



A partnership project for water resource restoration in Greene County

## 2007 Section 319(h) Nonpoint Source Program Grant Project

# Hartman Wetland & Stream Restoration Project

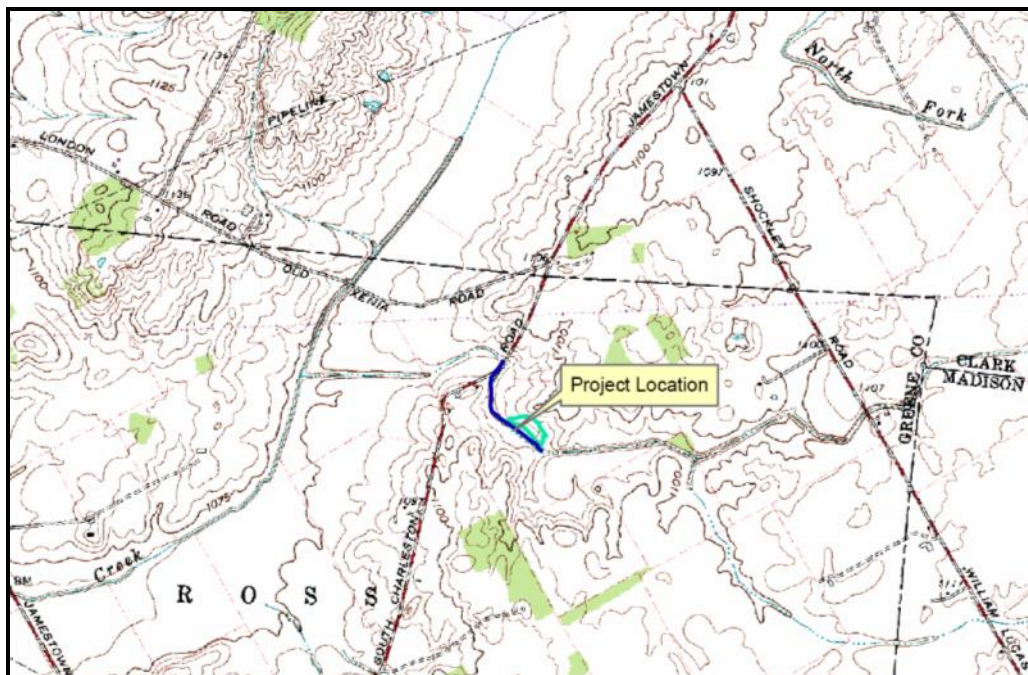
### Project Background

Greene County received grant funding from the Ohio EPA Section 319(h) Nonpoint Source Program in 2007 to implement a stream and wetland restoration project on an unnamed tributary to North Fork Massies Creek (NFMC), located in northeast Greene County.

The grant award was for \$410,755 with a local project match of \$273,900. The grant will be used to complete the restoration of a 1,570 linear foot segment of stream and an adjacent 2-acre wetland, located on the Cripple Creek Farm on South Charleston Road, outside of Cedarville. The local match will provide for the restoration of an additional 2,000 linear feet on NFMC. Funds will be utilized for construction, engineering, monitoring and education and outreach activities.

The project will restore riparian cover, stabilize the stream banks, and minimize erosion on the currently channelized stream as well as establish a 2-acre, seasonally-flooded emergent wetland. The stream and wetland restoration is expected to result in significantly improved habitat and water quality. Long-term protection of the site will be provided through a conservation easement.

This project is being implemented in concert with the "North Fork Massies Creek Stream Restoration Project" which is funded through the Ohio EPA Water Resource Restoration Sponsorship Program (WRRSP) and is part of Greene County's overall effort toward water resource restoration and improvements in the North Fork Massies Creek watershed.





Left to right: View of project site; agricultural field to be restored to wetland; existing stream channel to be restored

## Project Team

The project team is composed of staff from the [Greene County Sanitary Engineering Department](#), the [Greene Soil and Water Conservation District](#), and the consultant team from [Malcolm Pirnie, Inc.](#) In addition, the project has been made possible through the cooperation of the local landowner. Project funding, technical review and approval is provided by the [Ohio EPA Division of Surface Water Nonpoint Source Program](#).

## Conceptual Plan

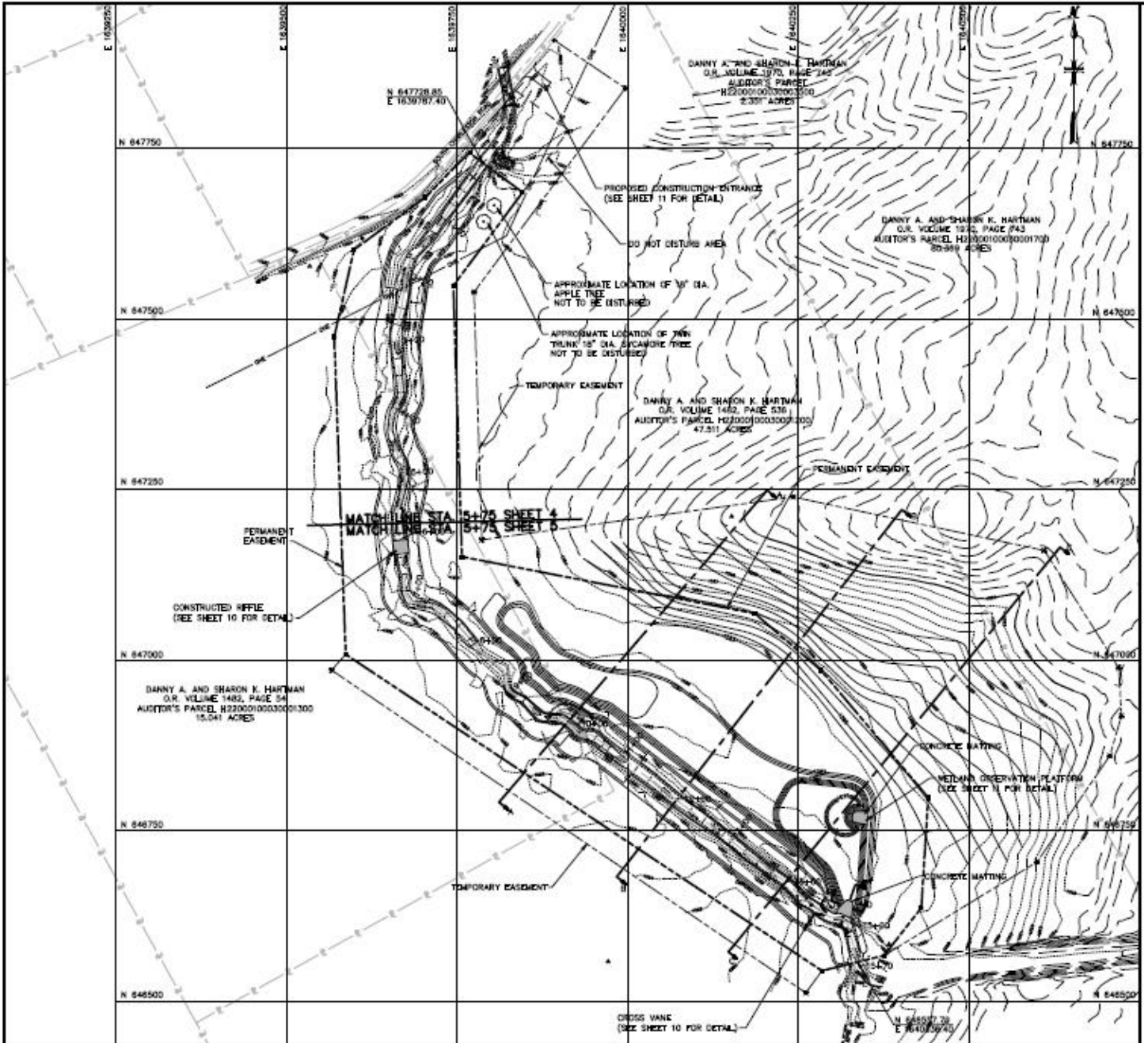
The restoration techniques employed on the NFMC tributary will focus on creating a stream corridor that has the dimension, pattern, and profile necessary to create a stable channel that maintains the sediment load appropriately. Natural channel design techniques will include bank stabilization, creation of riffle and pool habitats, installation of flow deflectors (cross vanes) and establishment of vegetated riparian buffers.

For the wetland, the primary goal of the design will be to reintroduce hydrology to the proposed area and establish wetland vegetation. The tributary will provide the primary source of hydrology to the wetland through modification of small portions of the streambank to allow inputs/overflows during high stream flow conditions. These modifications will reconnect the floodplain to the stream during periods of high flow, allowing for restoration of the area as a floodplain wetland.

The wetland and riparian buffers will be restored and planted with native, non-invasive herbaceous, shrub and tree species. All disturbed areas will be planted with native riparian and/or wetland seed mixes. Shrub and tree species will include native woody species such as:

- Pussy willow (*Salix discolor*)
- American cranberry (*Viburnum trilobum*)
- Eastern redbud (*Cercis canadensis*)
- Flowering dogwood (*Cornus florida*)
- Canadian serviceberry (*Amelanchier canadensis*)
- Downy serviceberry (*Amelanchier arborea*)
- Nannyberry (*Viburnum lentago*)
- Arrowwood viburnum (*Viburnum dentatum*)
- Black chokeberry (*Aronia melanocarpa*)
- Elderberry (*Sambucus canadensis*)
- Red maple (*Acer rubrum*)
- American sycamore (*Platanus occidentalis*)
- Swamp white oak (*Quercus bicolor*)
- River birch (*Betula nigra*)
- Northern red oak (*Quercus rubra*)
- Shagbark hickory (*Carya orata*)
- Black gum (*Nyssa sylvatica*)
- Sweet gum (*Liquidambar styraciflua*)
- Pin oak (*Quercus palustris*)
- Witchhazel (*Hamamelis virginiana*)

# Final Detailed Design:



A sheet from the project bid set is shown above, including the location and layout of the wetland, layout of the restored stream channel, location of constructed riffles and cross vanes, and associated temporary and permanent conservation easement areas.

## Preservation & Maintenance

Upon completion of construction, the restored wetland and stream will be preserved in perpetuity via a conservation easement to be held by Greene County Sanitary Engineering. The conservation easement will ensure that the project area is permanently protected by prohibiting certain activities or land uses within the designated area, while allowing the current landowner to retain ownership of the land.

While the project design is intended to require minimal maintenance, the project area will be monitored annually by the Greene Soil & Water Conservation District under the [Ditch Maintenance Program](#). Maintenance will be limited to the control of invasive vegetation, repair of significant bank erosion, repair of drain tile outlets, and removal of any blockages within the stream channel. This maintenance will ensure the drainage needs of the area are protected and the project continues to provide its intended benefits.



*Maintenance, such as the removal of large fallen trees impeding stream flow, will be performed via the Greene County Ditch Maintenance Program.*

## Project Schedule and Progress to Date

Since funding was awarded in 2007, the following tasks have been completed in support of the Hartman 319 Project:

- Field Assessment and Water Budget
- Site Survey and Conceptual Design
- U.S. Army Corps of Engineers Pre-Construction Notification (PCN)
- Quality Assurance Project Plan and Pre-Construction Monitoring
- Detailed Design Documents
- Acquisition and Recording of Conservation Easements (8.6 acres)
- Construction Bid Advertised in September 2008
- Project Awarded to Pul-Mac Solutions, LLC (South Charleston, OH)
- Project Construction—began May 2009 and substantially completed as of July 1, 2009



## NEW! Project Update April 2010

The restoration construction reached substantial completion as of July 1, 2009. The construction, which began in May 2009, included the following activities:

- The stream bench was graded on either side, seeded and stabilized with erosion control fabric.
- The wetland and wetland buffer areas were excavated, graded and stabilized with erosion control fabric and straw.
- A cross vane (i.e. an in-stream rock structure) was set in the stream to provide grade control and help direct water into the wetland feeder swale.
- The entire area was planted with native trees, shrubs, and wetland herbaceous plugs and seeded with a native seed mix.

The stream now functions to provide hydrology to the adjacent wetland which enhances habitat and provides flood storage capacity. Additional tree plantings are planned for Spring 2010. Progress of vegetation growth will be monitored through June 2010 to ensure that the restored system reaches its full potential.

A site tour to showcase the completed project will be held May 14, 2010 at 1:00 pm. Details are available at <http://www.co.greene.oh.us/saneng/>. Please continue to check back to this page for project updates and additional post-construction photos as new information becomes available.

**NEW! Updated Project Photos (Before and After)**

**BEFORE**



**AFTER**



*Before and after, top to bottom: (1) Pre-construction view of agricultural field (June 2008); (2) post-construction view of constructed wetland; (3) pre-construction view of stream channel with sediment deposition and dominance of reed canary grass, a non-native and invasive species in Ohio (June 2008); (4) post-construction view of cross vane structure (Aug 2009); (5) pre-construction view of vertical and eroding stream banks with no riparian buffer (Oct 2007); (6) post-construction view of restored stream channel and floodplain bench vegetated with native grasses and wildflowers (July 2009).*

## Contact Information

For more information about this project, please contact:



Don Leeds, Greene Soil and Water Conservation District  
(937) 372-4478 or [don.leeds@oh.nacdnet.net](mailto:don.leeds@oh.nacdnet.net)



Kristen Risch, Malcolm Pirnie, Inc.  
(614) 888-4953 or [krisch@pirnie.com](mailto:krisch@pirnie.com)

***Disclaimer:** This product or publication was financed in part of totally through a grant from the Ohio Environmental Protection Agency and the United States Environmental Protection Agency, under the provisions of Section 319(h) of the Clean Water Act. The contents and views, including any opinions, findings, or conclusions or recommendation, contained in this publication are those of the authors and have not been subject to any U.S. EPA or Ohio EPA peer or administrative review and may not necessarily reflect the views of either Agency, and no official endorsement should be inferred.*

Last Updated: April 27, 2010