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FINAL REPORT

**A Survey for Freshwater Mussel Fauna
at the Proposed Route 3 (East-West Connector)
Crossing of Hazel Run, Fredericksburg, Virginia**

Prepared By

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This Report needs minor revisions
BJ

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SURVEY PROCEDURES

Hazel Run, within the city limits of Fredericksburg, was surveyed for mussels by biologists (Michaelson, Zeik, O'Connell, Neves) with the Virginia Cooperative Fish and Wildlife Research Unit. A preliminary survey of four sites was conducted on April 6 and 11, to include the following crossings: Route 1 bypass and Route 1 business. (Note: Routes 1299 and 639 are located in Spotsylvania County upstream of the Route 1 bypass and are outside the area depicted on the attached cutout from the topographic map). These sites were surveyed by M. O'Connell with water scope. On the afternoon of May 15th and morning of May 16th, we surveyed that segment of the stream to be directly affected by the Route 3 East-West Connector, which included two channel relocations and an eventual bridge over Hazel Run (upstream of the existing Route 1 business route bridge). The surveyed reach of Hazel Run is situated between the railroad overpass (*), approximately 1.0 km upstream of its confluence with the Rappahannock River, and the proposed Route 3 crossing (west of the National Cemetery; see attached map). The length of stream surveyed was roughly 1.3 km. The location and plans for the roadway were provided by VDOT. We also met with Tom Slaydon, City Engineer for Fredericksburg, to obtain points of access to this stream reach.

Survey procedures and sampling consisted of wading and snorkeling the stream within the designated reach and collecting or identifying all freshwater mussels or valves. Approximately 24 man-hours of survey time were spent in Hazel Run. In addition, the stream banks and margins were checked for shall material. Hazel Run ranged from 5 to 10 m in width and was low and clear during our survey. Water temperature on May 15 was 19.5 C. Distances were determined by either topographic map, aerial photograph, or portable rangefinder.

RESULTS AND DISCUSSION

We found no live or relic valves of freshwater mussels, or other aquatic mollusks, in the roughly 1.3 km of stream surveyed. The stream does not support mollusks at present, due likely to several factors. Mr. Slaydon informed us that soils and bedrock in the upper watershed are relatively impervious, resulting in flash conditions during storm events. The scouring and instability of the stream bed was readily apparent. Sand and gravel/cobble bars were common, and most cobbles were rounded from tumbling and transport during high flows. There were few boulders in the stream to provide stability for the substratum. This shifting and unstable stream bottom provides poor habitat for both bivalves and gastropods.

Another factor likely contributing to the absence of mollusks is anthropogenic degradation of the stream. Silt was common along most of the stream. In proximity to the surveyed reach were the following businesses: Agri-Service Inc., Hicks Salvage, Norfleet Products, Mike's Tire Center, North American Die Casting Corporation, a lumber yard, and other smaller firms. As judged by accumulated debris in the stream, several of these companies have disposed of waste material here. We also noted the smell of sewage at the railroad aqueduct and the presence of pipes in or along the stream. It is

likely that water quality in Hazel Run is substandard during some of the year. Historically, the stream served as a conduit for the waste of a Sylvania Plant and other industries in Fredericksburg (Visitor Center employee, pers. comm.).

The total fauna in Hazel Run is of limited abundance and diversity. A beaver and its dam occurs roughly 300 m below the existing Route 1 business bridge. Other vertebrates that we observed were 4 adult lampreys (Petromyzon marinus), schools of cyprinid larvae, eelers, tadpoles, young-of-year centrarchids, and 1 watersnake. Most orders of aquatic insects and crayfish were not found in the stream. My biological assessment is that this stream is marginally suitable for even the most tolerant of aquatic fauna.

CONCLUSION

The proposed East-West Connector for Route 3 will likely have no adverse impact on the fauna of Hazel Run. This degraded stream is of minimal biological value and has lost most of its biotic integrity from previous impacts in the watershed. Standard BMP's for erosion and silt control are recommended to prevent further degradation of the stream.

ACKNOWLEDGEMENTS

Bill Beuter, VDOT, provided the aerial photograph and project documents to conduct the survey. Dave Michaelson and Travis Zeik assisted with the survey on May 15th and 16th, and Martin O'Connell searched other sites on the stream for mollusks in April.

