



## Mount Joy Borough Authority Nutrient Trading Project

ARRO helps pioneer first nutrient trade in the state for local borough authority.

### Background

The Chesapeake Bay Tributary Strategy allows for nutrient credit trading to aid wastewater treatment plants (WWTPs) in achieving compliance with the loading limits placed on facilities. Through this program, a source may implement voluntary nutrient reductions for purposes of generating nutrient credits. The credits produced can then be sold to another party to be used to help achieve compliance with regulatory limits on an annual basis.

### Challenges

In 2005, Mount Joy Borough Authority (MJBA) contracted with ARRO to:

- Evaluate alternatives for compliance with proposed nutrient loading limits for its WWTP
- Study evaluated upgrades to the existing facilities and nutrient trading options

Based on the Pennsylvania Department of Environmental Protection's (PA DEP's) nutrient loading criteria of 6-mg/l total nitrogen (TN) and 0.8-mg/l total phosphorus (TP) at the WWTP's design flow of 1.53 MGD, the TN and TP loading limits for the plant were expected to be 27,945 lbs. and 3,726 lbs., respectively. Upon review of the current TN concentrations in the WWTP's effluent, it became apparent that the existing treatment processes would not be capable of meeting the nitrogen loading limits.

### The Solution

In the study, ARRO concluded that nutrient credit trading was the most cost-effective method for MJBA to meet compliance. Other solutions included:

- A 76 percent savings to the ratepayer over plant upgrades
- ARRO assisted MJBA in discussions with Brubaker Farms of Lancaster County to purchase the necessary credits
- ARRO submitted a Nutrient Credit Trade Proposal to PA DEP on behalf of MJBA

### PROJECT:

Mount Joy Borough Authority  
Nutrient Trading Project

### CHALLENGE:

The Chesapeake Bay Tributary Strategy was developed in response to the signing of the Chesapeake 2000 Agreement. The strategy calls for a reduction in nutrient and sediment loadings so that the bay may be removed from the Federal Clean Water Act's list of impaired waters.

### SOLUTION:

The proposal provided calculations for the implementation of continuous no-till practices on 930 acres of farmland. PA DEP granted approval of the trade proposal, allowing MJBA to move forward with the actual nutrient credit trade. This was the first Nutrient Trade Proposal in the state.

## The Results

In the case of MJBA, the purchase of nutrient credits saved rate payers a minimum of \$12 per lb. of nitrogen from the cost of treatment plant upgrades and allowed for a cost-effective solution for achieving compliance.

As the first nutrient credit trade in the state, this project serves as a guide for municipalities and municipal authorities in need of an alternative to facility upgrades for compliance with the Chesapeake Bay Tributary Strategy.

## In Their Own Words

**"GROUPS LIKE MOUNT JOY ARE LEARNING FIRSTHAND HOW EFFECTIVE NUTRIENT TRADING CAN BE IN MEETING ENVIRONMENTAL GOALS AT LESS EXPENSE THAN TRADITIONAL COMMAND AND CONTROL APPROACHES. MOUNT JOY'S VISION IS A TRUE SHOWCASE FOR MANY OTHER LOCAL COMMUNITIES."**

— JOHN HINES

EXECUTIVE DIRECTOR – WATER PLANNING OFFICE  
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