

June 5, 1998

Mr. Roberto Fonseca-Martinez
Federal Highway Administration
1504 Santa Rosa Road
Richmond, Virginia 23229

Colonel Robert H. Reardon, Jr.
District Engineer
Norfolk District, Corps of Engineers
Fort Norfolk, 803 Front Street
Norfolk, Virginia 23510-1096

Attn: Mr. Edward Sundra, FHWA
Mr. David Byrd, Corps

Re: Route 29 (Charlottesville Bypass) -
VDOT Project #: 6029-002-F22-
PE101

Gentlemen:

The U.S. Fish and Wildlife Service has reviewed project plans for the Virginia Department of Transportation (VDOT) project number 6029-002-F22-PE101. The proposed roadway would extend from Route 29, approximately 915 meters north of the South Fork of the Rivanna River, to the Route 29/250 Bypass near Bellfield School on the north side of Charlottesville, Virginia (Figure 1). The Service received a request for formal consultation from the Federal Highway Administration (FHWA) on April 10, 1998. This document represents the Service's biological opinion on the effects of that action on the James River spiny mussel (*Pleurobema collina*) in accordance with Section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.). A complete administrative record of this consultation is on file in this office.

I. CONSULTATION HISTORY

Consultation history regarding this project is provided in Appendix A.

II. BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

VDOT will be applying for a Federal permit and federal funds to construct a new, four-lane limited access roadway on new location, north of the City of Charlottesville in Albemarle County, Virginia with a variable width right-of-way ranging from 312-575 feet depending upon topography. It would be approximately 6.2 miles in length. At its southern terminus, the roadway would intersect the Route 29/250 Bypass in the vicinity of St. Anne's Bellfield School. It would reconnect with existing Route 29 North approximately 0.5 mile north of the South Fork of the Rivanna River. The alignment would be located on undeveloped land west of Mary Greer Elementary School and Jack Jouett Middle School (Figure 1). The typical section for this portion of the roadway would include two, 12-foot travel lanes in each direction with 8-foot graded shoulders. The roadway would have a grass median of variable width.

This segment of the roadway would cross so-called Tributaries K, L, and M, all of which are tributaries to Ivy Creek. The roadway would not cross Ivy Creek. The portion of the alignment crossing Tributary K would be on 2 bridges, each with a typical roadway section of 43 feet. Bridges would be approximately 49 feet apart at the Tributary K crossing; resulting in a total roadway cross section at this point of 134 feet. Construction within the vicinity of Tributary K, L, and M should be completed during one construction season. The year of construction has not been determined.

An alternate design for the crossing of Tributary K would consist of a fill section resulting in a right-of-way footprint of 318 to 466 feet. The footprint would be approximately 82 feet greater on the west side of the roadway crossing than the current design. This would involve placement of a 10-foot by 12-foot box culvert with a stepped gabion weir outfall.

At Tributary L, a 48-inch reinforced concrete circular pipe would be installed with a vertical drop structure near the outlet end of the pipe to reduce the exit velocity of the flow before it enters the existing channel. During construction, either a stabilized temporary channel or pipe diversion would be installed to maintain flow.

At the crossing of Tributary M, a 54-inch reinforced concrete circular pipe would be installed with a vertical drop structure near the outlet of the pipe to reduce the exit velocity of the flow. During construction, flow at this tributary would be maintained using a temporary diversion channel or diversion pipe.

Temporary diversion channel excavation would begin at the downstream end and proceed upstream, leaving plugs between the excavation and existing stream. Immediately following excavation, the channel would be stabilized with geotextile fabric. Both downstream and upstream connections with

the natural channel would be excavated under dry conditions. Upon completion of the diversion channel, the natural stream would be diverted into the temporary channel using a sandbag diversion with impervious sheeting placed first on the upstream end and then the downstream end. The pipe culvert would then be installed, the stream would be re-diverted into the culvert, and the temporary diversion channel would be backfilled and stabilized.

Regarding installation of diversion pipes, a pipe would be placed on one side of the existing stream bed and all flow would be diverted to it using sandbags and impervious sheeting. Little to no excavation would be required. The pipe culvert would then be installed.

RANGEWIDE STATUS OF THE JAMES RIVER SPINYMUSSEL

Life History - The James spiny mussel is a small, filter-feeding freshwater mussel with a maximum size of approximately 3 inches. It feeds on plankton collected from water passed over its mucous-lined gills, thereby consuming large quantities of micro-organisms and inert organic material from the water column (Fuller 1977).

The shell of the James spiny mussel is subrhomboid in juveniles with an obliquely subtruncated posterior, widely-spaced concentric striations, a shiny, straw-colored periostracum, and with or without spines on each valve. With growth the shell becomes more ovate or even arcuate, develops a rounded posterior and a brownish-black periostracum, and in most cases loses any spines it may have had. In the adult, the posterior ridge is also broad and rounded, hinge teeth are medium-sized but strong and completely developed, and nacre is whitish and with or without pink or bluish suffusions (Clarke and Neves 1984).

The James spiny mussel is considered to be a short-term brooder. Both spawning and glochidial (larval) release occur between approximately May 15 and July 31. Male mussels release sperm into the water column in the spring; the sperm is then taken in by females during siphoning. Fertilized eggs are retained in the gills, which serve as brood pouches for the developing glochidia. The glochidia eventually drop off the female's gills, enter the water column, and attach to an appropriate host fish. Known fish hosts include the bluehead chub (*Nocomis leptcephalus*), rosieside dace (*Clinostomus funduloides*), blacknose dace (*Rhinichthys atratulus*), mountain redbelly dace (*Phoxinus oreas*), rosefin shiner (*Notropis ardens*), satinfish shiner (*Notropis analostanus*), and stoneroller (*Campostoma anomalum*).

Status of the Species Within its Range - The James spiny mussel was listed as a federally endangered species on July 22, 1988 (50 CFR 17.11). It was historically widespread in the James River drainage. A.H. Clarke surveyed 73 potential and/or historic locations for the species, but was able to find the James spiny mussel at only six of these sites (Clarke and Neves 1984). Based on this extensive field sampling of potential and historic habitats, in addition to other more recent survey data, the species is now known to inhabit sites in 15 waterways in Albemarle, Alleghany, Amherst, Botetourt, and Craig County, Virginia and Monroe County, West Virginia (U.S. Fish and Wildlife Service 1990) (Neves

pers. comm. 1998, Beaty and Neves 1997, Stephenson 1997, Lipford 1991, Hove 1990).

Although it is probable that the decline of the James spiny mussel began with municipal growth and industrialization of cities and towns in the James River watershed, much of the decline has occurred in the last 30 years. The species remained widespread through the mid-1960s, but now appears to be extirpated from approximately 90% of its historic range, with survival documented only in a few creeks and small rivers in the upper James River drainage. This restricted distribution makes the species vulnerable to threats such as water quality perturbations, disease, and displacement by expanding populations of the exotic Asian clam (*Corbicula fluminea*) (U.S. Fish and Wildlife Service 1990).

Threats to the Species - The main causes for decline of this species are thought to be siltation, invasion of the Asian clam, impoundment of rivers, and water pollution. Siltation generated by road construction, agriculture, and forestry practices have contributed to water quality problems and the decline of the James spiny mussel. Suspended sediment can clog the gills of filter feeding mussels and eventually suffocate them. Asian clams often reach high population densities in freshwater streams and have been shown to remove between 40 to 60% of the phytoplankton from one stretch of river (Cohen et al. 1984). Impoundment construction changes the habitat from lotic to lentic conditions, which many mussel species cannot survive, and often causes increased downstream siltation and decreasing flow rates. Due to changes in flows below impoundments, water temperatures may be changed and host fish communities may be eliminated (Bates 1962). Water pollutants that impact mussel populations include such substances as fly ash and sulfuric acid (Cairns et al. 1971, Raleigh et al. 1978), acid mine drainage (Neel and Allen 1964), organic wastes (Schmidt 1982), insecticides (Salanki and Varanka 1978), and chlorinated effluent from sewage treatment plants (Goudreau 1988).

Recovery Goals and Accomplishments - To recover the James spiny mussel, existing populations must be maintained and viable populations must be restored to a significant portion of its historic range, resulting in ultimate removal of this species from the federal list of endangered and threatened species. This can be accomplished by (1) protecting and enhancing habitat containing *P. collina* populations and (2) establishing or expanding populations within rivers and river corridors that historically contained this species (U.S. Fish and Wildlife Service 1990).

Several accomplishments to further identify the status and initiate recovery of the species have occurred since the recovery plan (U.S. Fish and Wildlife Service 1990) for this species was published. They are listed below:

- o 1995: Survey and landowner education of James spiny mussel in the South Fork of Potts Creek, Monroe County, West Virginia. This effort was conducted by the U.S. Fish and Wildlife Service and Virginia Polytechnic Institute and State University.
- o 1993: Production of educational video, brochure, and poster entitled: Help Save America's Pearly Mussels. This material was funded by the U.S. Fish and Wildlife Service and

Virginia Polytechnic Institute and State University.

- o May, 1990: Release of the document entitled: Distribution and life history of the endangered James spiny mussel (Bivalvia: Unionidae) by Mark C. Hove of Virginia Polytechnic Institute and State University.
- o Ongoing research and production of mussels in the laboratory at Virginia Polytechnic Institute and State University for eventual augmentation of existing James spiny mussel populations and reintroduction of the species into potentially suitable habitat. Funding of this project has been provided by the U.S. Fish and Wildlife Service, Virginia Department of Game and Inland Fisheries, and Tennessee Wildlife Resources Agency.
- o Completion or action on recovery tasks 1-5 in the James River spiny mussel recovery plan (U.S. Fish and Wildlife Service 1990) since listing of this species as federally endangered.
- o Evaluation by Virginia Polytechnic Institute and State University of the effects of sedimentation on mussels and methods to augment or reintroduce populations.
- o Completion of numerous James River spiny mussel surveys, since the species was listed in 1988, to document its current distribution.

ENVIRONMENTAL BASELINE

Description of the Action Area - The action area for this biological opinion consists of all or portions of Tributaries K, L, and M and Ivy Creek from 200 meters (656 feet) upstream of the proposed roadway crossing of Tributary K, L, and M, to the confluence of Tributary K and Ivy Creek. The action area also includes the section of Ivy Creek 800 meters (2,625 feet) downstream of the confluence of Tributary K and Ivy Creek.

Status of the Species in the Action Area - In February of 1997, Mr. Philip H. Stevenson found one set of James River spiny mussel valves (i.e. a dead mussel) in Ivy Creek approximately 2,100 feet downstream from the proposed roadway crossing of Tributary L. Mr. Stevenson found a second set of valves in Ivy Creek, approximately 4,000 feet downstream of the Tributary L crossing. In July of 1997, Dr. Richard Neves of Virginia Polytechnic and State University conducted a survey of the action area and discovered one fresh dead specimen of James spiny mussel approximately 2,600 feet downstream of the proposed road crossing at Tributary L. In September and October of 1997, Philip Stevenson again surveyed the action area and found one live James River spiny mussel and one fresh dead shell approximately 3,800 feet and 5,000 feet respectively, downstream of the proposed road crossing at Tributary L, in Ivy Creek. Stevenson also found two live and two dead specimens of James spiny mussel approximately 210 feet upstream of the confluence of Tributary K and Ivy Creek, in Ivy

Creek. No James River spiny mussels were found in Tributary K, L, or M.

EFFECTS OF THE ACTION

Direct Effects - In evaluating the effects of the Federal action under consideration in this consultation, 50 CFR 402.2 and 402.14(g)(3) require the Service to evaluate the direct and indirect effects of the action on the species. Direct impacts to the James River spiny mussel associated with this project include the potential to kill and/or injure mussels during construction through use of heavy equipment. Mussels may be killed or stressed due to siltation of the stream from construction-related activity. As stated above, direct effects will occur downstream and slightly upstream due to siltation. Siltation will result in harm to mussels through impairing their ability to feed as discussed in Threats to the Species.

Indirect Effects - Indirect effects are defined as those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). Indirect effects to adult and larval mussels will result from siltation during rain events after construction. Removal and disturbance of vegetation during roadway construction will encourage erosion from the site thereby increasing turbidity in Tributary K, L, and M and Ivy Creek.

According to FHWA in their letter to the Service dated February 2, 1998, “. . . (interchanges will be constructed at the termini of the Route 29 Bypass with Routes 250 and 29),” and no other interchanges will be constructed on the alignment. The Service believes this roadway will encourage secondary roadway development at some time in the future. However, since the construction of interchanges in the action area vicinity has been removed from project plans, indirect effects of this roadway are not likely to occur within the near future. Therefore, the Service is unable to assess any indirect effects that may occur as a consequence of this roadway.

Cumulative Effects - Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Endangered Species Act. Cumulative effects likely to impact the James spiny mussel in the future include ongoing siltation and toxic inputs into the waterway from the roadway in the action area.

CONCLUSION

After reviewing the current status of the James spiny mussel throughout its range and in the action area, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the James spiny mussel and is not likely to destroy or adversely modify designated critical habitat, since no critical habitat exists for this species.

III. INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the ESA, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the federal agency or applicant. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

AMOUNT OR EXTENT OF TAKE

The Service anticipates that incidental take of James spinymussels may occur during construction in the form of harm of an unknown but small number of individuals due to siltation, and other water quality degradation, in that portion of Ivy Creek 800 meters downstream of its confluence with Tributary K.

REASONABLE AND PRUDENT MEASURES

The measures described below are nondiscretionary, and must be implemented by FHWA and the Corps of Engineers so that they become binding conditions of any permit issued to the applicant in order for the exemption in Section 7(o)(2) to apply. FHWA and the Corps have a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and the Corps (1) fail to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit and the federal funding agreement, and/or (2) fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse. The Service considers the following reasonable and prudent measures to be necessary and appropriate to minimize take of the James spinymussel:

- o Construction must be conducted during the time of year when impacts to the James spinymussel reproductive cycle

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- o Siltation of the water column of Tributary K, L, and M and Ivy Creek must be minimized to the maximum extent possible to avoid stress or death of James spiny mussels in Ivy Creek.
- o Activity within Tributary K, L, and M must be minimized to avoid siltation and physical injury to James spiny mussels.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of Section 9 of the Endangered Species Act, FHWA and the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline the required reporting/monitoring requirements. Monitoring is not required for this project because only a small number of the James spiny mussel are likely to be affected by the proposed project and the anticipated take is minimal. These terms and conditions are nondiscretionary.

1. No roadway construction of the specified roadway section (Figure 2), will occur during the time period of May 15 through July 31 of any year to protect water quality during egg fertilization and glochidial release of the James spiny mussel. Figure 2 depicts the specified roadway section and roadway shoulders located 100 feet (30 meters) northeast of

Tributary M to 98 feet southwest of Tributary K.

2. No mechanized equipment will be allowed in Tributary K, L, or M during May 15 through July 31 of any year. Any equipment operated from the adjacent shoreline will operate from a rock construction pad or be placed on a mat to reduce sedimentation into any of these tributaries.
3. All floodplain and wetland fill must be removed from the construction area immediately upon the termination of construction and resultant exposed soils will be stabilized and seeded immediately following disturbance.
4. Vegetation removal adjacent to the streambank will be minimized. Trees will be felled on land rather than into the waters of Tributary K, L, and M. To minimize potential runoff, stumps/root wads will not be removed after vegetation clearing.
5. Human traffic within the streams during construction will be minimized.
6. Sediment and erosion controls must be strictly adhered to in accordance with the Virginia Erosion and Sediment Control Handbook (1992). All exposed soils will be stabilized and seeded immediately following disturbance.
7. Care must be taken in handling any dead specimens of proposed or listed species that are found in the project area to preserve biological material in the best possible state. In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead specimens does not imply enforcement proceedings pursuant to the ESA. The reporting of dead specimens is required to enable the Service to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective. Upon locating a dead specimen, notify the Service at the address provided in Condition 8.
8. The applicant is required to notify the Service before initiation of construction and upon completion of the project at the address given below. All additional information to be sent to the Service should be sent to the following address:

Virginia Field Office
U.S. Fish and Wildlife Service
P.O. Box 99
6669 Short Lane
Gloucester, VA 23061
Phone (804) 693-6694
Fax (804) 693-9032

IV. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to further minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans and other recovery activities, or to develop information to benefit the species.

The riparian corridors of Ivy Creek and Tributary K in the action area are bordered by pastures without fencing to prevent livestock from entering these streams. Waters in the action area are polluted by these livestock operations through excess nutrient runoff, livestock waste deposition directly into the streams, erosion of soils exposed by livestock on stream banks, and physical disturbance and subsequent siltation of the stream bottom from livestock wading in the streams.

During a recent site visit, the Service representative, Mr. William Hester, observed horses and mules walking in Tributary K. Hester also observed and obtained photographs of highly erosive stream banks in the action area caused by livestock activity. These photos are available from this office upon request. Dr. Richard Neves (pers. comm. 1998) recently reported that during a mussel survey in the action area in lower Tributary K, a cow and her calf were found in the stream. One mussel survey report (Beaty and Neves 1997), noted that the lower portion of the survey zone in Ivy Creek, “. . . is marginally suited for headwater mussel species, but current cattle impacts have created conditions unsuitable for mollusks.”

It is likely that the small James River spiny mussel population of Ivy Creek could increase in abundance if livestock were fenced out of the stream and 30-100 foot vegetated riparian buffers were established on Ivy Creek and Tributary K, and a small portion of Tributary M. In addition to keeping livestock out of these waterways, fenced and vegetated riparian buffers could be very effective at removing substantial amounts of excess nutrients and sediments from runoff. Buffer establishment would preclude the chance for direct killing of the James spiny mussel due to being crushed by livestock wading in Ivy Creek. Furthermore, vegetated riparian corridors provide high quality habitat for wildlife such as reptiles and amphibians, migratory landbirds, waterfowl, and mammals.

In order to improve water quality and habitat for the endangered James spiny mussel, the Service recommends that FHWA or VDOT provide funding for riparian restoration adjacent to the action area along Ivy Creek and Tributary K. Various federal and state agencies, as well as private consulting firms, could assist with riparian restoration in this area provided that funding was made available. Many options exist for obtaining access to these lands, and obtaining permanent conservation easements from landowners is generally the most effective.

This office, through our Partners for Fish and Wildlife Program, routinely conducts riparian restoration on private lands in Virginia to improve water quality. If funds were made available, we would be willing to provide technical assistance and administrative oversight to complete such a project. Please contact this office if we can provide further assistance with this initiative.

In order for the Service to be kept informed of actions that minimize or avoid adverse effects or benefit listed species or their habitats, the Service requests notification of the implementation of any of these conservation recommendations by FHWA, the Corps, and/or VDOT.

V. REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action outlined in the FHWA request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If this opinion does not contain national security or confidential business information, the Service will provide copies to the appropriate state natural resource agencies ten business days after the date of this opinion.

The Service appreciates the opportunity to work with FHWA and the Corps in fulfilling our mutual responsibilities under the Endangered Species Act. Please contact William Hester of this office at (804) 693-6694, ext. 134 if you require additional information or wish to discuss this document further.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

cc: Mr. Ricky Woody

VDOT Headquarters, Richmond, VA

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