
Appendix D

Tributary to Broad Run (250) Subwatershed Project Conceptual Design Narratives

Project: Agricultural Headwater Wetland / Stream Protection

Watershed:	Broad Run
Subwatershed Name:	Kettle Run and Tributaries to Broad Run within Rural Crescent
Subwatershed Code:	250 and 272
Site ID:	250-1, 250-2, 272-3
County Facility ID:	N/A
Project Type:	Watershed Planning
Drainage Area:	NA
GPIN/Owner:	NA
Neighborhood/Address:	NA
GPS Coordinates:	NA
Stream Ranking:	NA

Location: The headwater wetlands and streams are located throughout the rural subwatersheds of Broad Run.

Problem Description: Site 272-3 and 250-2 are typical of headwater stream/wetland sites within the agricultural areas of Broad Run watershed. These wetland systems are located at the head of small stream systems, and provide important ecological functions to the entire downstream system. The County's current GIS layers do not adequately identify these wetlands. Some of these headwater wetlands are indicated in the County GIS as a stream channel however these wetlands lack a well-defined stream channel. Without additional protection these wetland are subject to drainage, agricultural runoff, and mechanical disturbance.

Project Description: The County could identify the largest and most intact headwater wetlands within agricultural areas to be protected through agricultural BMPs such as filter strips and buffer zones. These efforts are most needed for headwater wetlands located in active croplands. These wetlands could be identified using exiting GIS data sources such as aerial photography, stream layer, and hydric soils.

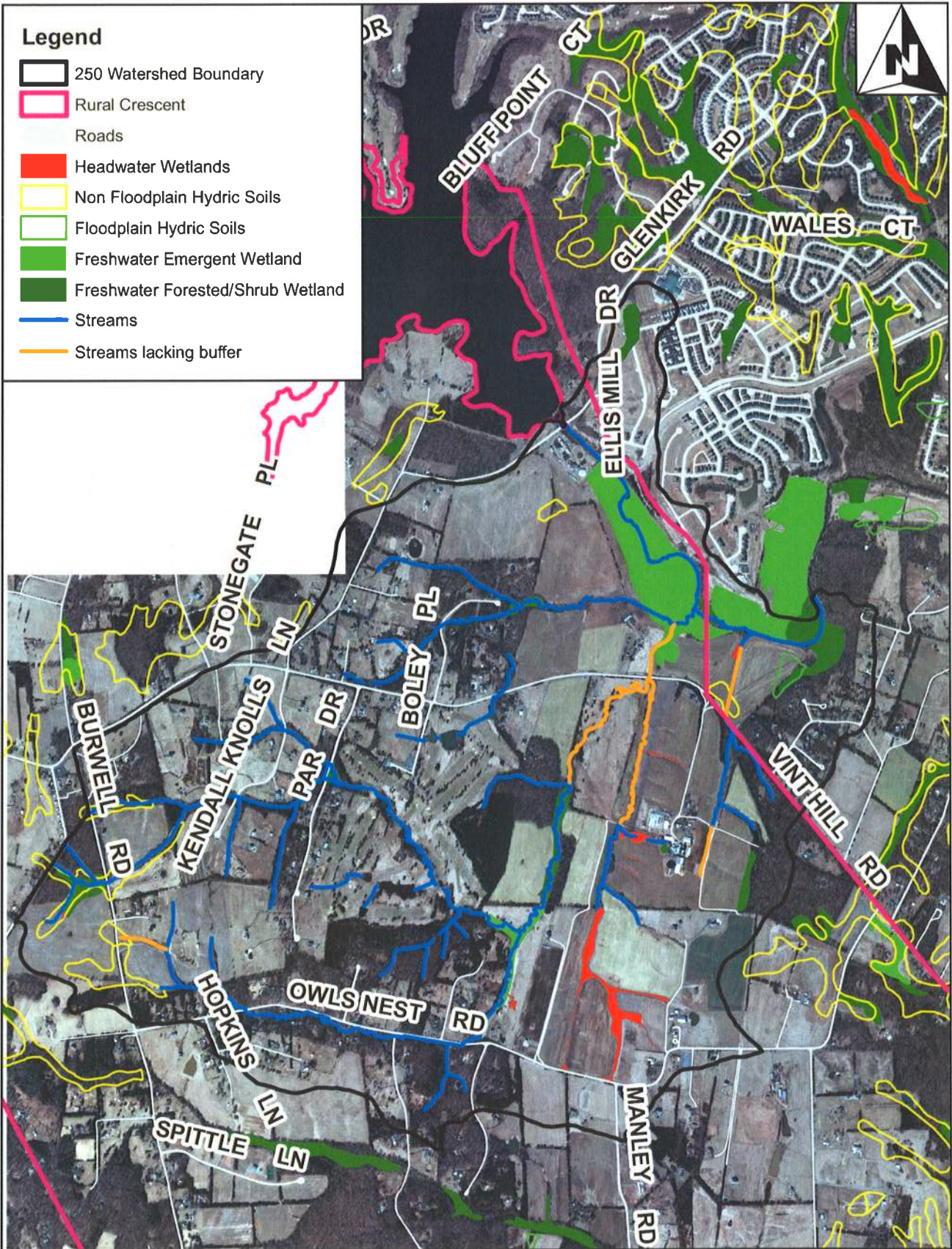
Within Subwatershed 272, there are approximately 23 acres of headwater wetlands within agricultural lands. These wetlands were identified based on aerial photography and site visits. In addition, there are >2,000 linear feet of stream channels within agricultural lands which lack a riparian buffer or agricultural filter strips. In most cases, the wetland or stream is surrounded by active corn or soybean fields. This subwatershed also contains 270 acres of forested wetlands, as identified by NWI, and 412 acres of hydric soils as identified by NRCS. This subwatershed has more wetlands than any other subwatershed in Kettle Run.

Within Subwatershed 250, there are 13 acres of headwater wetlands and approximately 9,000 linear feet of stream channels within agricultural lands which lack a riparian buffer or agricultural filter strips. In most cases, the wetland or stream is surrounded by active corn or soybean fields. This subwatershed has significantly fewer wetlands than subwatershed 272 due to the dominance of hydrologic group A and B soils which are typically well drained.

Potential Benefits: The benefit of this program would be the protection of headwater wetlands in the rural crescent zone from agricultural impacts, which would contribute to Bay TMDL goals.

Design Considerations and Constraints: Protection of these wetlands would require coordination with the Soil and Water District and agricultural community.

Cost Estimate: There would be costs for program implementation as well as costs for agricultural BMPs, including loss productively for land taken out of production.



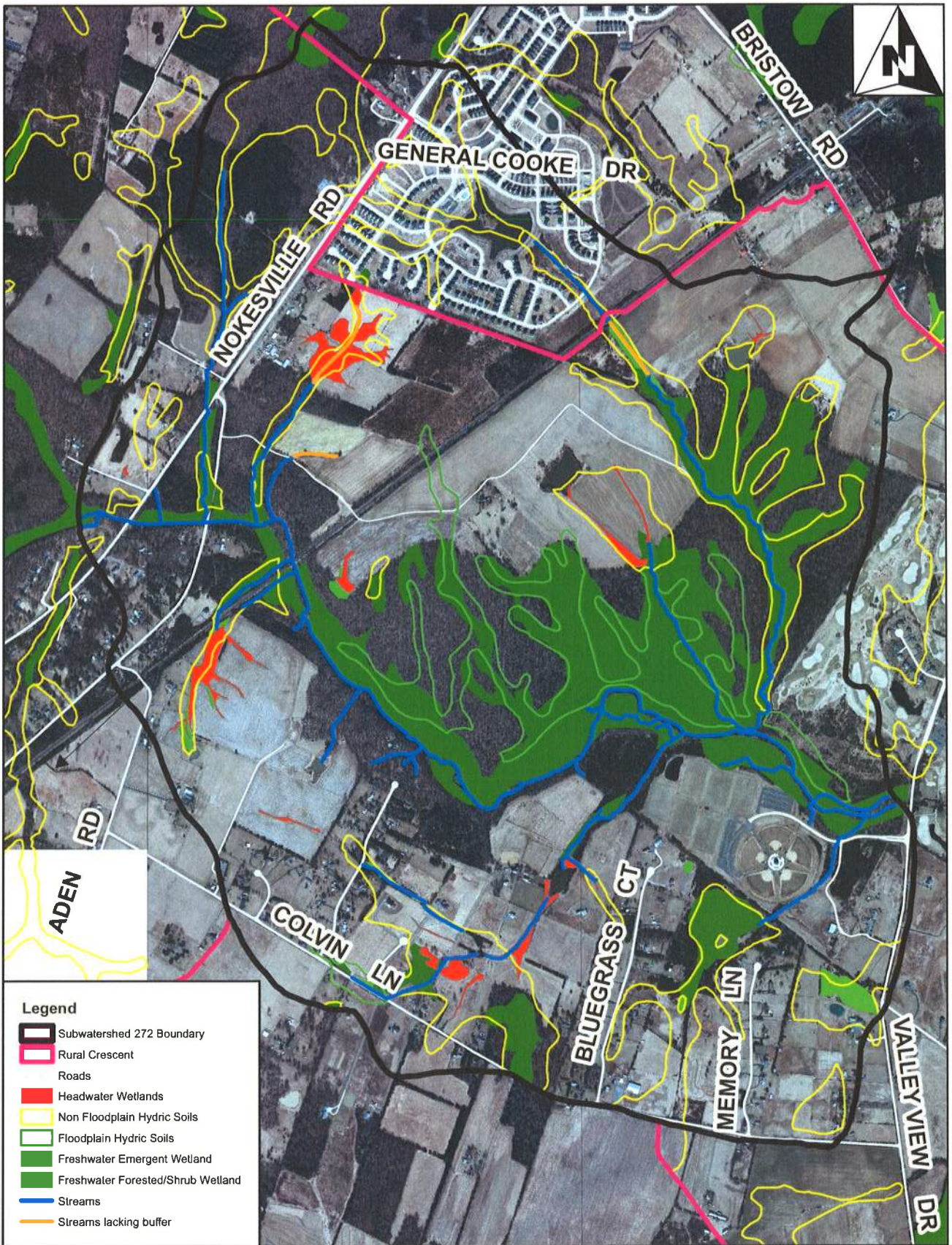
Watershed: Tributary to Broad Run
 Site ID#: 250 Headwater wetlands
 ADC Map (25th edition): Map 6, Page 11 and Map 7, Page 12



Watershed: Dawkins Branch

Site ID#: 250-2

ADC Map (25th edition): Map 7, Page 12, grid coordinate C11



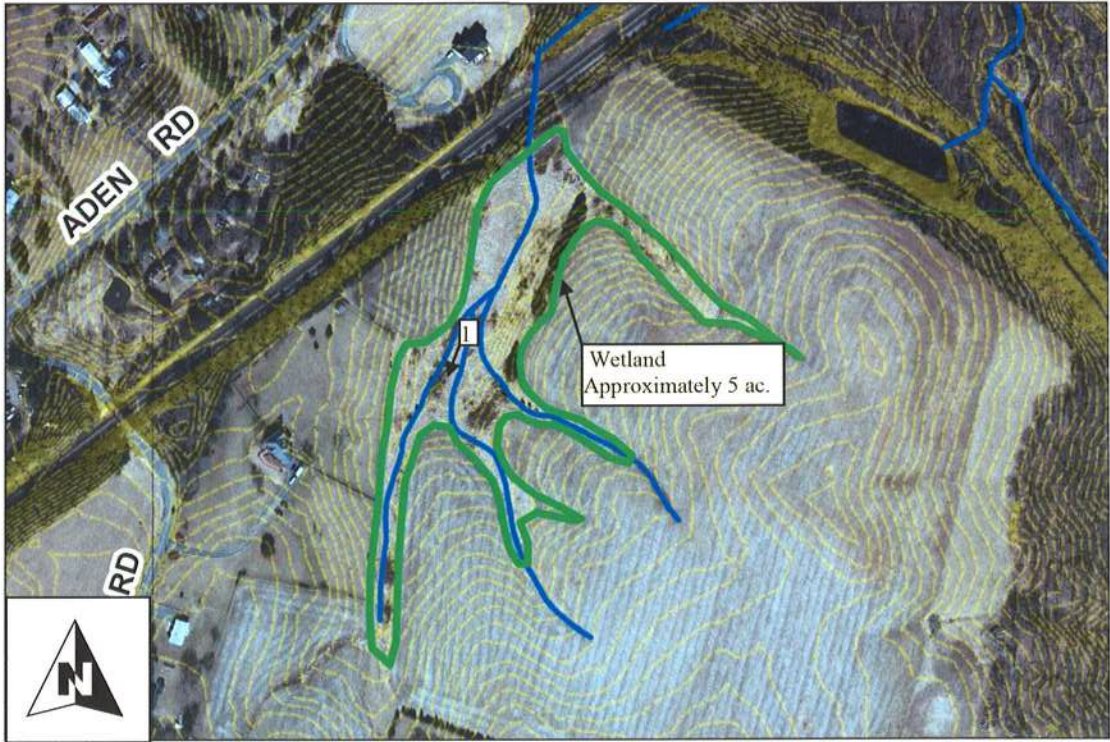
Watershed: Kettle Run
 Site ID#: 272 Headwater Wetlands
 ADC Map (25th edition): Map 12, Page 17



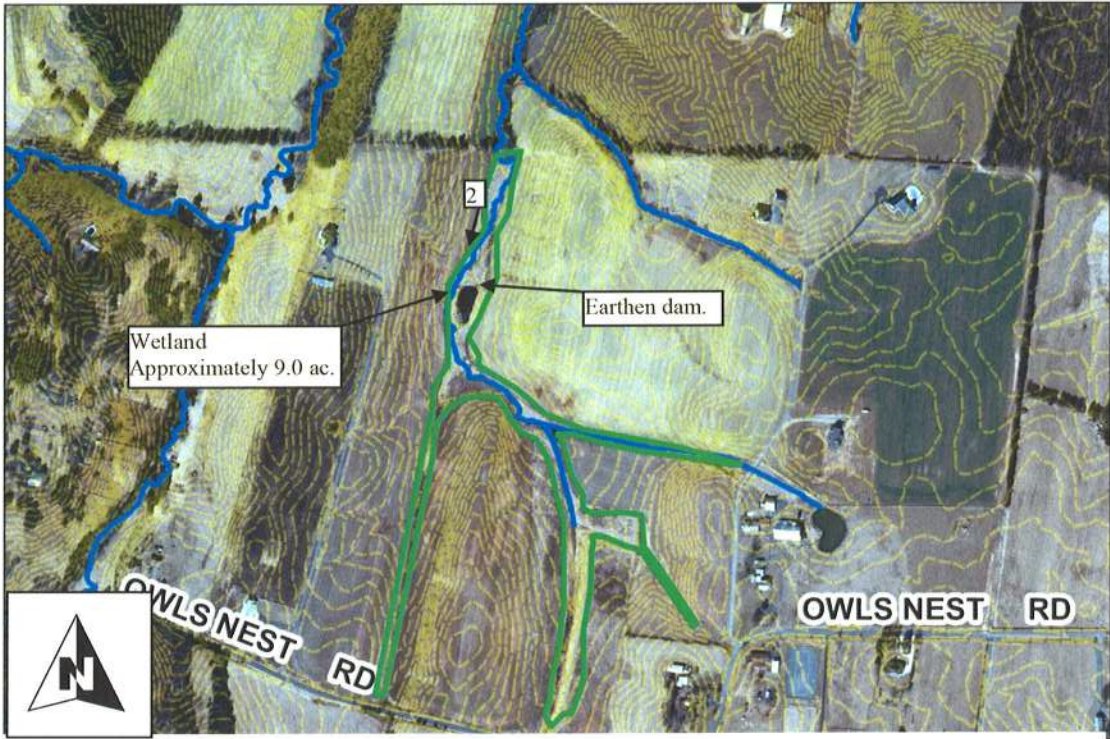
Watershed: Kettle Run

Site ID#: 272-2

ADC Map (25th edition): Map 12, Page 17, grid coordinate A4 and A5



Site 272-3: Example of “headwater streams” in rural crescent which are actually wetlands



Site 250-2: Example of headwater wetland without buffer



Photo 1: A large (approximately 5 acres) headwater wetland (site 272-3) with minimal impact



Photo 2: A large (Approximately 9 acres) headwater wetland (site 250-2) without buffer

Project: Rocky Branch 250-3 Pond Restoration / Stream Enhancement

Watershed:	Broad Run
Subwatershed Name:	Tributary to Broad Run
Subwatershed Code:	250
Site ID:	250-3
County Facility ID:	N/A
Project Type:	Pond Restoration / Stream Enhancement
Drainage Area:	416 acres
GPIN/Owner:	7395-16-1460
Neighborhood/Address:	Prince William County Park Authority 14631 Vint Hill Road, Nokesville 20181
GPS Coordinates:	38° 44' 49.40 77° 37' 50.32
Stream Ranking:	1

Location: This site is located southeast of Vint Hill Road and Par Drive on the property of Prince William Park Authority (Prince William Golf Course)

Problem Description: This project has two components: an in-stream pond, and eroding stream banks. The instream pond is approximately 0.2 acres and less than 3 feet deep. It is filled with sediment and does not have sufficient depth to provide aquatic habitat during periods of low stream flow.

The stream channel has eroding outer meander bends and a narrow riparian buffer. In some areas, the managed turf of the golf course extends to the banks of the stream channel, which results in poor bank stability and potentially high inputs of nutrients to the channel. At several locations irrigation pipes are exposed where the stream channel is actively eroding the stream banks. There is about 600 linear feet of stream that lacks wood buffers.

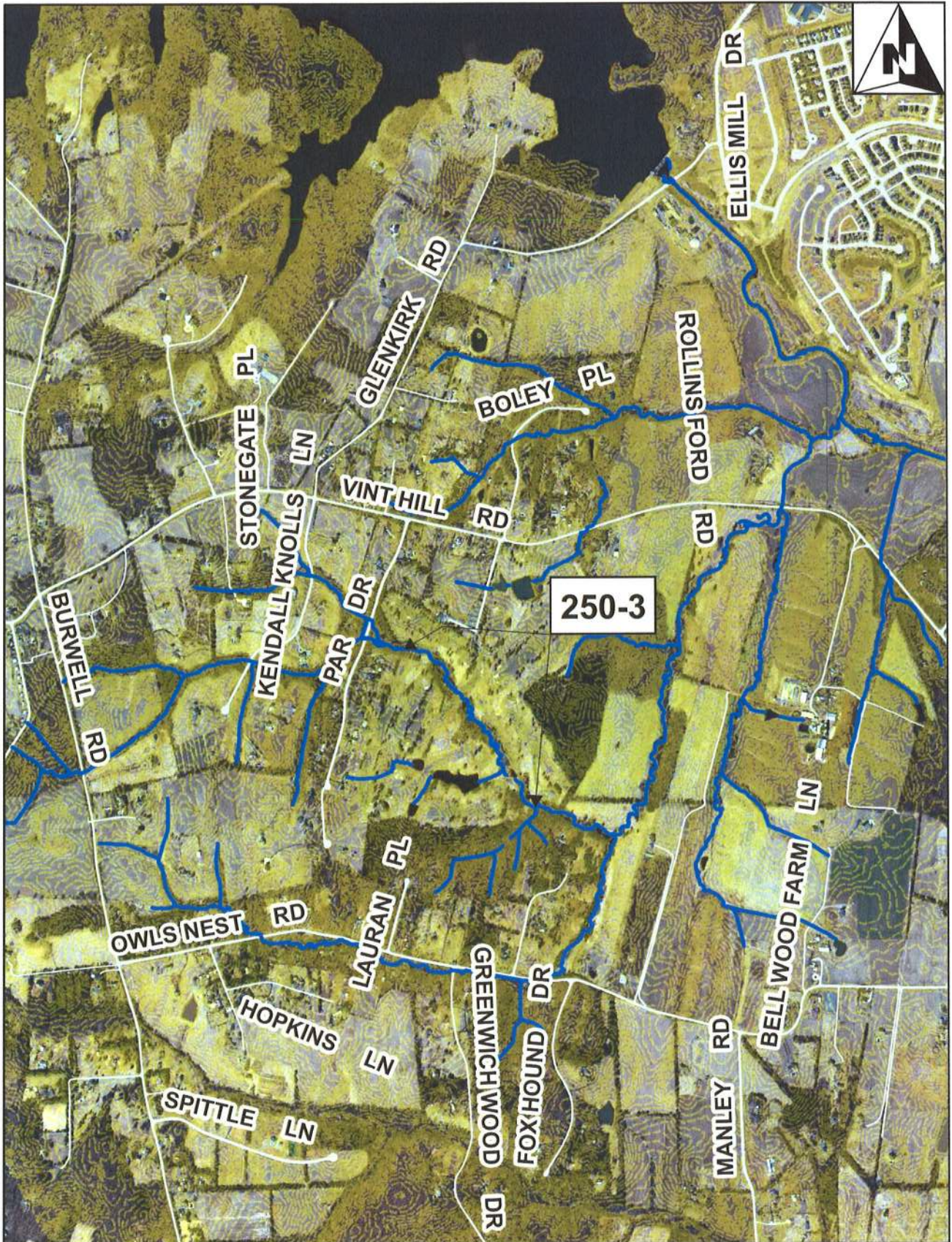
Project Description: The in-stream pond could be renovated to provide partial water quality treatment for the stream flow coming from the golf course. The sediment would be removed, and the pond contoured to provide deep water areas and fringing wetlands. A minimum depth of 6 feet should be provided, with 8 feet preferred.

The stream channel should be surveyed in detail, and the eroding banks stabilized. The exposed irrigation piping should be relocated away from meander bends. Where the riparian buffer is entirely managed turf grass, management of these areas should be changed to encourage deeper rooting species and woody vegetation where compatible with in play areas.

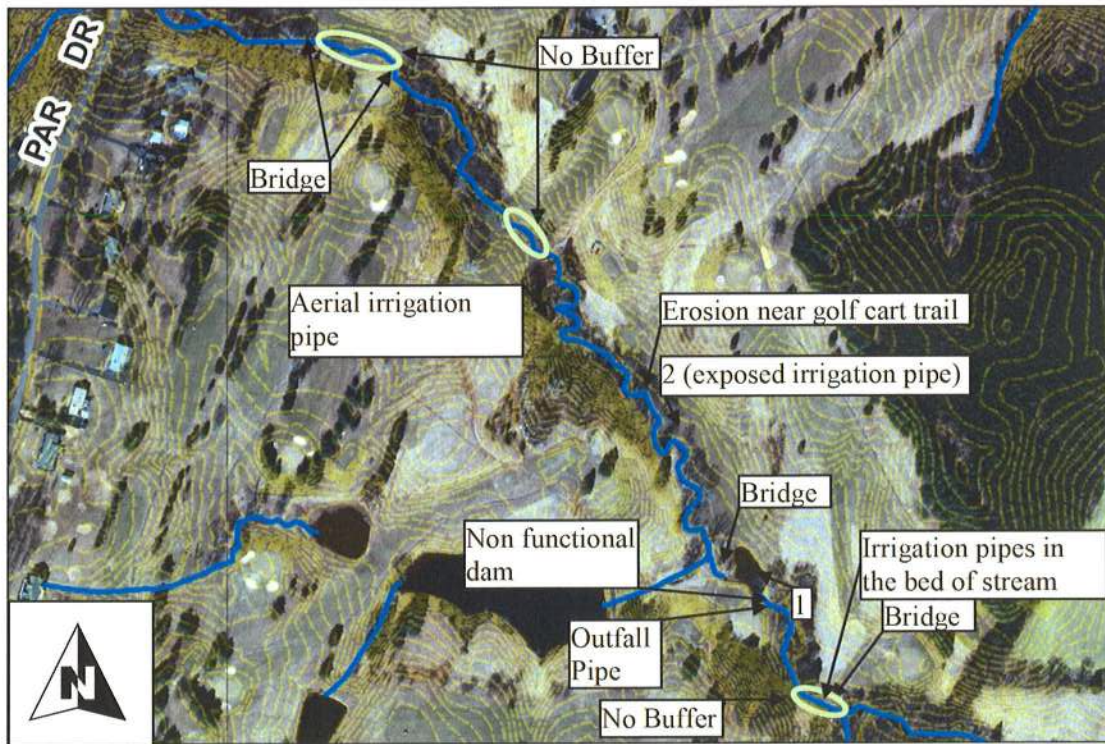
Potential Benefits: Currently, the eroding channel has filled the small pond and its dam is in poor condition. The restoration of the pond would restore its ability to trap sediment from the upstream watershed. The channel stabilization and buffer enhancements would reduce sediment inputs and improve water quality, respectively.

Design Considerations and Constraints: Construction access and staging would have to take into account keeping fairways in play and minimizing impacts to turfed areas. The existing pond footprint is small compared to the watershed size, so full water quality treatment is probably not possible. Based on field observations the stream feeding the pond becomes dry during portions of the year.

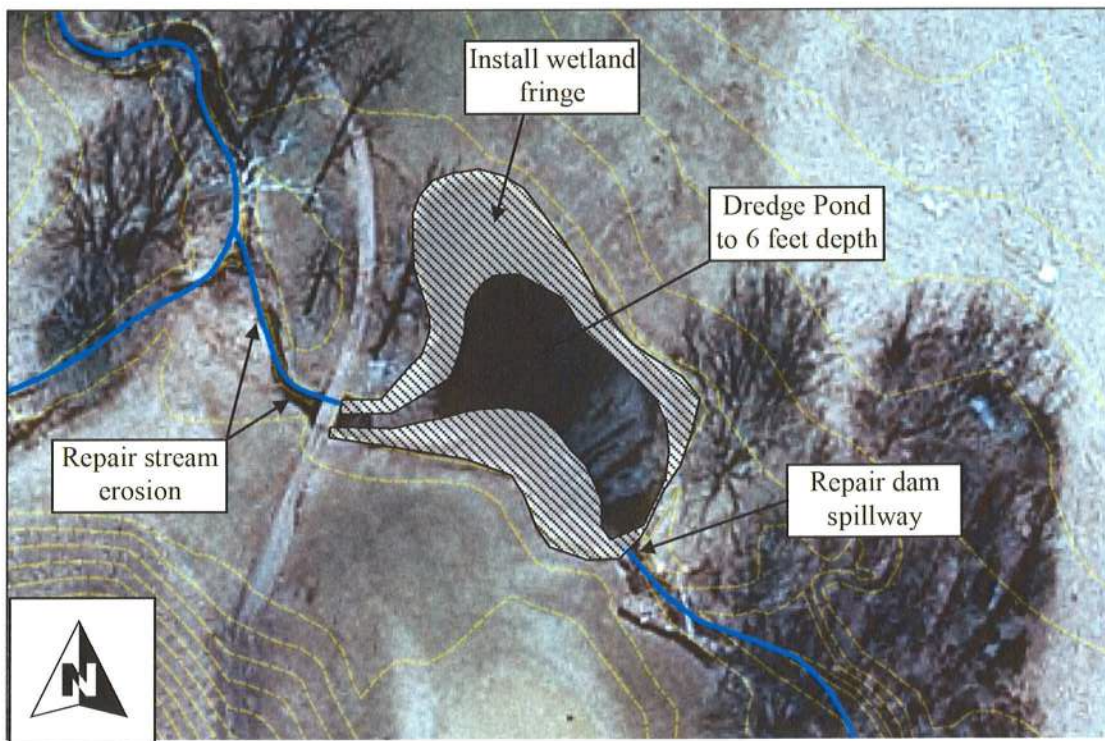
Cost Estimate: The renovation of the in-stream pond and stream is estimated to cost approximately \$193,000.



Watershed: Tributary to Broad Run
Site ID#: 250-3
ADC Map (25th edition): Map 7, Page 12, grid coordinate A10



Existing Condition: Stream channel through County golf course is experiencing erosion,



Conceptual Plan: In-stream Pond Renovation



Photo 1: In-stream pond on County Golf course in very poor condition



Photo 2: Exposed irrigation piping is common along the stream channel