



## **Economic Impact Analysis Virginia Department of Planning and Budget**

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### **9 VAC 25-260, §§350 & 400 - Water Quality Standards, State Water Control Board April 22, 1999**

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The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with Section 9-6.14:7.1.G of the Administrative Process Act and Executive Order Number 25 (98). Section 9-6.14:7.1.G requires that such economic impact analyses include, but need not be limited to, the projected number of businesses or other entities to whom the regulation would apply, the identity of any localities and types of businesses or other entities particularly affected, the projected number of persons and employment positions to be affected, the projected costs to affected businesses or entities to implement or comply with the regulation, and the impact on the use and value of private property. The analysis presented below represents DPB's best estimate of these economic impacts.

### **Summary of the Proposed Regulation**

The proposed regulation amends the Commonwealth's Water Quality Standards Regulation to designate Stony Creek and its tributaries in Shenandoah County as a nutrient enriched water. When a water body is designated as nutrient enriched, a companion regulation [the Board's policy for Nutrient Enriched Waters (9 VAC 25-40-10)] requires that certain municipal and industrial dischargers with a design flow of 1.0 MGD or greater, and whose effluents contain phosphorus, maintain a monthly average total phosphorus concentrations of 2 milligrams per liter or less. The only point source discharger affected by this requirement would be Rocco Farm Foods, near Edinburg, which has a design flow of 1.3 MGD.

### **Estimated Economic Impact**

As discussed above, a consequence of this regulation is that dischargers into Stony Creek with a design flow of 1.0 MGD must install a phosphorus removal system to control

phosphorous concentrations in its effluent. Currently, Rocco Farm Foods would be the only point source discharger that would be subject to this requirement. There are two approaches that Rocco Farm Foods can take to satisfy the regulation. It could redesign its flow operations so that the design flow would be less than 1.0 MGD, or it could install a phosphorus removal system.

The requirement to install phosphorus removal systems only applies to sources with design flow greater than 1.0 MGD. Rocco Farm Foods currently has a design flow of 1.3 MGD. It might be possible for Rocco to redesign its processes to reduce its design flow to below 1.0 MGD. If Rocco could do this, it would no longer be subject to the requirement to install phosphorus removal systems. However, while this is theoretically possible, discussions with Tim Moppin, in charge of environmental permitting for Rocco Farm Foods, suggest that it would be very difficult for Rocco to reduce its design flow to under 1.0 MGD, and therefore that it would not be likely that they would do so (Conversation with Moppin, 4-16-99). This implies that Rocco expects that the cost of reducing its design flow to exceed the cost of the installation of the phosphorus removal systems.

Instead of reducing its design flow to under 1.0 MGD, it is likely that, due to the requirements arising because of this regulation, Rocco Farm Foods will install a phosphorus removal system. We therefore need to examine the costs and benefits arising from this installation. The costs associated with this installation are somewhat uncertain, because very few phosphorus-specific removal systems have been developed. Rocco Farm Foods is working with Professor Clifford Randall of Virginia Tech to develop a workable system for their facility. The exact cost of this system is uncertain, because it is early in its development. However, one rough estimate is that installation of this system will cost two million dollars, according to Tim Moppin (Conversation with Moppin, 4-16-99). Another rough estimate from John Reid, a consulting engineer located in Fredericksburg, given to Bob Wolfe of Rocco, was two and a half million dollars (Email from Clifford Randall). Other costs could include the continuing costs of operating this system, and the cost of enforcing the permit. Rocco does not expect there to be substantial continuing costs of operation (Conversation with Bob Wolfe, Rocco Farms, 4-26-99). Also, the Department of Environmental quality does not expect that any extra resources will be necessary to enforce this permit (Conversation with Jean Gregory, 4-16-99). Thus, the costs of this regulation appear to be primarily the costs of installing the phosphorus removal system.

On the other hand, there will be many benefits from this installation, but these benefits are very difficult to quantify. After installation of the removal system, Rocco Farm Foods expects discharges of phosphorus to be significantly reduced (Conversation with Moppin, 4-16-99). This improvement in water quality will have several beneficial effects.

The water quality of Stony Creek has a significant impact on fish and wildlife using the Creek's water. The wood turtle, which is listed as threatened by the Commonwealth of Virginia, has been documented near Stony Creek. Improvements in water quality are expected to be beneficial to this species (Comment by Department of Conservation and Recreation, from Public Comments on this Regulation, 11-20-98). Also, a trout fishery is located near the discharge point of Rocco Farm Foods. Reducing the level of phosphorus in Stony Creek will lead to higher levels of dissolved oxygen which will greatly benefit this trout fishery.

There are also aesthetic and recreational benefits from reducing phosphorus discharges. Stony Creek itself has aesthetically pleasing clear water. To keep this water clear, reductions in phosphorus levels are necessary to prevent significant increases in algae. This region offers substantial opportunities for tourism and recreation. Maintenance of the water quality of Stony Creek is important to these opportunities. Additionally, Stony Creek flows into the North Fork of the Shenandoah River where there is a significant amount of recreational rafting. The economic value of recreational use of the North Fork of the Shenandoah would probably fall if water quality were not maintained.

A further advantage arises because the waters from Stony Creek eventually reach the Chesapeake Bay. Most of this phosphorus will eventually end up in the Bay. Reducing phosphorus discharges into Stony Creek can therefore reduce the amount of phosphorus entering the Bay, producing some economic benefits from improved water quality there.

While all of these are advantages to the installation of the phosphorus removal system by Rocco Farm Foods, it would be difficult to establish reliable monetary estimates of the economic value of these benefits. An investigation of these benefits would examine the following: the value of improving the likelihood of survival of the wood turtle in this region; the value of improved trout size and yield at the trout fishery; the value placed on the cleanliness of Stony Creek by residents of the Commonwealth; additional profits for rafting and tourism

establishments, arising due to the improvement of the water quality of Stony Creek; and the cost of the next best alternative to reducing the same amount of phosphorus discharges into the Chesapeake Bay. These are all significant values, but they are also difficult to quantify. The sum of these values could then be compared to the cost of installing and operating the removal system. Without further study, we cannot make any conclusions at this time about whether the redesignation of Stony Creek will have a positive or negative net economic value for Virginia.

## **Businesses and Entities Affected**

This regulation will directly affect Rocco Farm Foods. Businesses indirectly affected include a trout fishery located nearby the Rocco discharge point, and operators of ecotourism and rafting in the area, and along the North Fork of the Shenandoah River.

## **Localities Particularly Affected**

The Rocco Farm Foods facility is near the town of Edinburg. This locality will be principally affected by this regulation.

## **Projected Impact on Employment**

The proposed regulation is not expected to have any affect on employment (Conversation with Bob Wolfe, Rocco Farms, 4-26-99).

## **Effects on the Use and Value of Private Property**

This regulation will lead to the installation of a costly phosphorus removal system. However, once this is installed, it is not expected to have any substantial negative effect on the value of Rocco Foods. Assuming that there are recreational and wildlife benefits associated with the redesignation, we would expect a small increase in the value of downstream riparian property.

## **Summary**

The proposed regulation designates Stony Creek and its tributaries in Shenandoah County as nutrient enriched water. A consequence of this regulation is that municipal and industrial dischargers with a design flow of 1.0 MGD or greater must maintain a monthly average total

phosphorus concentrations of 2 milligrams per liter or less. Because of this, Rocco Farm Foods, which has a design flow of 1.3 MGD, must either reduce its design flow below 1.0 MGD or install a phosphorus removal system. It is expected that Rocco will install a phosphorus removal system.

While it is currently unclear exactly what phosphorus removal system will be installed, it is expected that the cost of whatever system is installed will be approximately two million dollars. There will be a number of benefits resulting from the decreased discharges of phosphorus. These benefits include protection of fish and wildlife nearby, improvement of the aesthetic quality of the river, maintenance of recreational opportunities including rafting, and a reduction of phosphorus discharges into the Chesapeake Bay. It is difficult to assign a monetary value to any of these benefits, but it is expected that these benefits will be substantial. We cannot, however, make any conclusion about the net economic impact of the change.