control measures described in the SEIS, will double phosphorus loads to the reservoir.

As stated in the SEIS, the South Fork Rivanna River Reservoir has exhibited signs of eutrophication. Clearly, nutrient inputs are already excessive. The bypass will exacerbate this critical situation by doubling phosphorus loads from the right-of-way. The SEIS failed to document this impact and failed to examine alternatives which would have reduced phosphorus. This is a very serious flaw in the SEIS.

Table 2: Bypass Phosphorus Loading To The Reservoir

LAND USE		Acres	Pretreatment Phosphorus Load (lb/yr)	Fraction of Runoff Treated in Wet Ponds	Fraction Removed in Wet Ponds	Phosphorus Load To Reservoir (lb/yr)
EXISTING LAND USE			80.50	0.00		**80.50**
WITH BYPASS						
Pervious	Treated	174.72	100.03	0.73	0.51	62.79
	Untreated	69.49	66.04	0.00		66.04
Impervious		85.81	104.68	0.73	0.51	65.71
	Total	330.02	270.75			**194.54**

HAZARDOUS MATERIAL SPILL

This issue is described in SEIS Table 4.1 as:

> "Hazardous material spills generally are low-probability events, but are understood to have potentially high consequences in terms of human health, response and clean-up costs, water treatment plant contamination, and interruption of water supply. A number of citizens, as well as the Rivanna Water and Sewer Authority, Albemarle County officials, and others, have noted this as their greatest concern."

The analysis of the potential for a hazardous material spills and impacts to the South Fork Rivanna River Reservoir is contained in SEIS Section 4 Environmental Consequences. The detailed analysis begins in SEIS Section 4.3.10 Hazardous Material Spills. The variables used in the analysis and the results are presented in SEIS Table 4-13, which appears on pages 4-26 and 4-27. The last row in Table 4-13 states that without the bypass a hazmat spill within the reservoir watershed will occur once every 39.3 years. With the bypass spill frequency increases to once in 30.1 years. Table 4-13 also

presents a spill frequency of once in 785 years for the "Critical Area", which is described on SEIS page 4-20 as:

> "a 0.28-mile Bypass segment...that poses the greatest concern for adverse effects of potential highway spills on water quality in the watershed and the Reservoir. "

Following are several questions and discrepancies regarding Table 4-13.

Truck Traffic Volume

The row in Table 4-13 labeled "trucks/day" presents the assumption that trucks will account for 7% of bypass traffic and 2% of the traffic on existing and "other" roads. The basis for these percentages is not presented in the SEIS. The basis is also absent in the Technical Memorandum, dated January 14, 2002, from Mr. James Salisbury, cited in the SEIS.

The existing roads are listed in the technical memorandum as Routes 250, 601, 676 and 743. Again, the basis for the 2% and 7% truck figures is not provided in the memorandum. According to figures provided by Mr. Gerald Utz, of the Virginia Department of Transportation (VDOT), trucks presently account for about 3.5% of the traffic on Routes 250, 601 and 743. Table 2-4, in the Black & Veatch report, shows that up to 15% of the traffic on Route 29 will be trucks by the year 2020.

Portion of Trucks Transporting Hazardous Waste

The next row in Table 4-13 is labeled "hazmat trucks per day (8% of total trucks)." The source for this figure (8% of total trucks) appears to be in the second paragraph on SEIS page 4-19. This paragraph states:

> "Hazmat shipments are only a small fraction (4-8%) of the total number of shipments nationwide (Federal Motor Carrier Safety Administration, March 2001)."

The Federal Motor Carrier Safety Administration study cited as the reference for the 4-8% figure does indeed show this range. But the 4-8% figure is based upon studies conducted along interstates and other major highways. The existing roads listed in the technical memorandum (Routes 250, 601, 676 and 743) are neither interstates nor major highways. Of course the bypass will be a major highway similar to an interstate. Dr. Carter noted that 4% to 8% is actually a rather broad range. He also questioned the rationale for focusing on a 47-mile area since hazmat shipments from more distant locations would likely pass through the area.

On page 16, of the April 9, 2002 comments prepared by the Charlottesville-Albemarle Transportation Coalition (CATCO), data gathered by the Virginia State Police is cited as showing that 18% of all truck traffic is transporting hazardous waste. Presumably, this data was gathered on multilane highways resembling Route 29; not more local road such as Routes 250, 601, 676 and 743.

Critical Area

The "Critical Area" referenced in Table 4-13 is defined in SEIS in the subsection labeled "Area of Concern for Spill on Bypass," on page 4-20, as:

> "...a 0.28-mile Bypass segment (referred to in this SEIS as the "critical segment") between Earlysville Road (Route 743) and Woodburn Road (Route 659) that poses the greatest concern for adverse effects of potential highway spills on water quality in the watershed and the Reservoir. The cross sections shown in Figures 4-4A through 4-4D illustrate the relationship between the proposed Bypass and the Reservoir, with the road being approximately 590 feet from the Reservoir at the closest point. This critical segment would drain into the Reservoir instead of draining into Ivy Creek, a tributary to the Reservoir."

The actual distance measured by CEDS between the two critical segment boundaries presented above is 0.95 miles, not the 0.28-miles stated above. Furthermore, the criteria used in the SEIS to define the critical segment was that the bypass would drain to the reservoir instead of to Ivy Creek. Approximately 1.12 miles of the bypass would drain directly into the reservoir, as opposed to flowing into Ivy Creek, then the reservoir.

The SEIS does not present a clear explanation for why a hazardous material spill within the "Critical Area" is of greater concern than a spill elsewhere along the 3.4 miles of bypass located within the reservoir watershed. According to Dr. Gu the reservoir is a "run-of-the-river" impoundment, pollutants would reach the intake fairly quickly. Furthermore, he pointed out that the slopes along the bypass down to the reservoir are very steep, which would allow a spill to travel relatively fast. Hence the entire length of the bypass within the reservoir watershed is a critical area. From a water quality protection perspective, there is no obvious distinction. A spill would be harmful when it occurs anywhere along the entire length of the 3.4-mile corridor.

Revised Hazmat Spill Frequency

Table 3, which follows this page, is based upon SEIS Table 4-13, with the following modifications.

1. The Critical Area column has been deleted since this adds nothing to the analysis of how the bypass would threaten reservoir quality.

2. The portion of total traffic which is trucks is corrected to the 3.5% figure provided by VDOT.

3. Route 29 percent truck traffic is corrected to 15% as recommended in the Black & Veatch report

4. The percentage of trucks transporting hazardous waste on Route 29 has been set to 18% based upon the results of the Virginia State Police study. For existing roads and other roads the lower end of the Federal Motor Carrier Safety Administration 4% range is applied.

Table 3
ESTIMATED TRUCK ACCIDENT RATES/RELEASE PROBABILITIES FOR HAZARDOUS MATERIALS IN THE RESERVOIR WATERSHED

	No Build	Selected Build Alternatives		
	Existing Roads	Bypass	Other Roads	Total Risk (Bypass + Other Roads)
BACKGROUND TRAFFIC DATA				
vehiles/day	27,000	24,400	18,740	n/a
percent of traffic which is trucks	3.5	15.0	3.5	
trucks/day	945	3,660	656	n/a
percent of trucks carrying hazmat	4	18	4	
hazmat trucks per day	38	659	26	n/a
Miles in Reservoir watershed	18.11	3.44	18.11	n/a
vehicle miles/day	124,370	83,936	339,381	423,317
vehicle miles/day - hazmat trucks only	685	2,266	475	2,741
Annual veh-miles	45,395,050	30,631,733	30,153,453	60,785,186
Annual veh-miles - hazmat trucks only	249,864	827,189	173,424	1,000,613
Annual veh-miles (millions)	45.395	30.632	30.153	60.785
Annual veh-miles (millions) - hazmat trucks only	0.250	0.827	0.173	1.001
ACCIDENT/RELEASE RISK DATA				
Hazmat Truck Accident Rate (Acc./million vehicle-miles)	0.32	0.32	0.32	0.32
Probability of Release from Hazmat Accidents	0.28	0.28	0.28	0.28
Calculated Hazmat Releasing Accident Rate (Acc./mill veh-miles)	0.09	0.09	0.09	0.09
RISK OF ACCIDENT/RELEASE				
Annual Predicted Occurrence of Hazmat Truck Accident	0.080	0.265	0.055	0.320
Return Frequency (years per event)	12.5	3.8	18.0	3.1
Annual Predicted Occurrence of Hazmat Releasing Accident	0.022	0.074	0.016	0.090
Return Frequency (years per event)	44.7	13.5	64.4	11.2

Table 3 shows that with these modifications a hazardous material spill would occur in the reservoir watershed once every 44.7 years under existing conditions. The bypass would cause a very large increase the volume of hazmat truck traffic entering the reservoir watershed. This change causes the probability of a spill into the reservoir to increase by four-fold. In other words, with the bypass the frequency of hazmat spills in the reservoir watershed would go from once every 45 years to once every 11 years.

Analysis of Spill Effects Upon the Reservoir

The SEIS focuses on a spill involving a 10,000 gallon tanker truck. Table 4, below, presents an analysis of how such a spill would affect reservoir quality. This analysis examines the impact of a tanker filled with 10,000 gallons of MTBE treated gasoline. MTBE is a pollutant of great concern to agencies responsible for providing safe drinking water to the public, such as the Rivanna Water & Sewer Authority with their 82,000 customers in the Charlottesville area.

Table 4 goes through each step in the calculation of in-reservoir MTBE concentration assuming complete mixing. The analysis also examines a three-day scenario, which is the maximum amount of time the Rivanna Water & Sewer Authority can go with the reservoir out-of-service. Tributary inflow to the reservoir during this three-day period is included in the dilution calculation.

The analysis presented in Table 4 computes an MTBE concentration of 453 micrograms per liter (µg/l) throughout the reservoir. Table 4 shows that the U.S. Environmental Protection Agency Drinking Water Advisory calls for no more than 20-40 µg/l MTBE. California drinking water standards limit MTBE to as little as 5 µg/l. In other words, if all 10,000 gallons of gasoline entered the reservoir, then applicable water quality standards would be exceeded by a factor of 15 to 91. Table 4 also shows that water quality standards would be exceeded if as little as 110 gallons of MTBE treated gasoline entered the reservoir.

Spill Prevention Measures

On SEIS page 4-28, the assertion is made that it is nearly impossible for the reservoir to be harmed by a spill on the bypass. In fact, the SEIS presents five conditions which it is claimed must be met for harm to occur. These conditions are:

SEIS Condition 1: The rollover protection devices installed on the tanker fail to prevent tanker rollover, and rollover occurs;

> During his review of this section of the SEIS, Dr. Carter noted that spills may occur from truck accidents even if rollover does not occur. For example, a truck may collide with another vehicle or a tree. According to an analysis by the Federal Motor Carrier Safety Administration, "Large Truck Crash Profile: The 1998 National Picture," 4.2% of fatal truck accidents involved rollover while 7.3% resulted from a truck striking a fixed object and 79% from striking another vehicle. A tractor-trailer jackknife is involved in 2.4% of all nonfatal truck accidents. In other

Table 4: Effect of a Gasoline Tanker Spill on South Fork Rivanna Reservoir MTBE Concentrations

VALUE	VARIABLE
	Volume of MtBE in Tanker Truck
10,000	Tanker truck volume (gallons) (Ref 1)
0.3	Weight in kilograms of MtBE in one gallon of gasoline. (Ref: 2)
3,000	Kilograms of MtBE in a 10,000 gallon tanker (10,000 x 0.3)
3,000,000,000,000	Kilograms of MtBE converted to micrograms (kg x 1,000,000,000 = micrograms)
	Reservoir Volume
1,150,000,000	South Fork Rivanna Reservoir volume (gallons) (Ref 3)
4,352,750,000	Reservoir volume converted to liters (one gallon = 3.785 liters)
	Three-Day Reservoir Inflow Volume
310.00	Average reservoir inflow in cubic feet/second (cfs) (Ref 3)
80,352,000	Cubic feet of reservoir inflow during three days (310 cfs x 60 seconds x 60 minutes x 24 hrs x 3 days)
2,274,909,754	Three day inflow converted to liters (one cubic foot x 7.48 = gallons x 3.785 = liters)
	Reservoir Volume + Inflow Volume
6,627,659,754	Total volume (liters) available for MtBE dilution (inflow during 3 days at low-flow + reservoir volume)
	Micrograms/liter (ug/l) of MtBE Assuming Complete Mixing In Reservoir 3-Day Volume
453	ug/l MtBE (micrograms of MtBE in 10,000 gallons gasoline divided by liters in 3-day reservoir volume.)
	MtBE Standards in ug/l
20-40	US EPA MtBE advisory level for taste & odor. (Ref 4)
13	California MtBE Maximum Contaminant Level (Ref 5)
5	California MtBE Secondary Maximum Contaminant Level (Ref 5)
	MtBE Standards Divided By Predicted MtBE Concentration
15	US EPA MtBE advisory level for taste & odor.
35	California MtBE Maximum Contaminant Level
91	California MtBE Secondary Maximum Contaminant Level
	Gallons of Gasoline Which Could Enter Reservoir Without Exceeding Standards
663	US EPA MtBE advisory level for taste & odor.
287	California MtBE Maximum Contaminant Level
110	California MtBE Secondary Maximum Contaminant Level

REFERENCES

1. In the last paragraph on SEIS page 4-44, it is stated that the typical tanker truck volume would be 10,000 gallons.
2. Johnson et al., Environmental Science & Technology, May 1, 2000, p. 2A-9A.
3. US Geological Survey records for the gaging station on the South Fork Rivanna River, 0.5 miles downstream of the reservoir.
4. EPA Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on MtBE.
5. California EPA, 1999. Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water.

words, a rollover is not the only way in which a truck accident may occur. In fact, it is not even the most likely.

SEIS Condition 2: Due to container damage or failure, the accident results in a substantial release of hazardous cargo;

Table 4 shows that "substantial" could be as little as 110 gallons. It is extremely difficult to prevent such an "insubstantial" quantity of hazardous material from entering the reservoir after a spill.

SEIS Condition 3: The immediate release from the tanker is not contained by local emergency response personnel arriving on-scene;

Beginning at the bottom of SEIS page 4-30, in the portion of the SEIS describing the "Local Hazardous Materials Spill Response Plan," the following text appeared:

> **SEIS Text:** "Spill containment procedures for a worst-case scenario - a tanker accident on a bridge over a tributary - are not listed in the EOP [Emergency Operations Plan]. Although hazardous material spill procedures are outlined clearly, there are no guidelines regarding chemical or oil spills over water. Also, guidelines for agency coordination in POL or toxic chemical cleanup are not mentioned in the plan, and information on the sorbent materials used is not mentioned."

This text indicates that local emergency response capabilities are not ready to handle a likely spill scenario along the proposed bypass.

Furthermore, comments attached to a letter dated March 29, 2002, from the Rivanna Water & Sewer Authority, addressed to Mr. J. Mark Wittkofski, stated that response units capable of dealing with a major spill are located 60 or more miles distant in Harrisonburg, Richmond and Fredericksburg. Thus it cannot be assumed that a major spill would be contained before a substantial quantity of hazardous materials escaped into the reservoir and tributary streams.

SEIS Condition 4: The series of mitigation measures built for spill containment on the Bypass fail;

The following excerpt from the November, 2001, Center for Watershed Protection comments show that there was good reason to believe that the containment measures described in the Black & Veatch report would not reliably prevent a spill from escaping into the reservoir. These same flaws apply to the measures described in the SEIS.

> "I am particularly concerned about the dual use of the stormwater treatment system for spill containment and/or control. Quite simply, the greatest risk of highway accidents will be during inclement weather, which is precisely when the highway is producing

stormwater runoff to the ponds. It is hard to imagine how the ponds can serve for spill containment when they are also treating large volumes of stormwater. From an engineering standpoint, the spill containment system should be completely separate from the stormwater treatment system. The spill containment should be off-line and have no possibility of bypassing into the stormwater pond (where the spills will be extremely difficult to treat)."

According to Dr. Gu it is correct to assume that the ponds and sumps could be full of ice or runoff when a spill occurs. Thus little volume would remain to detain hazardous liquids before they began flowing down into the reservoir.

SEIS Condition 5: The spill continues to travel more than 500 feet from the Bypass to the Reservoir in a quantity that would cause contamination of the Reservoir, without dispersion into the air or soil.

As shown in Table 4, above, after just 1 % of a tanker load has entered the reservoir, MTBE concentrations would exceed standards for the protection of drinking water. Following is one of many realistic scenarios in which a bypass hazmat spill could cause severe contamination of the reservoir. The precipitation and reservoir conditions described below are based upon an actual rainfall event which occurred on December 15, 1999 and actual reservoir inflow patterns during December, 1999.

A Realistic Worse-Case Scenario

In "Large Truck Crash Profile: The 1998 National Picture," the Federal Motor Carrier Safety Administration states that 10% of all fatal truck accidents occurred while it was raining and 3% occurred during snow, sleet or hail. In this scenario a gasoline tanker truck is traveling along the 3.4-mile section of bypass located within the reservoir watershed. An inch and a half of rain has fallen during the previous 24 hours. Its been cold and presently the bypass is slippery. The 1.5-inch rain has filled the dry sumps, forebays, and the wet-retention ponds with runoff and ice. All three facility types are constantly discharging excess runoff.

The tanker truck hits a section of slippery road, jackknifes, strikes a bridge abutment or another truck, and the tank ruptures spilling 10% (a thousand gallons) of MTBE treated gasoline onto the bypass. The gasoline flows down to the full dry sumps and floats on the water surface as it drains down into the forebay then into the full wet-retention pond where it resides for a brief time before discharging into a reservoir tributary.

The gasoline then enters the reservoir where the MTBE it contains disperses at a concentration far in excess of EPA standards. Reservoir inflow is averaging about 220 cubic feet per second (as it did in December 1999). With this actual inflow rate it takes eight days to flush the reservoir. The maximum amount of time the Rivanna Water & Sewer Authority can go without the reservoir in service is three days. In conclusion, this very realistic scenario results in a period of severe hardship for the Authority's 82,000 Charlottesville area customers.

If the gasoline spill happens to take place in the Ivy Creek watershed, then the loss of endangered James spinymussel populations, and that of other aquatic organisms, will be added to degradation of reservoir water quality. A scenario such as that described above was not specifically addressed in the SEIS. Had it been the SEIS would have been forced to conclude that the probability of a spill is much higher than set forth and that the consequences to Charlottesville area residents would be disastrous.

INDUCED GROWTH IMPACTS

By improving access, new roads, such as the proposed bypass, can alter growth patterns. Specifically, improved road access can alter the location, pace and character of future development (S/PI 1998). This impact is termed "induced growth."

Albemarle County has taken steps to minimize the potential for growth within the reservoir watershed. The County's intent, of course, is to protect reservoir water quality by maintaining the rural character of the watershed, particularly in close proximity to the reservoir. If the bypass were to induce suburban or urban development then the County's efforts to protect the reservoir would be undercut. Text pertaining to the induced growth issue appears in SEIS Section 4.10 Indirect Effects.

In their 1998 analysis, Synergy Planning, Inc. (S/PI) illustrated the factors which determine how a new road will affect growth patterns by pointing to the following examples within the Route 29 corridor:

> "Those bypasses that are relatively long and completely avoid small urban concentrations have little apparent land-use impact beyond the issues of noise, bifurcation, barriers and segmentation.
>
> Those which are short in relation to the critical mass of the urban activity they attempt to 'bypass' have much more impact. Short bypasses are notorious for completely relocating 'downtowns' and 'main streets' even in very small urban agglomerations.
>
> The new highway segments near the small, free-standing urban agglomerations of Chatham, Gretna and Hurt/Altavista may serve as 'bypasses.' On the other hand, the urban area of Warrenton is much larger and is well within the economic sphere of the Washington-Baltimore New Urban Region. Warrenton is thus the focus of significant urban land-use development pressures. VDOT is now completing the fourth 'bypass' around Warrenton. Each bypass has fundamentally restructured the urban form and radically changed the land uses in the Warrenton area."

In SEIS Section 4.10, it is argued that the proposed bypass will only increase growth at access points. It is further argued in the SEIS that the lands in the vicinity of both termini are designated for growth by local government and are outside the reservoir watershed. Additionally, the SEIS points to all the effort made by local government to prevent any growth other than rural uses within the reservoir watershed. Therefore, the SEIS contends, local government would never permit more intense development within

the watershed and, therefore, whatever induced growth results from the bypass will not affect reservoir quality.

There are a number of problems with these arguments.

1. The southern termini will connect with Route 29 at a point which is 0.58-miles from the reservoir watershed. The intense commercial and residential development induced by existing Route 29, just north of this termini, extends 0.80 miles towards the reservoir. It is therefore logical to assume that the bypass could create pressure for intense development an equal distance from the southern access point, which would lap 0.2-miles into the reservoir watershed. This point was not addressed in the SEIS and represents a serious flaw in the SEIS analysis of the potential for induced growth within the reservoir watershed.

2. While the present bypass plans do not show any additional access points, the construction of future access is not inconceivable. In fact, four interchange projects are currently under construction in Virginia (http://virginiadot.org/projects/default.asp). Once the bypass is built there is nothing which would absolutely prevent additional access points from being created. The only step which would prevent the creation of new access points in the reservoir watershed, is to construct the bypass at least 0.8miles from the watershed perimeter.

2. In their analysis of the proposed bypass, Synergy Planning, Inc. stated:

> "Given the potential of locating a new tax base near an interchange, municipal governments in the Commonwealth of Virginia (and throughout the United States) almost always jump at the opportunity to provide incentives for 'First Realm' job-producing development (aka tax base). 'First Realm' job-producing development in turn produces 'Second Realm' service development and concentrated residential land uses and 'Third Realm' scatterization of low-density development to house and support the workers. This is clearly demonstrated in Goochland County along 1-64 east of the Charlottesville-Albemarle community and in Prince William County near U.S. Route 29 to the north."

In other words, bypass construction will create logical new locations for job-producing development. Tremendous pressure will be exerted on local government to upzone nearby vacant parcels, including those located in the reservoir watershed, from rural to classifications permitting job-producing development.

Induced growth within the reservoir watershed would mean the replacement of many acres of forest with impervious surfaces and lawn. This would dramatically increase pollution loads to the reservoir and Ivy Creek. It would also exacerbate construction phase sediment impacts and the loss of groundwater recharge. Furthermore, the increase in traffic within the watershed would also increase the probability of a hazardous material spill into the reservoir.

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