

**Department of Agriculture, Trade and Consumer Protection  
Division of Agricultural Development  
Agricultural Development & Diversification Program (ADD)**

**Grant Project Final Report**

Contract Number: 15051

Grant Project Title: Aquaculture Discharge Best Management Practices

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## Final Grant Report

### Aquaculture best management practices Rushing Waters Fisheries

The original intent of this project was to help develop guidelines in aquaculture to reduce waste when growing fish. Our discharge has always been a concern as a user of a natural resource. We have always taken great pride in our use and return of water. We have been monitored monthly since 1996 by the DNR and have a WPDES permit with the state. This project was to further help reduce any wastes that might be discharged into waters of the state from our operation and to be an example to other operations of techniques that might be used.

The project was changed from the original format to better fit our farm and increase the impact on the discharge.

The funds from the grant helped us in starting our project that would be otherwise too expensive for a small producer. The funds allowed us to spend money on our discharge issue and try to better our effluent.

The successes we encountered were many. First realizing that there is help out there and we are not an island by ourselves was a great discovery (many other farms need to find this out). Talking with consultants such as Harry Westers and Goudy Research, we learned more ways to reduce discharge and help lower our environmental impact. Finally, overall we improved our discharge which was the main goal.

The biggest challenge in the project was when our main research company (Goudy Research) dissolved. They ended the company in the middle of our project and we had a hard time continuing the project as planned.

Rushing Waters Fisheries has been a leader in the education of the public in regards to aquaculture. We have between 1-4 tours weekly during the summer and a big part of each tour is the grant project. We link together the water resource with the fish and end the tour with our discharge project. At the WAA conference in 2001, we gave a presentation on the project. We are also hosting the WAA annual picnic this year where people will come from around the state to tour Rushing Waters.

The project did not meet our original expectations but met others that we did not realize. The project started as a NH<sub>3</sub> reduction effort for our discharge, and ended as a project showing ways to cut down on TSS, BOD, and NH<sub>3</sub>. We are still working on a new potential agricultural product. We now have the ability to harvest our fish manure and are looking at a market for it. We learned a great deal from the project and always feel that there is more to learn. We plan to continue the project and adding new ideas. The grant affected our business by reducing our effluent rates and saving us money. We also gained by increasing our discharge quality and providing us the ability to trap solids from the ponds.

The Wisconsin family farm can benefit by using these same tactics on their ponds. Every farm is different but the chemistry of water is the same. A settling basin at the end of the farm or field is a good way to catch solids and reduce TSS, BOD, and NH<sub>3</sub> from leaving the farm. As future agricultural laws tighten, we will have to resort to new technology and the use of these studies. This project should help down the road as more farmers look to improve their discharge water quality.

The information from the project will be available to anybody interested and they will be able to also visit the farm to see the project in motion. We have always had an open door policy and will continue to do so in the future to help educate people in aquaculture.

### **Analysis:**

Two graphs are included with this report. The first shows the farm population verses pounds of food fed per month and the second shows our discharge readings for TSS and NH<sub>3</sub>-.

Population and food: This graph shows the increase in standing crop on the farm over the period of the grant study and also shows the amount of food fed per month. This helps us know the farm background when interpreting the data. The farm is not a constant and these changes need to be realized in the analysis. This graph shows an increase in both standing crop and food fed through the last two years.

Discharge parameters: This graph shows our discharge levels throughout the study for ammonia and total dissolved solids. By comparing these two graphs, we can get an idea of the overall impact the grant project had on the farm. As the feed consumption and standing crop rose on the farm, the discharge parameters stayed relatively the same. The TSS always bounces around a bit due to weather but the ammonia levels stayed low and were reported lower than at the start of the grant project.

Over the course of the project, our standing crop rose about 17%. During that same time period, our ammonia levels stayed the same and even lowered a little. This shows the positive impact of the grant project. We believe we can keep this working in our favor over the course of the next couple of years. We will also be adding more retention ponds and clean out ditches to capture more waste from the discharge allowing us to grow more trout and keep our discharge at a low impact level.

### **Conclusion:**

We used a few different ideas in this project, settling ponds, weir structures and aeration and each had a different impact. The settling ponds were by far the greatest help in reducing our effluent levels. Aeration helped to reduce NH<sub>3</sub> and help increase our DO. The weir structures for capturing waste are still being looked at. They work great to keep the materials out of the stream but are hard to empty.

In starting this project we intended to improve our effluent levels and did so. These techniques can be used on any other farm or operation to do the same. By networking with other farmers and people in the field you can find all the help you need to undertake a project like this. The big picture in the end is that as long as the DNR realizes that aquaculture plays a major role in feeding our population, they will allow us to operate under safe and clean guidelines.