# Hominy Swamp Stream Restoration

## EEP Project No: 180

# 2005 Annual Monitoring Report

4th Year of 5-year Monitoring Plan

Submitted to: NCDENR/Ecosystem Enhancement Program
1619 Mail Service Center
Raleigh, NC 27699-1619

March 6, 2006

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Design Firm: KCI Associates of North Carolina, P.A.

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**APPENDIX A – VEGETATION RAW DATA**



**APPENDIX B – GEOMORPHOLOGIC RAW DATA**

## 1.0 Executive Summary/Project Abstract

Hominy Swamp Creek was restored through the North Carolina Wetlands Restoration Program (NCWRP). The objectives of the project are to:

1.) Establish an stable dimension, pattern and profile on 2,232 feet of Hominy Swamp Creek
2.) Improve habitat within Hominy Swamp Creek
3.) Establish an riparian buffer along Hominy Swamp Creek
4.) Incorporate this project into a watershed wide management plan

This is the 4th year of the 5-year monitoring plan for Hominy Swamp Creek.

Overall, while the majority of the stream is functioning well and holding grade, the stream has areas of concern and areas of immediate need. Table X shows a summary of identified problem areas within the project reach. Channel dimension and pattern are similar to as-built conditions with the exceptions of the noted areas of bank slumping. The channel profile is void of defined bed features and is dominated by runs and pools. Placed structures are holding grade and functioning well.

Vegetation is not succeeding to levels required for mitigation credit.

## 2.0 Project Background

### 2.1 Location and Setting

The project is located within the city limits of Wilson, North Carolina. From Raleigh, take US 64 BYP East to US 64 then US 264 (Wilson exit). Proceed east on US 264 to Exit 36B, US 264 ALT East (Raleigh Road). Continue into Wilson on Raleigh Road until you reach Ripley Road. Turn left (north) on Ripley Road and the site is immediately on the east/right side of the road. Refer to Figure 1 for project location.

### 2.2 Mitigation Structure and Objectives

The restoration of this portion of Hominy Swamp Creek, located within the Wilson City Recreational Park, was conducted to correct identified system deficiencies including severe bank erosion, channel widening, and the loss of aquatic habitat resulting from stream channelization, the loss of riparian vegetation, and watershed development. The goal of the project was to develop a stable stream channel with reduced bank erosion, efficient sediment transport, enhanced warm water fisheries, and improved overall stream habitat and site aesthetics. Implementation of the project was completed in September 2001.

**Table I. Project Structure and Objectives Table**
**Project No. 180 (Hominy Swamp Creek)**

| Segment Reach ID | Mitigation Type | Approach | Linear Feet/Acreage |
|---|---|---|---|
| Hominy Swamp Creek | Restoration | Priority 1 | 2,232 feet |

### 2.3 Project History and Background

Tables II, III, and IV provide the project history, contact information and background data.

| Table II. Project Activity and Reporting History<br>Project No. 180 (Hominy Swamp Creek) | | |
|---|---|---|
| **Activity or Report** | **Calendar Year of Completion or Planned Completion** | **Actual Completion Date** |
| Restoration Plan | | 2001 |
| Mitigation Plan | | January 2003 |
| Construction | | September 2001 |
| As-Built Report | | June 2002 |
| Initial – Year 1 Monitoring | | January 2003 |
| Year 2 monitoring | | December 2003 |
| Year 3 Monitoring | | December 2004 |
| Year 4 Monitoring | December 2005 | |
| Year 5 Monitoring | December 2006 | |
| Year 5+ Monitoring | TBD | |

| Table III. Project Contact Table<br>Project No. 180 (Hominy Swamp Creek) | |
|---|---|
| **Designer** | KCI Associates of North Carolina, P.A.<br>Landmark Center II, Suite 200<br>4601 Six Forks Road<br>Raleigh, NC 27609 |
| **Construction Contractor** | Not provided |
| **Planting Contractor** | Not provided |
| **Seeding Contractor** | Not provided |
| Seed Mix Sources | Not provided |
| Nursery Stock Suppliers | Not provided |
| **Monitoring Performers (Year 4)** | Rummel, Klepper & Kahl, LLP<br>900 Ridgefield Drive, Suite 350<br>Raleigh, NC 27609 |
| Stream Monitoring POC | Howard Woodall, P.E.<br>919-878-9560 |
| Vegetation Monitoring POC | Howard Woodall, P.E.<br>919-878-9560 |

| Table IV. Project Background Table<br>Project No. 180 (Hominy Swamp Creek) | |
|---|---|
| **Project County** | Wilson County, North Carolina |
| **Drainage Area** | 5.4 square miles |
| **Drainage impervious cover estimate (%)** | Not provided |
| **Stream Order** | 3 |
| **Physiographic Region** | Coastal Plain |
| **Ecoregion** | Rolling Coastal Plain |
| **Rosgen Classification of As-Built** | E5 |
| **Cowardin Classification** | PSS1Ad |
| **Dominant soil types** | Bibb Loam (Bb) |
| **Reference site ID** | Hominy Swamp Creek |

| Table IV. Project Background Table<br>Project No. 180 (Hominy Swamp Creek) | |
|---|---|
| **USGS HUC for Project and Reference** | 3020203020040 |
| **NCDWQ Sub-basin for Project and Reference** | 03-04-07 Neuse River Basin |
| **NCDWQ Classification for Project and Reference** | C; Sw, NSW |
| **Any portion of any project segment 303d listed?** | Yes – From its source to Conentnea Creek |
| **Any portion of any project segment upstream of a 303d listed segment?** | |
| **Reasons for 303d listing or stressor** | Impaired biological integrity; Stressors not identified (Potential sources: Urban Runoff/Storm Sewers) |
| **% of project easement fenced** | 0 |

2.4 Monitoring Plan View

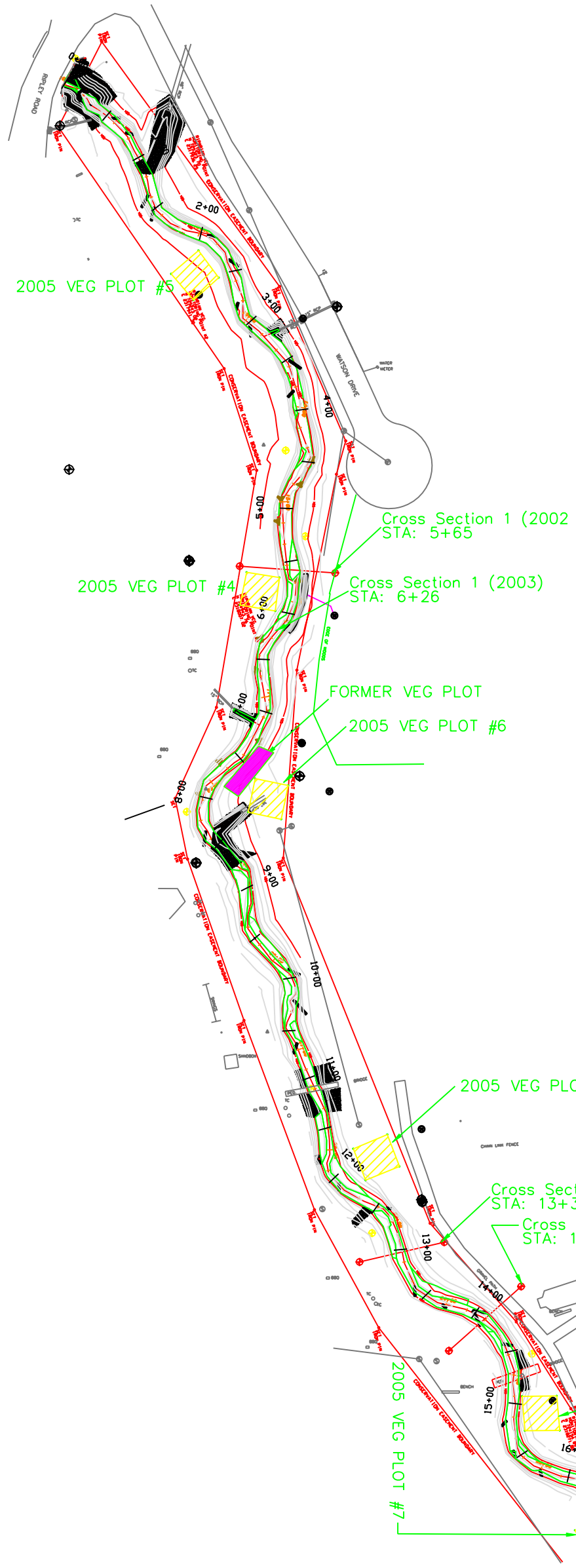
See following page for Monitoring Plan View.

STRUCTURES LEGEND

- LOG VANE
- LOG CROSS VANE
- ROCK CROSS VANE
- ROOT WAD
- COIR ROLL
- SAND BAR
- RIP RAP

SCALE 1" = 120'

50 0 50 100




| | |
|---|---|
| DRAWING NO. | |
| SHEET NO. | 1 OF 1 |
| FILENAME | 2005HOMINYE.DWG |
| PROJECT NO. | 305-065 |
| DATE | 12/01/2005 |

HOMINY SWAMP CREEK
WILSON COUNTY, N.C.
ECOSYSTEM ENHANCEMENT PROGRAM

2005 MONITORING


RUMMEL, KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive
Suite 350
Raleigh, NC 27609


| NO | REVISIONS | DRN | CHK | DATE |
|---|---|---|---|---|

## 3.0 Project Condition and Monitoring Results

### 3.1 Vegetation Assessment

Previously, there were six vegetation monitoring plots being monitored for vegetation success. These six are circlular plots with a 15 foot radius and did not meet current EEP monitoring guidelines. To conform with the EEP guidelines, seven new vegetation monitoring plots were installed for 2005. These plots were installed, as 10X10 meter plots on or near existing vegetation monitoring plots to compare baseline data. The results of stem counts yielded no vegetation monitoring plots meeting minimum success criteria. The riparian buffer areas along Hominy Swamp Creek have been mowed and maintained by workers of the adjacent city park. Although some of the planted trees have survived, the majority has been mowed and are the causes of the vegetation monitoring plots not meeting the minimum success criteria.

#### 3.1.1 Soil Data

The Bibb series consists of very deep, poorly drained, moderately permeable soils that formed in stratified loamy and sandy alluvium. These soils are on flood plains of streams in the Coastal Plain. They are commonly flooded and water runs off the surface very slowly. Slopes range from 0 to 2 percent. The vegetation found on Bibb series is usually dominanted by native woodland species consisting of sweetgum, loblolly pine, red maple, water oak, willow oak, green ash, baldcypress, swamp tupelo, and black willow

**Table V. Preliminary Soil Data**
**Project No. 180 (Hominy Swamp Creek)**

| Series | Max Depth (in.) | % Clay on Surface | K | T | OM % |
|---|---|---|---|---|---|
| Bibb Loam (Bb) | 80 | 2 – 18 | .28 - .37 | 5 | .5 - 2 |

#### 3.1.2 Vegetative Problem Areas

**Table VI. Vegetative Problem Areas**
**Project No. 180 (Hominy Swamp Creek)**

| Feature/Issue | Station #/Range | Probable Cause | Photo # |
|---|---|---|---|
| Plot 1 | 20+25L | Mowing | P1 |
| Plot 2 | 15+00L | Mowing | P21 |
| Plot 3 | 12+00L | Mowing | P29 |
| Plot 4 | 6+00R | Mowing | P51 |
| Plot 5 | 2+00R | Mowing | P64 |
| Plot 6 | 8+00L | Mowing | P43 |
| Plot 7 | 16+50R | Mowing | P14 |

#### 3.1.3 Vegetative Problem Area Plan View

Refer to A.1 for Vegetative Problem Area Plan View.

### 3.1.4 Stem Counts

Once the new plots were installed, the surviving stems were counted. The results of the stem counts yielded no vegetation monitoring plots meeting minimum success criteria. Data for the number and type of species initially planted in each vegetation plot was not available. To determine if the surviving stems met the minimum success criteria, area of the plots were compared to the surviving stem counts. A total of twenty-one stems were counted in all seven plots, this survival rate compared to the total planted area, resulted in 6 trees per acre. A total of 320 trees per acre survival rate is required after monitoring year five.

**Table VII. Stem counts for each species arranged by plot**
**Project No. 180 (Hominy Swamp Creek)**

| Species | Plots | | | | | | | Year 4 Totals | Initial Totals | Survival % |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | | | |
| **Trees** | | | | | | | | | | |
| *Quercus falcate* | | | | | | | | 0 | 30 | 0 |
| *Quercus lyrata* | | | 1 | 3 | | | | 4 | 22 | 18 |
| *Quercus laurifolia* | 3 | | 4 | 1 | 2 | 1 | 2 | 13 | 185 | 7 |
| *Quercu nigra* | | | | | | | | 0 | 61 | 0 |
| *Quercus pagoda* | | | | | | | | 0 | 94 | 0 |
| *Quercus michauzii* | | | | | | | | 0 | 9 | 0 |
| *Vibumum nudum* | | | | | | | | 0 | 100 | 0 |
| *Carya aquatica* | | | | | | | | 0 | 140 | 0 |
| *Fraxinus pennsylvanica* | | 1 | | | 1 | | | 2 | 66 | 3 |
| *Fraxinus caroliniana* | | | | | | | | 0 | 19 | 0 |
| *Diospyros virginlana* | | | | | | | | 0 | 24 | 0 |
| *Crateafus marshallii* | | | | | | | | 0 | 50 | 0 |
| *Sambucus canadensis** | | | | | | | | 0 | 200 | 0 |
| *Caphlanthus occidentalis** | | | | | | | | 0 | 100 | 0 |
| *Salix nigra** | 1 | | | | | | | 1 | 100 | 1 |

*Denotes that original plantings were live stakes

### 3.1.5 Vegetation Plot Photos

Photos are located in Appendix A.

## 3.2 Stream Assessment

### 3.2.1 Procedural Items

#### 3.2.1.a Morphometric Criteria

Dimension – Previously established cross-sections were surveyed for comparison to past measurements.

Profile – The longitudinal profile of the restored stream was also surveyed for comparison to the previous monitoring survey. Since the total restored length is less than 3000 feet, the entire reach was surveyed.

3.2.1.b Hydrologic Criteria

Two bankfull events must be recorded during the 5 year monitoring period in order to meet hydrologic criteria.

| **Table VIII. Verification of Bankfull Events Project No. 180 (Hominy Swamp Creek)** |
|---|
| Bankfull events were recorded in 2002 and 2004. No further verification is required. |

3.2.1.c Bank Stability Assessment

| **Table IX. BEHI and Sediment Export Estimates Project No. 180 (Hominy Swamp Creek)** |
|---|
| Not required for Year 4 Monitoring |

3.2.2 Problem Areas Plan View (Stream) – Refer to B.1 for Problem Areas Plan View.

3.2.3 Problem Areas Table – Table X below provides categorical feature issues by station, the suspected cause, and denotes the number of a representative photo of the condition (Appendix B).

**Table X. Stream Problem Areas Project No. 180 (Hominy Swamp Creek)**

| Feature/Issue | Station Numbers | Suspected Cause | Photo number |
|---|---|---|---|
| **Aggradation/ Bar Formation** | **02+25 - 02+40** | Upstream bank scour and watershed usage | **P65** |
| | **05+50 - 05+70** | Upstream bank scour and watershed usage | **P52** |
| | **9+90 - 10+00** | Upstream bank scour and watershed usage | **P36** |
| | **12+00 - 12+15** | Upstream bank scour and watershed usage | **P31** |
| | **21+20 - 21+45** | Upstream bank scour and watershed usage | **P3** |
| **Bank Scour** | **01+10 – 01+25** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P67** |
| | **02+55 – 02+55** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P63** |
| | **02+60 – 02+70** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P63** |
| | **03+15 – 03+30** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P59** |
| | **04+10 – 04+35** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P57** |
| | **04+10 – 04+25** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P55** |
| | **06+20 – 06+45** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P48,P49** |
| | **15+20 – 15+40** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P22, P23** |
| | **15+60 – 15+80** | Lack of Riparian Buffer, overland flow, lack bank vegetation root mass | **P19, P20** |

3.2.4 Numbered issue photos section – Refer to B.2 for photos.

3.2.5 Fixed station photos – Refer to B.3 for photos.

3.2.6 Stability Assessment Table

| Table XI. Categorical Stream Feature Visual Stability Assessment Project No. 180 (Hominy Swamp Creek) | | | | | | |
|---|---|---|---|---|---|---|
| **Feature** | **Initial** | **MY-01** | **MY-02** | **MY-03** | **MY-04** | **MY-05** |
| A. Riffles | 100% | NA | NA | NA | 33% | |
| B. Pools | NA | NA | NA | NA | NA | |
| C. Thalweg | 100% | NA | NA | NA | 60% | |
| D. Meanders | 100% | NA | NA | NA | 67% | |
| E. Bed General | 100% | NA | NA | NA | 96% | |
| F. Vanes/J Hooks etc. | 100% | NA | NA | NA | 90% | |
| G. Wads and Boulders | 100% | NA | NA | NA | 93% | |

3.2.7 Quantitative Measures Tables – Refer to the following pages for Table XII (Baseline Morphology and Hydraulic Summary) and Table XIII (Morphology and Hydraulic Monitoring Summary).

**Table XII. Baseline Morphology and Hydraulic Summary**
**Project No. 180 (Hominy Swamp Creek)**

| Parameter | USGS Gauge Data | | | Regional Curve Interval | | | Pre-Existing Condition | | | Project Reference Stream | | | Design | | | As-Built | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med | Min | Max | Med |
| BF Width (ft) | | | | | | | n/a | n/a | 25.5 | n/a | n/a | 11.9 | n/a | n/a | 20.2 | 21.7 | 24.8 | 23.3 |
| Floodprone Width (ft) | | | | | | | n/a | n/a | >100 | n/a | n/a | 45 | n/a | n/a | >100 | n/a | n/a | >300 |
| BF Cross Sectional Area ($ft^2$) | | | | | | | n/a | n/a | 70 | n/a | n/a | 19.2 | n/a | n/a | 55 | 53.4 | 62.3 | 57.9 |
| BF Mean Depth (ft) | | | | | | | n/a | n/a | 2.74 | n/a | n/a | 1.61 | n/a | n/a | 2.73 | 2.46 | 2.51 | 2.49 |
| BF Max Depth (ft) | | | | | | | n/a | n/a | 4.68 | n/a | n/a | 2.11 | n/a | n/a | 4.3 | 3.6 | 3.8 | 3.7 |
| Width/Depth Ratio | | | | | | | n/a | n/a | 9.3 | n/a | n/a | 7.4 | n/a | n/a | 7.4 | 8.8 | 9.9 | 9.4 |
| Entrenchment Ratio | | | | | | | n/a | n/a | >4 | n/a | n/a | >2.2 | n/a | n/a | >5 | 12.1 | 13.9 | 13.0 |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | |
| Hydraulic radius (ft) | | | | | | | | | | | | | | | | | | |
| **Pattern** | | | | | | | | | | | | | | | | | | |
| Channel Beltwidth (ft) | | | | | | | n/a | n/a | 92 | n/a | n/a | 92 | n/a | n/a | 85 | n/a | n/a | n/a |
| Radius of Curvature (ft) | | | | | | | 43 | 135 | n/a | 27.35 | 36.9 | n/a | 46.5 | 62.6 | n/a | n/a | n/a | n/a |
| Meander Wavelength (ft) | | | | | | | 114 | 170 | n/a | 107 | 150 | n/a | 182 | 255 | n/a | n/a | n/a | n/a |
| Meander Width Ratio | | | | | | | n/a | n/a | 3.6 | n/a | n/a | 7.7 | n/a | n/a | 4.2 | n/a | n/a | n/a |
| **Profile** | | | | | | | | | | | | | | | | | | |
| Riffle length (ft) | | | | | | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Riffle slope (ft/ft) | | | | | | | n/a | n/a | 0.00016 | n/a | n/a | 0.0018 | n/a | n/a | 0.0015 | n/a | n/a | n/a |
| Pool length (ft) | | | | | | | 26 | 38 | n/a | 20 | 29 | n/a | 35 | 49 | n/a | n/a | n/a | n/a |
| Pool spacing (ft) | | | | | | | n/a | n/a | 167 | n/a | n/a | 69.56 | 91.0 | 127.5 | n/a | n/a | n/a | n/a |
| **Substrate** | | | | | | | | | | | | | | | | | | |
| d50 (mm) | | | | | | | n/a | n/a | n/a | n/a | n/a | VFsand | n/a | n/a | 0.25 | n/a | n/a | 0.26 |
| d84 (mm) | | | | | | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| | | | | | | | | | | | | | | | | | | |
| **Additional Reach Parameters** | | | | | | | | | | | | | | | | | | |
| Valley Length (ft) | | | | | | | n/a | | | n/a | | | 1,850 | | | 1,850 | | |
| Channel Length (ft) | | | | | | | n/a | | | n/a | | | 2,232 | | | 2,232 | | |
| Sinuosity | | | | | | | 1.1 | | | 1.41 | | | 1.2 | | | n/a | | |
| Water Surface Slope (ft/ft) | | | | | | | 0.0015 | | | 0.0015 | | | 0.0014 | | | n/a | | |
| BF slope (ft/ft) | | | | | | | n/a | | | n/a | | | n/a | | | n/a | | |
| Rosgen Classification | | | | | | | E5 (Modified) | | | E5 | | | E5 | | | n/a | | |
| Number of Bankfull Events | | | | | | | | | | | | | | | | n/a | | |
| Extent of BF floodplain (acres) | | | | | | | n/a | | | n/a | | | n/a | | | n/a | | |

Note: "n/a" denotes that historical documents necessary to provide this data were unavailable at the time of this report submission, or a value is not applicable.

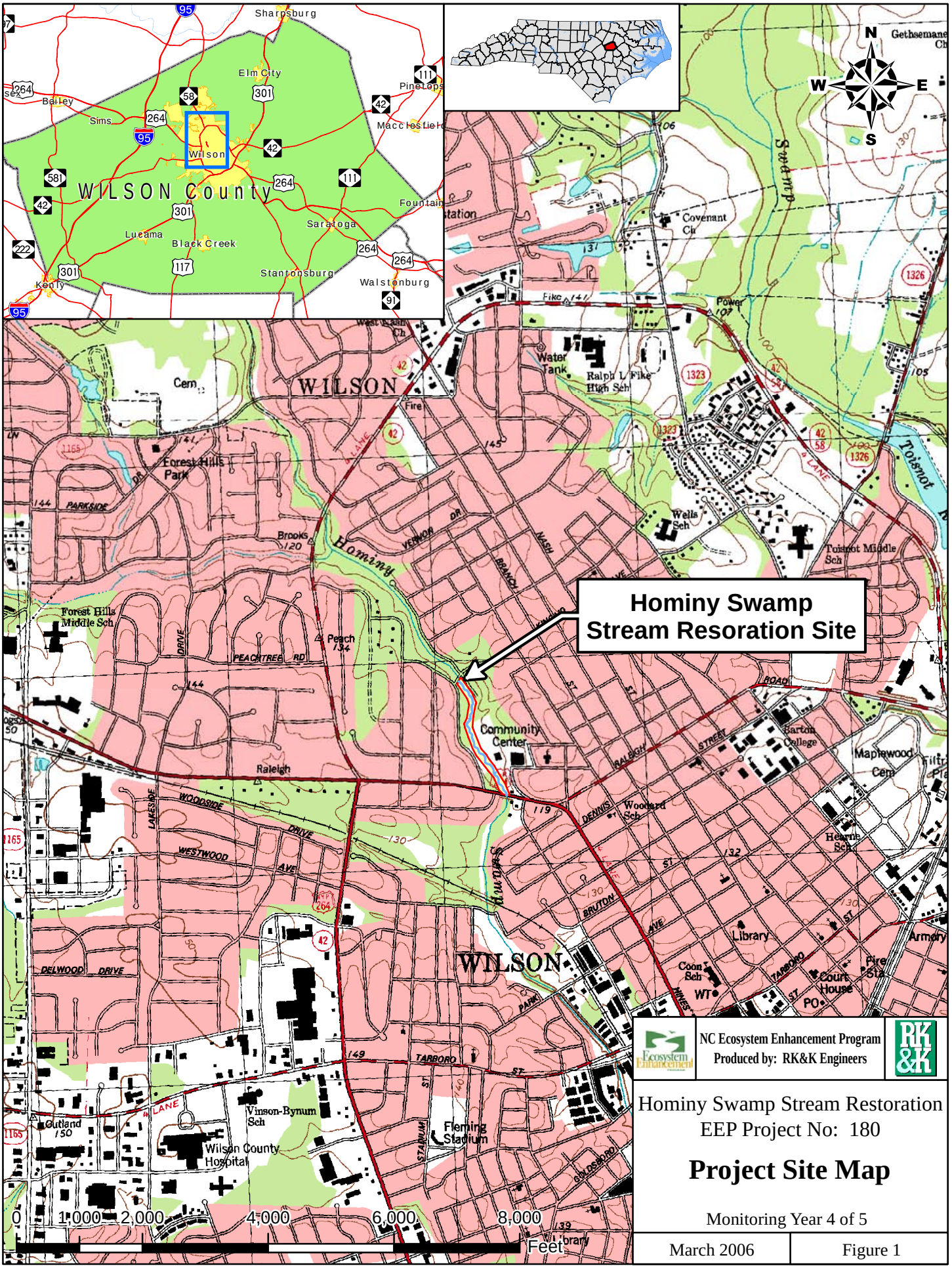
**Table XIII. Morphology and Hydraulic Monitoring Summary**
**Project No. 180 (Hominy Swamp Creek)**

| Parameter | Cross Section 1 Riffle | | | | Cross Section 2 Riffle | | | | Cross Section 3 Pool | | | | Cross Section 4 Pool | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dimension** | **MY1** | **MY 2** | **MY 3** | **MY4** | **MY1** | **MY2** | **MY3** | **MY4** | **MY1** | **MY2** | **MY3** | **MY4** | **MY1** | **MY2** | **MY3** | **MY4** |
| BF Width (ft) | 25.0 | 24.6 | 16.8 | 43.7 | 21.6 | 18.3 | 19.0 | 22.1 | 31.8 | 33.1 | 27.7 | 24.0 | 23.5 | 26.8 | 24.9 | 25.4 |
| Floodprone Width (ft) | >300 | | | | >300 | | | 60.7 | n/a | | | | n/a | | | |
| BF Cross Sectional Area ($ft^2$) | 62.3 | 87.2 | 52.7 | 102.9 | 53.1 | 53.9 | 59.8 | 2.7 | 76.3 | 64.9 | 54.3 | 61.8 | 88.3 | 107.5 | 113.8 | 119.5 |
| BF Mean Depth (ft) | 2.5 | 3.5 | 3.1 | 2.4 | 2.5 | 3.0 | 3.2 | 4.9 | 2.4 | 2.0 | 2.0 | 2.6 | 3.8 | 4.0 | 4.6 | 4.7 |
| BF Max Depth (ft) | 3.6 | 6.8 | 4.9 | 4.6 | 3.8 | 4.2 | 4.8 | 8.2 | 6.0 | 5.5 | 4.9 | 4.8 | 6.0 | 6.8 | 7.2 | 7.3 |
| Width/Depth Ratio | 9.9 | | | 18 | 8.79 | | | | n/a | | | | n/a | | | |
| Entrenchment Ratio | 12.08 | | | | 13.85 | | | | | | | | | | | |
| **Substrate** | | | | | | | | | | | | | | | | |
| d50 (mm) | 0.54 | 0.29 | 0.58 | 1.55 | 0.20 | 0.17 | 0.26 | 1.64 | 0.22 | 0.26 | 1.88 | n/a | 0.17 | 0.22 | 0.27 | n/a |
| d84 (mm) | 2.00 | 0.58 | 1.88 | 1.60 | 0.63 | 0.49 | 0.67 | 1.8 | 13.65 | 5.88 | 17.73 | n/a | 3.74 | 0.62 | 0.75 | n/a |

| Parameter | MY-01 (2002) | | | MY-02 (2003) | | | MY-03 (2004) | | | MY-04 (2005) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pattern** | **Min** | **Max** | **Med** | **Min** | **Max** | **Med** | **Min** | **Max** | **Med** | **Min** | **Max** | **Med** |
| Channel Beltwidth (ft) | | | | 32 | 69 | 46 | 32 | 69 | 46 | 32 | 69 | 46 |
| Radius of Curvature (ft) | | | | 33 | 76 | 56 | 33 | 76 | 56 | 33 | 76 | 56 |
| Meander Wavelength (ft) | | | | 115 | 227 | 155 | 115 | 227 | 155 | 115 | 227 | 155 |
| Meander Width ratio | | | | 1.5 | 3.2 | 2.1 | 1.8 | 3.9 | 2.6 | 1.4 | 3.1 | 2.1 |
| **Profile** | | | | | | | | | | | | |
| Riffle length (ft) | | | | 15 | 53 | 23 | 16 | 41 | 28 | | | |
| Riffle slope (ft/ft) | | | | | | | | | | | | |
| Pool length (ft) | | | | 30 | 73 | 52 | 32 | 115 | 53 | | | |
| Pool spacing (ft) | | | | 64 | 178 | 107 | 45 | 165 | 108 | | | |

Note: "n/a" denotes that historical documents necessary to provide this data were unavailable at the time of this report submission, or a value is not applicable.

**FIGURES**




NC Ecosystem Enhancement Program
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# Hominy Swamp Stream Restoration
EEP Project No: 180

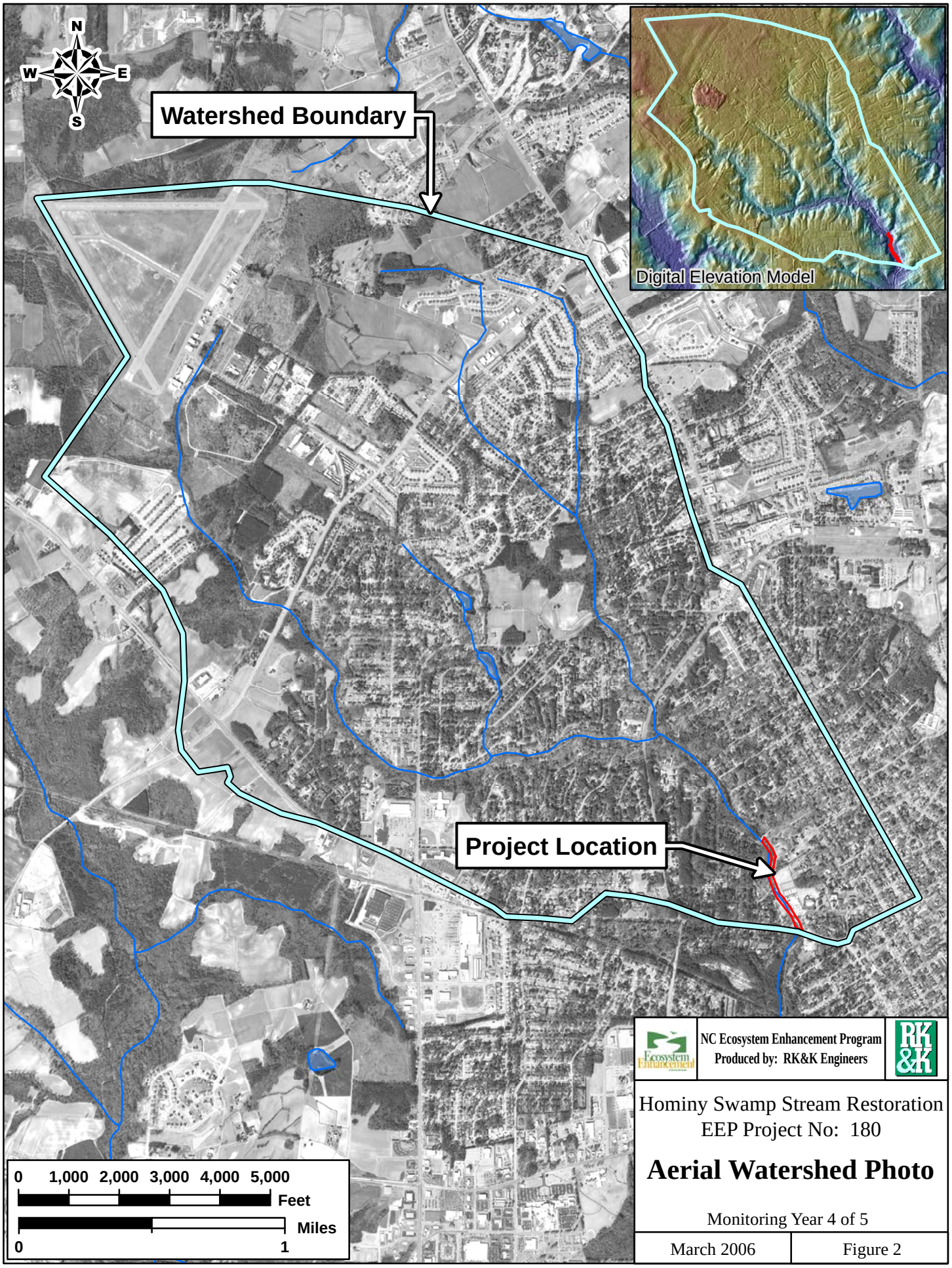
## Project Site Map

Monitoring Year 4 of 5

| March 2006 | Figure 1 |
|---|---|

1 inch equals 2,000 feet

Source: USGS 7.5 Minute Quadrangles, Wilson & Winstead Crossroads, NC




NC Ecosystem Enhancement Program
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Hominy Swamp Stream Restoration
EEP Project No: 180

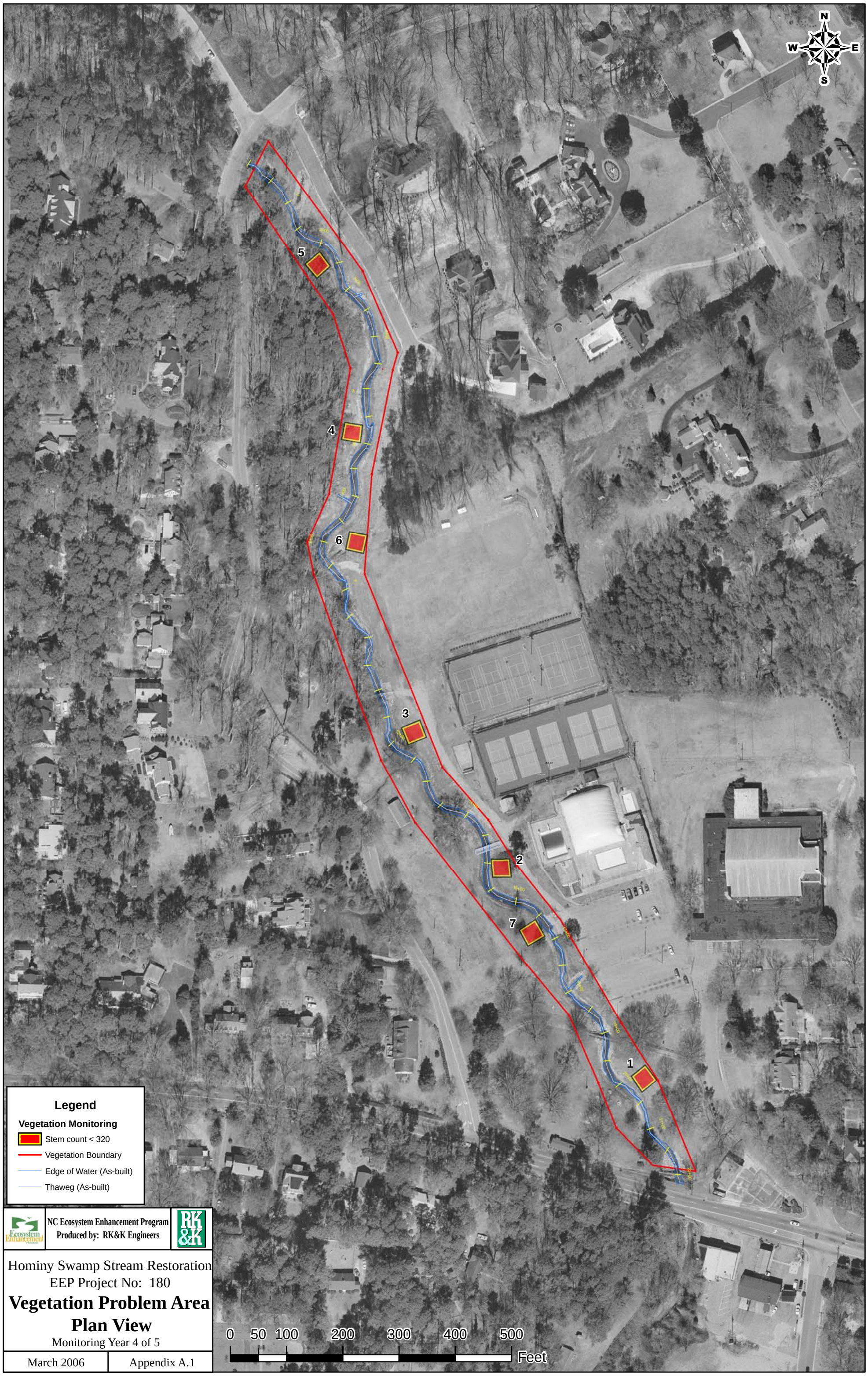
# Aerial Watershed Photo

Monitoring Year 4 of 5

| March 2006 | Figure 2 |
|---|---|

# APPENDIX A – VEGETATION RAW DATA

# A.1 VEGETATIVE PROBLEM AREA PLAN VIEW




NC Ecosystem Enhancement Program
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Hominy Swamp Stream Restoration
EEP Project No: 180

# Vegetation Problem Area Plan View

Monitoring Year 4 of 5

| March 2006 | Appendix A.1 |
|---|---|

## A.2 VEGETATION PROBLEM AREAS PHOTOS

# Hominy Swamp Vegetation Problem Area Photos

P1. Vegetation Monitoring Plot 1

P21. Vegetation Monitoring Plot 2.

P29. Vegetation Monitoring Plot 3.

P51. Vegetation Monitoring Plot 4.

P64. Vegetation Monitoring Plot 5.

P43. Vegetation Monitoring Plot 6.

P14.  Vegetation Monitoring Plot 7.

# A.3 VEGETATION MONITORING PLOT PHOTOS

# Hominy Swamp Vegetation Monitoring Plot Photos

P1. Vegetation Monitoring Plot 1

P21. Vegetation Monitoring Plot 2.

P29. Vegetation Monitoring Plot 3.

P51. Vegetation Monitoring Plot 4.

P64. Vegetation Monitoring Plot 5.

P43. Vegetation Monitoring Plot 6.

P14.  Vegetation Monitoring Plot 7.

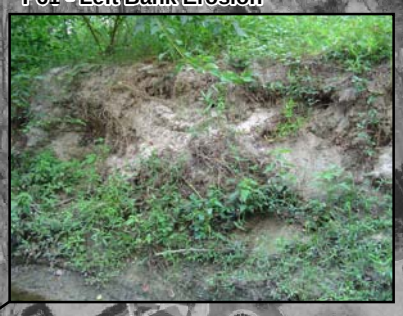
# APPENDIX B – GEOMORPHOLOGIC RAW DATA

# B.1 PROBLEM AREAS PLAN VIEW

P67 - Right Bank Erosion

P65 - Aggradation

P61 - Left Bank Erosion



P63 - Right Bank Erosion

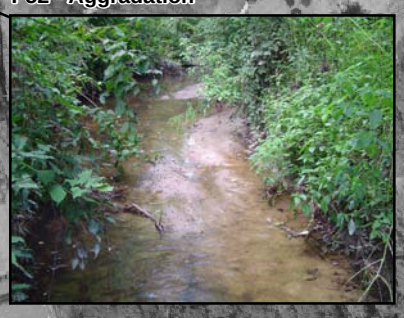
P59 - Left Bank Erosion

P57 - Right Bank Erosion

P55 - Left Bank Erosion

P49 - Right Bank Erosion

P52 - Aggradation



P48 - Right Bank Erosion

P36 - Aggradation

P23 - Left Bank Erosion

P31 - Aggradation

P22 - Left Bank Erosion

P20 - Right Bank Erosion

P19 - Right Bank Erosion

P3 - Aggradation

## Legend

**Feature Issues**

- Aggradation - Concern
- Aggradation - High Concern
- Erosion - Concern
- Erosion - High Concern

**Vegetation Monitoring**

- Stem count < 320
- Vegetation Boundary
- Edge of Water (As-built)
- Thaweg (As-built)

NC Ecosystem Enhancement Program
Produced by: RK&K Engineers

Hominy Swamp Stream Restoration
EEP Project No: 180

# Problem Area Plan View

Monitoring Year 4 of 5

| March 2006 | Appendix B.1 |
|---|---|

0 50 100 200 300 400 500 Feet

## B.2 STREAM PROBLEM AREAS PHOTOS

**Hominy Swamp Stream Problem Area Photos**

P3. Station 21+30. Aggregation.

P31. Station 12+15. Aggregation.

P36. Station 9+90. Aggregation.

P52. Station 5+60. Aggregation.

P65. Station 2+20. Aggregation.

P19. Station 15+80. Erosion on right bank looking upstream.

P20. Station 15+70. Erosion on left bank.

P22. Station 15+30. Erosion on left bank

P23.  Station 15+25.  Erosion on left bank.

P48.  Station 6+25.  Erosion on right bank.

P49. Station 6+25. Erosion on right bank.

P55. Station 4+15. Erosion on left bank.

P57. Station 4+10. Erosion on right bank.

P61. Station 2+65. Erosion on left bank.

P63.  Station 2+60.  Erosion on right bank.

P67.  Station 1+20.  Erosion on right bank.

## B.3 STREAM CROSS SECTION PHOTOS

**Hominy Swamp Cross-section Photos**

P60. Station 6+30. Cross-section 1.

P27. Station 14+10. Cross-section 3.

P28. Station 13+40. Cross-section 2.

P6. Station 19+90. Cross-section 4,

## B.4 CROSS SECTION PLOTS AND RAW DATA TABLES

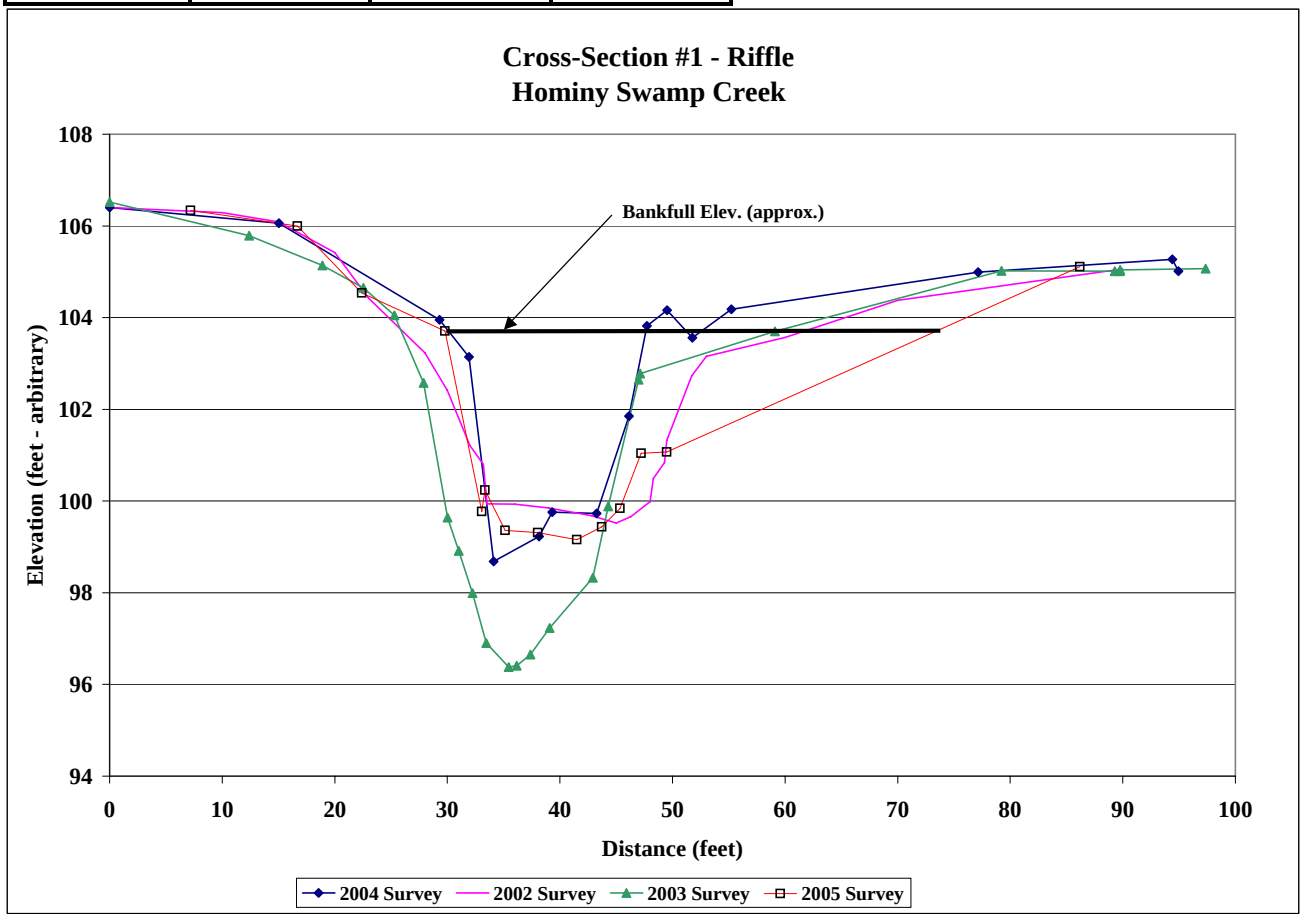
**Project** Hominy Swamp Creek
**Cross Se** #1
**Feature** Riffle
**Date** 6/23/05
**Crew** Cook, Stafford

**Cross-Section #1 location was moved in 2003**

**Photo of Cross-Section #1 - Looking Downstream**

| 2004 Survey | | | 2002 Survey | | | 2003 Survey | | | 2005 Survey | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Notes | Station | Elevation | Notes | Station | Elevation | Notes | Station | Elevation | Notes |
| -2.22 | 106.52 | | 0 | 106.4 | | 0 | 106.52 | | 7.2 | 106.34 | |
| 0 | 106.4 | | 10 | 106.29 | | 12.4 | 105.79 | | 16.68 | 106.00 | |
| 15.04 | 106.06 | | 15 | 106.09 | | 18.9 | 105.14 | | 22.41 | 104.54 | |
| 29.3 | 103.95 | | 20 | 105.42 | | 22.55 | 104.65 | | 29.79 | 103.71 | BKF |
| 31.92 | 103.14 | | 23 | 104.43 | BKF | 25.31 | 104.05 | BKF | 33.07 | 99.77 | |
| 34.12 | 98.68 | | 28 | 103.23 | | 27.88 | 102.58 | | 33.33 | 100.24 | |
| 38.15 | 99.23 | | 30 | 102.42 | | 30.03 | 99.64 | | 35.12 | 99.36 | |
| 39.31 | 99.76 | | 32 | 101.21 | | 31 | 98.91 | | 38.02 | 99.31 | |
| 43.25 | 99.73 | | 33.2 | 100.8 | | 32.24 | 97.99 | | 41.5 | 99.16 | |
| 46.13 | 101.85 | | 33.5 | 99.94 | | 33.47 | 96.9 | | 43.72 | 99.44 | |
| 47.72 | 103.82 | | 36 | 99.93 | | 35.45 | 96.38 | | 45.33 | 99.84 | |
| 49.53 | 104.16 | | 39 | 99.85 | | 36.15 | 96.41 | | 47.22 | 101.04 | |
| 51.77 | 103.56 | | 42.8 | 99.68 | | 37.39 | 96.65 | | 49.5 | 101.07 | |
| 55.23 | 104.18 | BKF | 45 | 99.52 | | 39.08 | 97.23 | | 86.19 | 105.11 | |
| 77.16 | 104.99 | | 46.3 | 99.66 | | 42.9 | 98.33 | | | | |
| 94.4 | 105.27 | | 48 | 99.99 | | 44.3 | 99.88 | | | | |
| 94.94 | 105.01 | | 48.3 | 100.49 | | 47.0 | 102.65 | | | | |
| | | | 49.3 | 100.84 | | 47.1 | 102.78 | | | | |
| | | | 49.5 | 101.32 | | 59.1 | 103.7 | | | | |
| | | | 51.7 | 102.73 | | 79.2 | 105.02 | | | | |
| | | | 53 | 103.16 | | 89.3 | 105.01 | | | | |
| | | | 60 | 103.57 | BKF | 89.7 | 105.01 | | | | |
| | | | 70 | 104.38 | | 89.8 | 105.04 | BKF | | | |
| | | | 90 | 105.06 | | 97.4 | 105.07 | | | | |

| | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|
| **Area** | 62.3 | 87.2 | 52.7 | 102.9 |
| **Width** | 25.0 | 24.6 | 16.8 | 43.7 |
| **Mean Depth** | 2.5 | 3.5 | 3.1 | 2.4 |
| **Max Depth** | 3.6 | 6.8 | 4.9 | 4.6 |

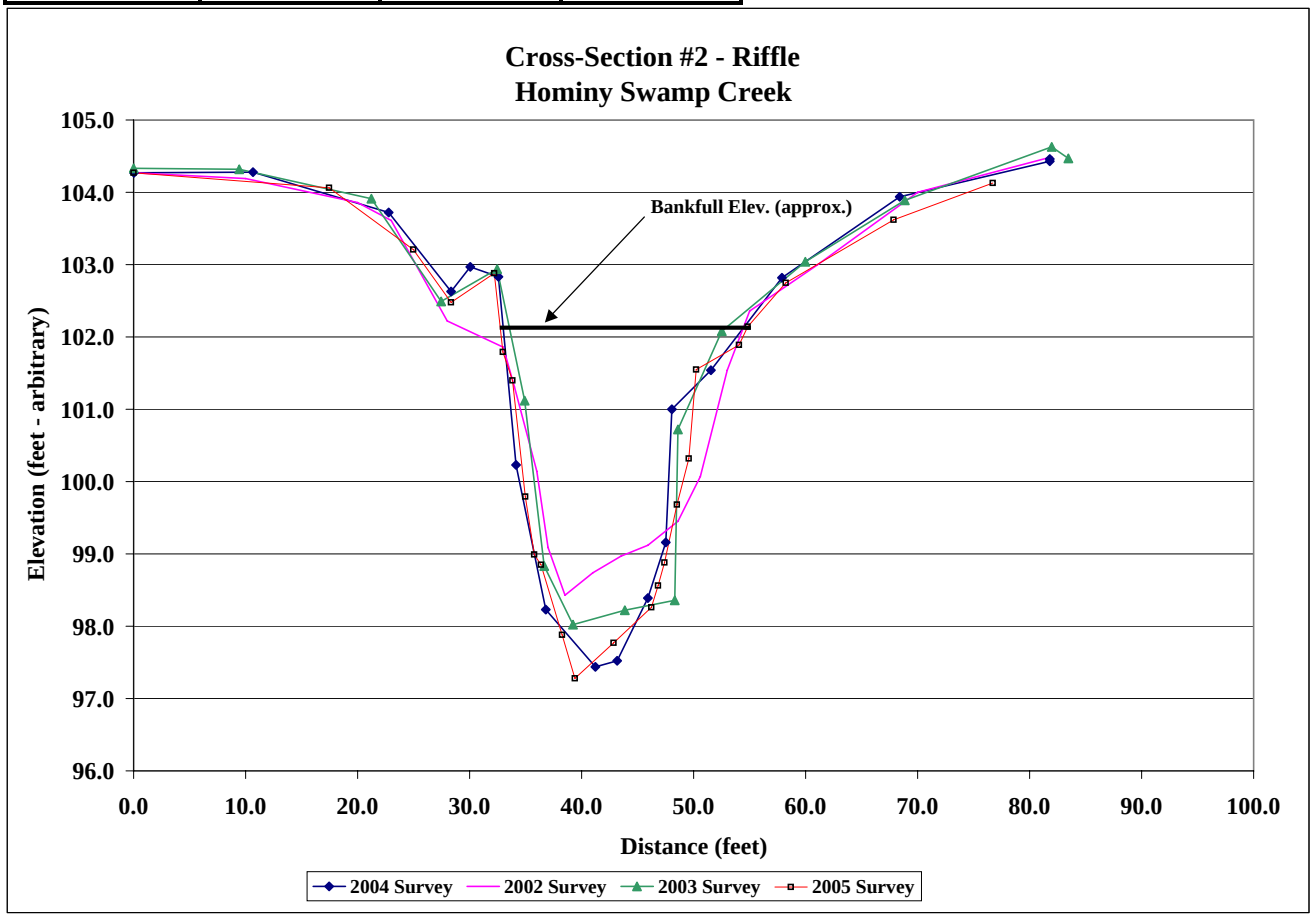


**Project** Hominy Swamp Creek
**Cross Se** #2
**Feature** Riffle
**Date** 6/23/05
**Crew** Cook, Stafford

| 2004 Survey | | | 2002 Survey | | | 2003 Survey | | | 2005 Survey | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Notes | Station | Elevation | Notes | Station | Elevation | Notes | Station | Elevation | Notes |
| 0.0 | 104.3 | | 0.0 | 104.3 | | 0.0 | 104.3 | | 0.0 | 104.27 | |
| 10.7 | 104.3 | | 10.0 | 104.2 | | 9.4 | 104.3 | | 17.5 | 104.06 | |
| 22.8 | 103.7 | | 20.0 | 103.9 | | 21.2 | 103.9 | | 25.0 | 103.21 | |
| 28.3 | 102.6 | BKF | 23.0 | 103.6 | | 27.5 | 102.5 | BKF | 28.3 | 102.48 | |
| 30.1 | 103.0 | | 28.0 | 102.2 | BKF | 32.5 | 102.9 | | 32.2 | 102.88 | |
| 32.6 | 102.8 | | 33.0 | 101.9 | | 34.9 | 101.1 | | 33.0 | 101.79 | |
| 34.2 | 100.2 | | 34.0 | 101.3 | | 36.7 | 98.8 | | 33.8 | 101.40 | |
| 36.8 | 98.2 | | 36.0 | 100.1 | | 39.2 | 98.0 | | 34.98 | 99.79 | |
| 41.2 | 97.4 | | 37.0 | 99.1 | | 43.9 | 98.2 | | 35.8 | 98.99 | |
| 43.2 | 97.5 | | 38.5 | 98.4 | | 48.3 | 98.4 | | 36.4 | 98.85 | |
| 45.9 | 98.4 | | 41.0 | 98.7 | | 48.6 | 100.7 | | 38.3 | 97.88 | |
| 47.5 | 99.2 | | 43.5 | 99.0 | | 52.5 | 102.1 | | 39.4 | 97.28 | |
| 48.1 | 101.0 | | 45.9 | 99.1 | | 60.0 | 103.0 | | 42.9 | 97.77 | |
| 51.5 | 101.5 | | 48.6 | 99.5 | | 68.9 | 103.9 | | 46.2 | 98.26 | |
| 57.9 | 102.8 | | 50.6 | 100.1 | | 82.0 | 104.6 | | 46.8 | 98.56 | |
| 68.4 | 103.9 | | 53.0 | 101.5 | | 83.5 | 104.5 | | 47.4 | 98.88 | |
| 81.8 | 104.4 | | 55.0 | 102.4 | BKF | | | | 48.5 | 99.68 | |
| 81.8 | 104.5 | | 61.0 | 103.0 | | | | | 49.6 | 100.32 | |
| | | | 70.0 | 104.0 | | | | | 50.2 | 101.55 | |
| | | | 82.0 | 104.5 | | | | | 54.1 | 101.89 | |
| | | | | | | | | | 54.8 | 102.14 | BKF |
| | | | | | | | | | 58.2 | 102.75 | |
| | | | | | | | | | 67.9 | 103.62 | |
| | | | | | | | | | 76.7 | 104.13 | |

**Photo of Cross-Section #2 - Looking Upstream**

| | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|
| **Area** | 53.1 | 53.9 | 59.8 | 60.7 |
| **Width** | 21.6 | 18.3 | 19.0 | 22.1 |
| **Mean Depth** | 2.5 | 3.0 | 3.2 | 2.7 |
| **Max Depth** | 3.8 | 4.2 | 4.8 | 4.9 |

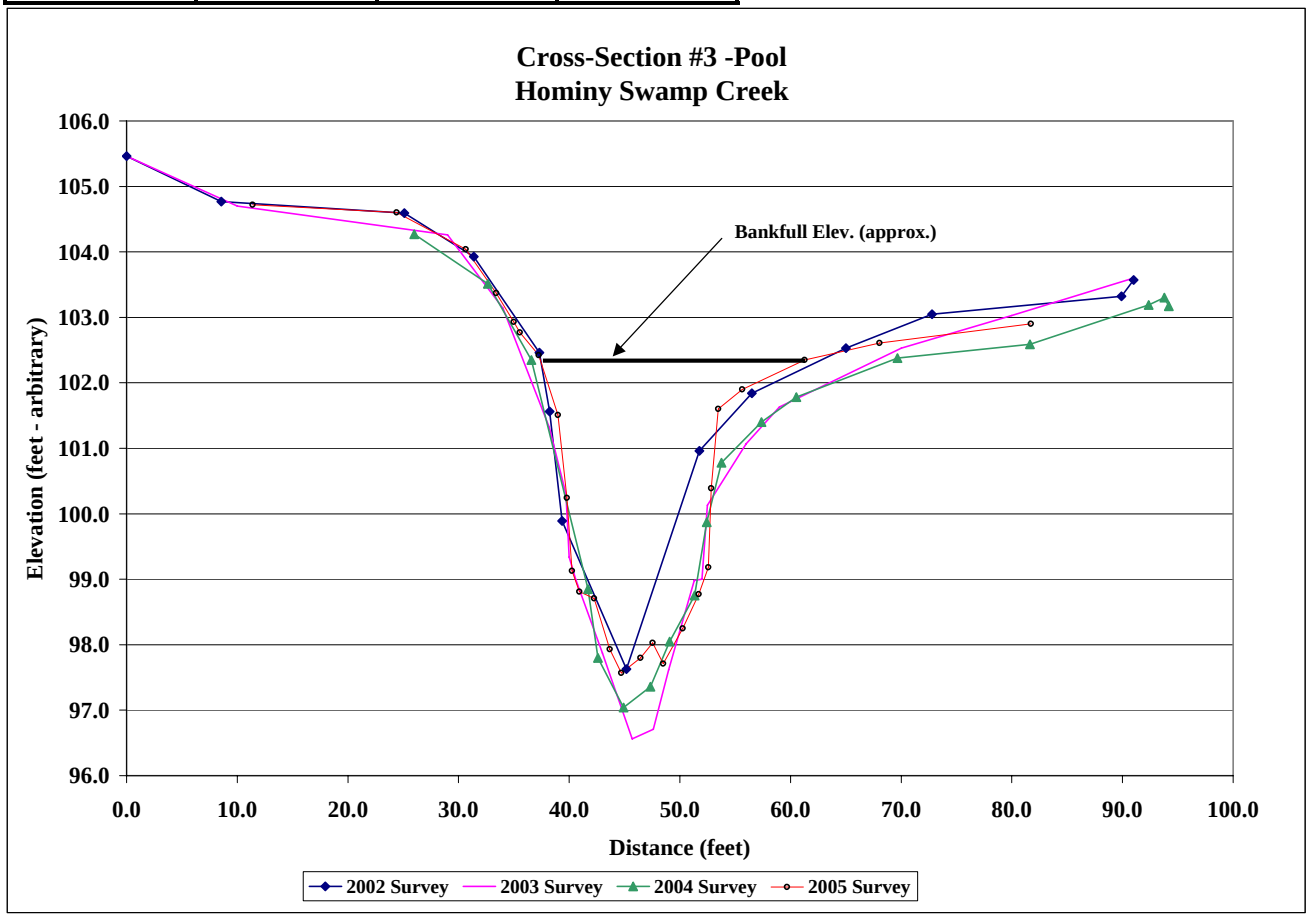


**Project** Hominy Swamp Creek
**Cross Se** #3
**Feature** Pool
**Date** 6/23/05
**Crew** Cook, Stafford

| 2002 Survey | | | 2003 Survey | | | 2004 Survey | | | 2005 Survey | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Station** | **Elv.** | **Notes** | **Station** | **Elv.** | **Notes** | **Station** | **Elv.** | **Notes** | **Station** | **Elv.** | **Notes** |
| 0.0 | 105.5 | | 0.0 | 105.5 | | 26.0 | 104.3 | | 11.4 | 104.72 | |
| 8.6 | 104.8 | | 10.0 | 104.7 | | 32.7 | 103.5 | | 24.4 | 104.6 | |
| 25.1 | 104.6 | | 29.0 | 104.3 | | 36.6 | 102.4 | | 30.6 | 104.04 | |
| 31.4 | 103.9 | | 34.0 | 103.1 | | 41.7 | 98.9 | | 33.4 | 103.37 | |
| 37.3 | 102.5 | | 38.2 | 101.3 | | 42.6 | 97.8 | | 35.0 | 102.93 | |
| 38.2 | 101.6 | | 39.7 | 100.3 | | 44.9 | 97.0 | | 35.5 | 102.77 | |
| 39.4 | 99.9 | | 40.0 | 99.3 | | 47.3 | 97.4 | | 37.2 | 102.42 | |
| 45.2 | 97.6 | | 40.6 | 99.0 | | 49.1 | 98.1 | | 38.97 | 101.51 | |
| 51.8 | 101.0 | | 43.0 | 97.9 | | 51.3 | 98.8 | | 39.8 | 100.2 | |
| 56.5 | 101.8 | | 45.7 | 96.6 | | 52.4 | 99.9 | | 40.3 | 99.1 | |
| 65.0 | 102.5 | BKF | 47.6 | 96.7 | | 53.8 | 100.8 | | 40.9 | 98.8 | |
| 72.8 | 103.1 | | 49.0 | 97.6 | | 57.4 | 101.4 | | 42.3 | 98.7 | |
| 89.9 | 103.3 | | 51.3 | 99.0 | | 60.5 | 101.8 | | 43.7 | 97.9 | |
| 91.0 | 103.6 | | 52.0 | 99.0 | | 69.7 | 102.4 | | 44.7 | 97.6 | |
| | | | 52.5 | 100.1 | | 81.6 | 102.6 | BKF | 46.4 | 97.8 | |
| | | | 56.0 | 101.1 | | 92.4 | 103.2 | | 47.5 | 98.0 | |
| | | | 59.0 | 101.6 | | 93.8 | 103.3 | | 48.5 | 97.7 | |
| | | | 70.0 | 102.5 | BKF | 94.2 | 103.2 | | 50.3 | 98.3 | |
| | | | 80.0 | 103.0 | | | | | 51.7 | 98.8 | |
| | | | 91.0 | 103.6 | | | | | 52.6 | 99.2 | |
| | | | | | | | | | 52.8 | 100.4 | |
| | | | | | | | | | 53.5 | 101.6 | |
| | | | | | | | | | 55.6 | 101.9 | |
| | | | | | | | | | 61.3 | 102.4 | BKF |
| | | | | | | | | | 68.1 | 102.6 | |
| | | | | | | | | | 81.7 | 102.9 | |

**Photo of Cross-Section #3 - Looking Downstream**

| | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|
| **Area** | 76.3 | 64.9 | 54.3 | 61.8 |
| **Width** | 31.8 | 33.1 | 27.7 | 24.0 |
| **Mean Depth** | 2.4 | 2.0 | 2.0 | 2.6 |
| **Max Depth** | 6.0 | 5.5 | 4.9 | 4.8 |

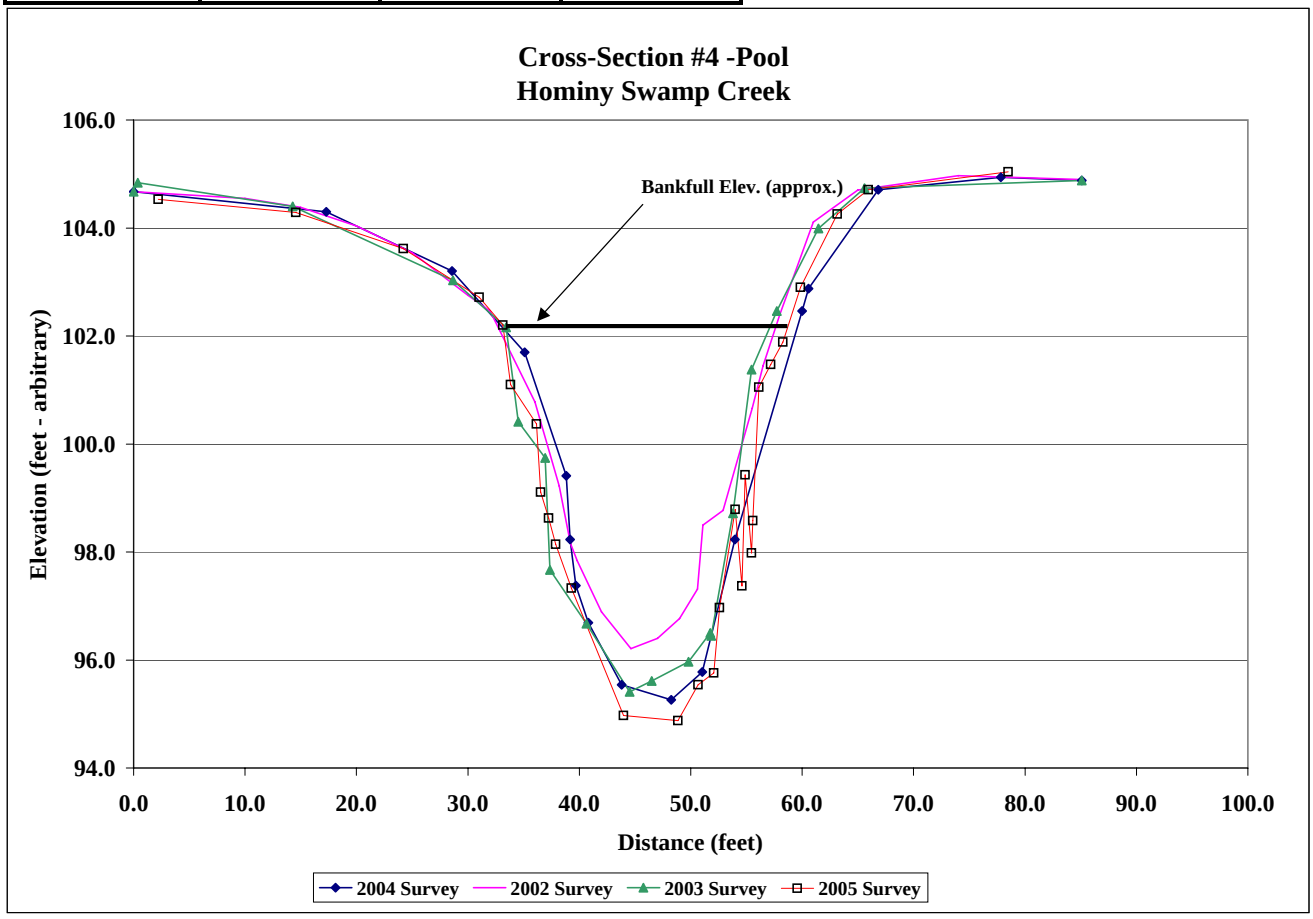


**Project** Hominy Swamp Creek
**Cross Se** #4
**Feature** Pool
**Date** 6/23/05
**Crew** Cook, Stafford

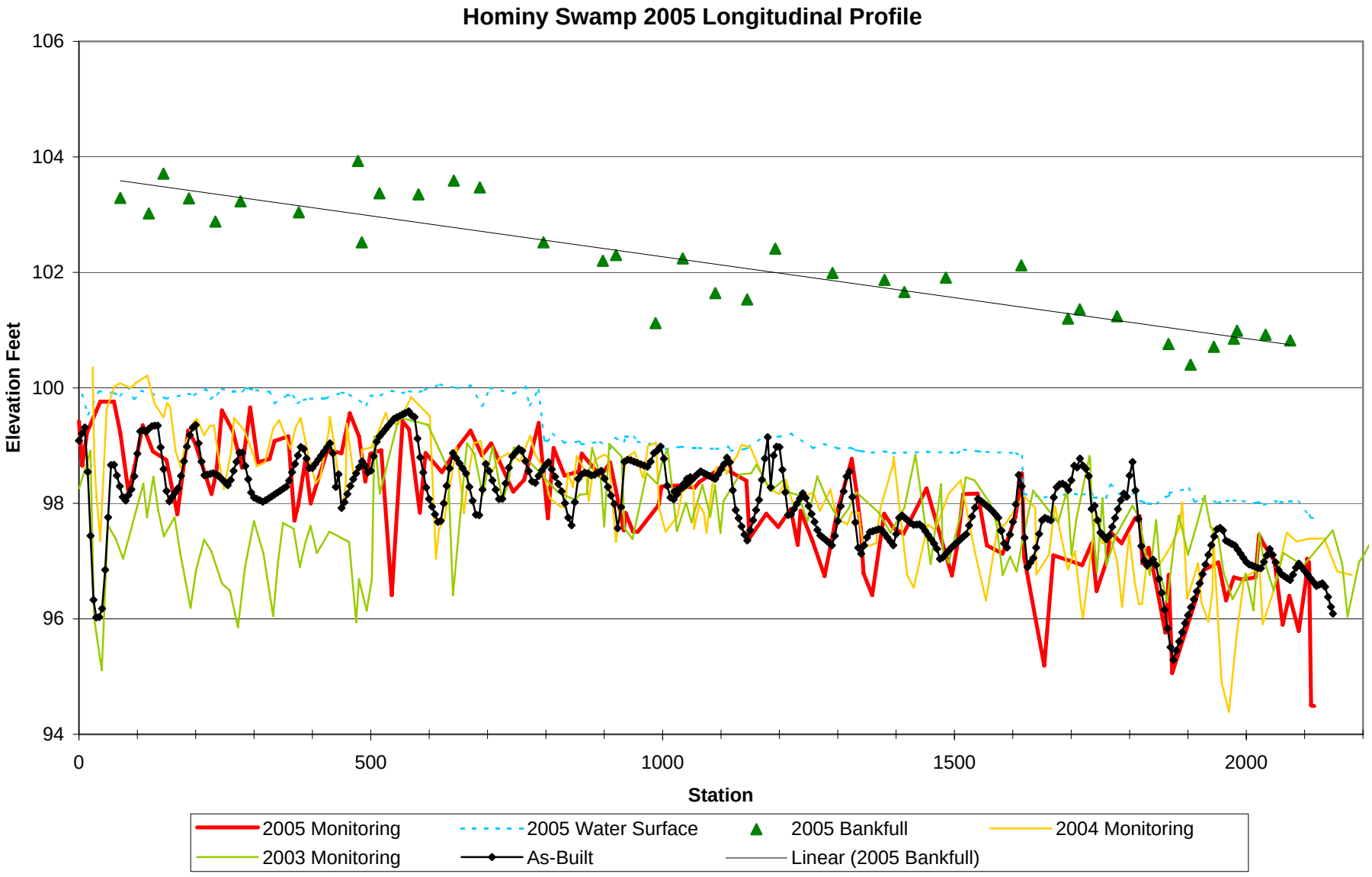
| 2004 Survey | | | 2002 Survey | | | 2003 Survey | | | 2005 Survey | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Elevation | Notes | Station | Elevation | Notes | Station | Elevation | Notes | Station | Elevation | Notes |
| 0.0 | 104.7 | | 0.0 | 104.7 | | 0.0 | 104.7 | | 2.2 | 104.53 | |
| 17.3 | 104.3 | | 10.0 | 104.6 | | 0.4 | 104.8 | | 14.6 | 104.29 | |
| 28.6 | 103.2 | | 15.0 | 104.4 | | 14.3 | 104.4 | | 24.2 | 103.62 | |
| 35.1 | 101.7 | | 20.0 | 104.0 | | 28.7 | 103.0 | | 31.01 | 102.72 | |
| 38.8 | 99.4 | | 25.0 | 103.5 | | 33.4 | 102.2 | | 33.1 | 102.2 | BKF |
| 39.2 | 98.2 | | 30.0 | 102.8 | | 34.5 | 100.4 | | 33.82 | 101.1 | |
| 39.7 | 97.4 | | 32.0 | 102.5 | BKF | 36.9 | 99.7 | | 36.17 | 100.37 | |
| 40.8 | 96.7 | | 36.0 | 100.8 | | 37.4 | 97.7 | | 36.5 | 99.11 | |
| 43.8 | 95.5 | | 38.2 | 99.2 | | 40.6 | 96.7 | | 37.3 | 98.6 | |
| 48.3 | 95.3 | | 39.2 | 98.2 | | 44.5 | 95.4 | | 37.9 | 98.1 | |
| 51.0 | 95.8 | | 39.8 | 97.8 | | 46.5 | 95.6 | | 39.3 | 97.3 | |
| 54.0 | 98.2 | | 42.0 | 96.9 | | 49.8 | 96.0 | | 44.0 | 95.0 | |
| 60.0 | 102.5 | BKF | 44.6 | 96.2 | | 51.7 | 96.5 | | 48.8 | 94.9 | |
| 60.6 | 102.9 | | 47.0 | 96.4 | | 51.9 | 96.5 | | 50.7 | 95.5 | |
| 66.8 | 104.7 | | 49.0 | 96.8 | | 53.8 | 98.7 | | 52.1 | 95.8 | |
| 77.8 | 104.9 | | 50.6 | 97.3 | | 55.5 | 101.4 | | 52.6 | 97.0 | |
| 85.1 | 104.9 | | 51.1 | 98.5 | | 57.7 | 102.5 | BKF | 54.0 | 98.8 | |
| | | | 52.9 | 98.8 | | 61.5 | 104.0 | | 54.6 | 97.4 | |
| | | | 55.5 | 100.7 | | 65.6 | 104.7 | | 54.9 | 99.4 | |
| | | | 56.5 | 101.5 | | 85.1 | 104.9 | | 55.5 | 98.0 | |
| | | | 58.0 | 102.4 | BKF | | | | 55.6 | 98.6 | |
| | | | 61.0 | 104.1 | | | | | 56.1 | 101.1 | |
| | | | 65.0 | 104.7 | | | | | 57.2 | 101.5 | |
| | | | 74.0 | 105.0 | | | | | 58.3 | 101.9 | |
| | | | 85.0 | 104.9 | | | | | 59.8 | 102.9 | |
| | | | | | | | | | 63.1 | 104.3 | |
| | | | | | | | | | 65.9 | 104.7 | |
| | | | | | | | | | 78.5 | 105.0 | |

**Photo of Cross-Section #4 - Looking Upstream**

| | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|
| **Area** | 88.3 | 107.5 | 113.8 | 119.5 |
| **Width** | 23.5 | 26.8 | 24.9 | 25.4 |
| **Mean Depth** | 3.8 | 4.0 | 4.6 | 4.7 |
| **Max Depth** | 6.0 | 6.8 | 7.2 | 7.3 |



## B.5 LONGITUDINAL PLOTS AND RAW DATA TABLES


Hominy Swamp 2005 Longitudinal Profile
106
104
102
100
98
96
94
Elevation Feet
0
500
1000
1500
2000
Station
2005 Monitoring
2005 Water Surface
2005 Bankfull
2004 Monitoring
2003 Monitoring
As-Built
Linear (2005 Bankfull)

Project Name: Hominy Swamp
Task: Longitudinal Profile
Date: June 22, 2005

| | | 2005 Survey | | | |
|---|---|---|---|---|---|
| TWG | TWG | WS | WS | BKF | BKF |
| Station | Elevation | Station | Elevation | Station | Elevation |
| 0 | 99.42 | 5.48 | 99.88 | 70.9 | 103.29 |
| 5.71 | 98.65 | 15.32 | 99.54 | 119.66 | 103.02 |
| 13.78 | 99.23 | 34.78 | 99.94 | 144.76 | 103.71 |
| 36.66 | 99.76 | 61.17 | 99.91 | 188.5 | 103.28 |
| 60.02 | 99.76 | 69.91 | 99.87 | 233.75 | 102.88 |
| 70.85 | 99.22 | 82.44 | 100.01 | 276.81 | 103.23 |
| 84.83 | 98.19 | 94.62 | 99.81 | 376.73 | 103.04 |
| 95.8 | 98.65 | 106.8 | 99.95 | 478.12 | 103.93 |
| 109.21 | 99.35 | 125.89 | 99.9 | 484.63 | 102.52 |
| 126.68 | 98.9 | 149.9 | 99.81 | 514.9 | 103.37 |
| 149.72 | 98.75 | 187.69 | 99.9 | 581.64 | 103.35 |
| 168.72 | 97.81 | 197.64 | 99.87 | 642.28 | 103.59 |
| 187.13 | 99.26 | 216.86 | 99.98 | 686.79 | 103.47 |
| 199.23 | 99.04 | 226.27 | 99.81 | 795.93 | 102.52 |
| 218.64 | 98.43 | 236.01 | 99.89 | 897.71 | 102.2 |
| 227.16 | 98.16 | 245.08 | 99.98 | 920.11 | 102.3 |
| 235.54 | 98.54 | 263.6 | 99.94 | 987.8 | 101.12 |
| 244.83 | 99.61 | 279.51 | 99.94 | 1034.47 | 102.24 |
| 263.6 | 99.25 | 285.5 | 100 | 1090.38 | 101.64 |
| 279.32 | 98.62 | 293.26 | 99.98 | 1144.85 | 101.53 |
| 285.6 | 99.07 | 303.8 | 99.96 | 1193.01 | 102.41 |
| 293.26 | 99.66 | 326.68 | 99.93 | 1291.14 | 101.99 |
| 306.5 | 98.71 | 335.55 | 99.73 | 1379.99 | 101.87 |
| 326.52 | 98.77 | 357.17 | 99.88 | 1414.07 | 101.66 |
| 335.25 | 99.08 | 366.3 | 99.86 | 1485.18 | 101.91 |
| 358.68 | 99.16 | 374.83 | 99.73 | 1614.48 | 102.12 |
| 369.19 | 97.7 | 385.35 | 99.79 | 1694.66 | 101.2 |
| 375.59 | 97.97 | 396.48 | 99.81 | 1714.61 | 101.36 |
| 387.85 | 98.74 | 423.97 | 99.82 | 1778.6 | 101.24 |
| 397.08 | 98 | 450.27 | 99.92 | 1866.63 | 100.76 |
| 425.52 | 98.92 | 463.53 | 99.89 | 1904.57 | 100.4 |
| 449.78 | 98.87 | 491.94 | 99.7 | 1944.39 | 100.71 |
| 464.06 | 99.56 | 499.76 | 99.86 | 1978.66 | 100.85 |
| 479.8 | 99.16 | 516.94 | 99.87 | 1984.16 | 100.99 |
| 490.63 | 98.38 | 535.86 | 99.95 | 2033.03 | 100.92 |
| 499.38 | 98.86 | 554.15 | 99.91 | 2075.18 | 100.82 |
| 517.91 | 98.92 | 565.71 | 99.94 | | |

| | | 2005 Survey | | | |
|---|---|---|---|---|---|
| TWG | TWG | WS | WS | BKF | BKF |
| Station | Elevation | Station | Elevation | Station | Elevation |
| 535.86 | 96.41 | 584.07 | 99.93 | | |
| 554.53 | 99.42 | 592.33 | 99.96 | | |
| 565.66 | 99.28 | 619.07 | 100.06 | | |
| 584.07 | 97.84 | 648.92 | 99.99 | | |
| 593.86 | 98.87 | 670.26 | 100.04 | | |
| 621.74 | 98.54 | 691.06 | 99.69 | | |
| 650.76 | 98.99 | 704.44 | 100 | | |
| 670.86 | 99.26 | 745 | 99.9 | | |
| 690.66 | 98.83 | 765.16 | 100.02 | | |
| 706.29 | 99.04 | 771.9 | 99.7 | | |
| 744.12 | 98.2 | 787.46 | 99.96 | | |
| 762.96 | 98.41 | 797.32 | 99.09 | | |
| 770.26 | 98.7 | 802.69 | 99.08 | | |
| 787.79 | 99.39 | 812.45 | 99.21 | | |
| 797.57 | 98.35 | 830.78 | 99.05 | | |
| 803.32 | 97.74 | 856.87 | 99.07 | | |
| 813.29 | 98.96 | 861.44 | 99.02 | | |
| 831.8 | 98.48 | 893.39 | 99.07 | | |
| 856.02 | 98.55 | 909.73 | 98.95 | | |
| 861.53 | 98.86 | 919.75 | 99.13 | | |
| 893.57 | 98.47 | 933.87 | 99.07 | | |
| 910.03 | 98.71 | 936.55 | 99.15 | | |
| 920.11 | 98.22 | 950.25 | 99.15 | | |
| 933.38 | 97.53 | 957.4 | 99.07 | | |
| 936.71 | 97.83 | 993.17 | 99 | | |
| 949.16 | 97.51 | 998.8 | 99.01 | | |
| 957.55 | 97.51 | 1005.39 | 98.94 | | |
| 993.17 | 97.97 | 1031.73 | 98.98 | | |
| 997.84 | 98.29 | 1053.24 | 98.96 | | |
| 1030.89 | 98.31 | 1062.7 | 98.96 | | |
| 1054.51 | 98.27 | 1092 | 98.94 | | |
| 1062.7 | 98.37 | 1112.27 | 98.98 | | |
| 1093.84 | 98.57 | 1116.79 | 98.91 | | |
| 1112.73 | 98.76 | 1142.33 | 98.94 | | |
| 1116.96 | 98.54 | 1146.79 | 98.97 | | |
| 1143.49 | 98.39 | 1177.24 | 99.19 | | |
| 1149.01 | 97.4 | 1199.55 | 99.15 | | |
| 1177.64 | 97.82 | 1220.69 | 99.21 | | |
| 1198.08 | 97.59 | 1257.96 | 98.95 | | |
| 1219.51 | 97.9 | 1276.78 | 99.03 | | |
| 1231.62 | 97.28 | 1299.7 | 98.95 | | |

| | | 2005 Survey | | | |
|---|---|---|---|---|---|
| TWG | TWG | WS | WS | BKF | BKF |
| Station | Elevation | Station | Elevation | Station | Elevation |
| 1236.25 | 97.87 | 1324.59 | 98.96 | | |
| 1256.98 | 97.34 | 1331.28 | 98.92 | | |
| 1277.45 | 96.74 | 1338.19 | 98.91 | | |
| 1299.01 | 97.85 | 1341.46 | 98.9 | | |
| 1324.09 | 98.77 | 1358.5 | 98.88 | | |
| 1331.72 | 98.24 | 1380.37 | 98.9 | | |
| 1339.48 | 97.57 | 1395.03 | 98.87 | | |
| 1344.08 | 96.79 | 1413.67 | 98.88 | | |
| 1358.94 | 96.41 | 1454.02 | 98.89 | | |
| 1379.73 | 97.82 | 1493.91 | 98.88 | | |
| 1394.96 | 97.58 | 1505.38 | 98.87 | | |
| 1412.49 | 97.47 | 1516.37 | 98.93 | | |
| 1452.08 | 98.26 | 1540.81 | 98.9 | | |
| 1495.67 | 96.75 | 1555.07 | 98.89 | | |
| 1504.42 | 97.25 | 1606.05 | 98.87 | | |
| 1515.13 | 98.16 | 1615.87 | 98.82 | | |
| 1539.77 | 98.17 | 1618.54 | 98.14 | | |
| 1555.55 | 97.27 | 1620.19 | 98.16 | | |
| 1582.6 | 97.13 | 1654.69 | 98.1 | | |
| 1604.57 | 97.77 | 1667.66 | 98.14 | | |
| 1615.59 | 98.52 | 1706.41 | 98.16 | | |
| 1618.07 | 97.67 | 1719.54 | 98.15 | | |
| 1619.36 | 97.07 | 1734.88 | 98.18 | | |
| 1653.86 | 95.19 | 1739.71 | 98.1 | | |
| 1669.52 | 97.1 | 1759.77 | 98.1 | | |
| 1707.64 | 96.97 | 1767.64 | 98.32 | | |
| 1718.82 | 96.93 | 1786.38 | 98.13 | | |
| 1735.26 | 97.31 | 1810.02 | 98.18 | | |
| 1743.39 | 96.48 | 1818.08 | 98.04 | | |
| 1760.66 | 97 | 1822.86 | 98.03 | | |
| 1767.68 | 97.5 | 1832.43 | 97.99 | | |
| 1786.38 | 97.31 | 1846.57 | 97.99 | | |
| 1809.27 | 97.74 | 1861.74 | 98.11 | | |
| 1816.97 | 97.78 | 1867.46 | 98.13 | | |
| 1822.13 | 96.96 | 1868.89 | 98.18 | | |
| 1832.43 | 97.23 | 1901.32 | 98.26 | | |
| 1846.33 | 96.56 | 1912.09 | 98.02 | | |
| 1861.36 | 95.76 | 1925.18 | 98.08 | | |
| 1867.22 | 96.76 | 1952.44 | 98.01 | | |
| 1868.01 | 96.5 | 1966.26 | 98.04 | | |
| 1872.94 | 95.06 | 1978.07 | 98.05 | | |

| | | 2005 Survey | | | |
|---|---|---|---|---|---|
| TWG | TWG | WS | WS | BKF | BKF |
| Station | Elevation | Station | Elevation | Station | Elevation |
| 1965.36 | 96.32 | 2030.68 | 97.97 | | |
| 1978.66 | 96.72 | 2049.31 | 98.04 | | |
| 1993.52 | 96.68 | 2058.6 | 98.02 | | |
| 2015.61 | 96.72 | 2074.46 | 98.03 | | |
| 2021.68 | 97.45 | 2088.94 | 98.03 | | |
| 2031.18 | 97.27 | 2107.77 | 97.79 | | |
| 2048.22 | 97 | 2110.52 | 97.76 | | |
| 2062.32 | 95.9 | 2114.93 | 97.74 | | |
| 2073.77 | 96.4 | | | | |
| 2089.79 | 95.79 | | | | |
| 2102.12 | 96.68 | | | | |
| 2104.24 | 97.04 | | | | |
| 2107.59 | 96.97 | | | | |
| 2110.94 | 94.5 | | | | |
| 2116.35 | 94.49 | | | | |

## B.6 PEBBLE COUNT PLOTS AND RAW DATA TABLES

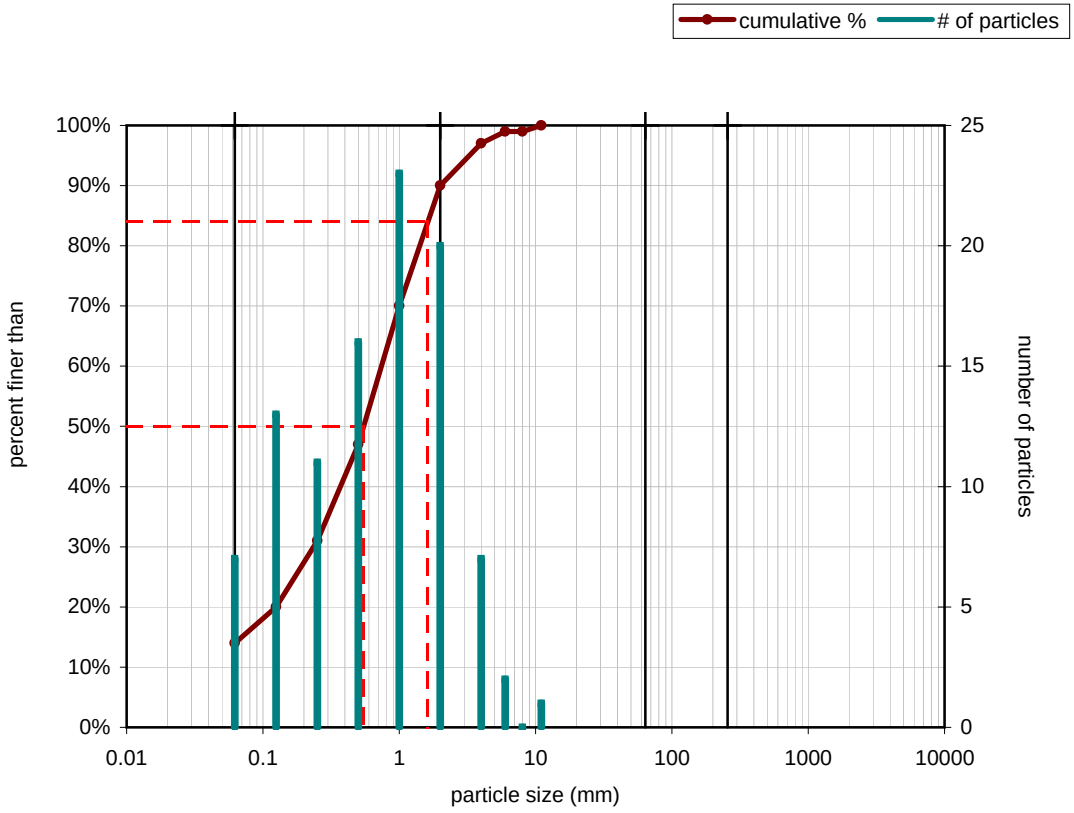
## Year 4 Monitoring, Pebble Count Cross Section 1 Riffle

Hominy Swamp Creek Stream Restoration Project — Pebble Count Data Sheet
Project No: D050515 — Cross Section 1
12/1/2005 — Station 15+60

| Materia | Size Range (mm) | | Count | % Range | %Cum. |
|---|---|---|---|---|---|
| silt/clay | 0 | - 0.062 | 7 | 7% | 14% |
| very fine sand | 0.062 | - 0.125 | 13 | 13% | 20% |
| fine sand | 0.125 | - 0.25 | 11 | 11% | 31% |
| medium sand | 0.25 | - 0.5 | 16 | 16% | 47% |
| coarse sand | 0.5 | - 1 | 23 | 23% | 70% |
| very coarse sand | 1 | - 2 | 20 | 20% | 90% |
| very fine gravel | 2 | - 4 | 7 | 7% | 97% |
| fine gravel | 4 | - 6 | 2 | 2% | 99% |
| fine gravel | 6 | - 8 | 0 | 0% | 99% |
| medium gravel | 8 | - 11 | 1 | 1% | 100% |
| medium gravel | 11 | - 16 | | 0% | 100% |
| coarse gravel | 16 | - 22 | | 0% | 100% |
| coarse gravel | 22 | - 32 | | 0% | 100% |
| very coarse gravel | 32 | - 45 | | 0% | 100% |
| very coarse gravel | 45 | - 64 | | 0% | 100% |
| small cobble | 64 | - 90 | | 0% | 100% |
| medium cobble | 90 | - 128 | | 0% | 100% |
| large cobble | 128 | - 180 | | 0% | 100% |
| very large cobble | 180 | - 256 | | 0% | 100% |
| small boulder | 256 | - 362 | | 0% | 100% |
| small boulder | 362 | - 512 | | 0% | 100% |
| medium boulder | 512 | - 1024 | | 0% | 100% |
| large boulder | 1024 | - 2048 | | 0% | 100% |
| very large boulder | 2048 | - 4096 | | 0% | 100% |
| total particle count: | | | 100 | 100% | |
| bedrock | | | | | |
| clay hardpan | | | | | |
| detritus/wood | | | | | |
| artificial | | | | | |
| total count: | | | 100 | | |

Note: Cross-X1

Cross Section 1 Riffle Pebble Count Distribution and Histogram




| Size (mm) | |
|---|---|
| D16 | 0.078 |
| D35 | 0.3 |
| D50 | 0.55 |
| D65 | 0.86 |
| D84 | 1.6 |
| D95 | 3.3 |

| Size Distribution | |
|---|---|
| mean | 0.4 |
| dispersion | 5.0 |
| skewness | -0.17 |

| Type | |
|---|---|
| silt/clay | 7% |
| sand | 83% |
| gravel | 10% |
| cobble | 0% |
| boulder | 0% |

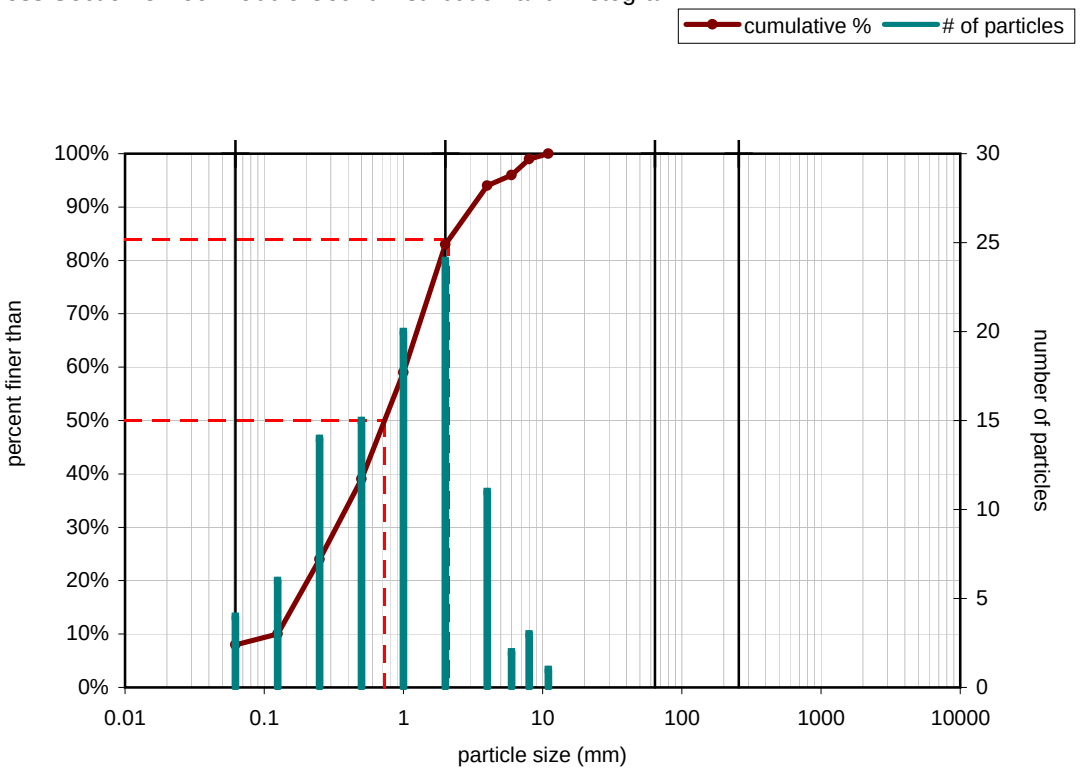
## Year 4 Monitoring, Pebble Count Cross Section 2 Riffle

Hominy Swamp Creek Stream Restoration Project — Pebble Count Data Sheet
Project No: D050515 — Cross Section 3
12/1/2005 — Station 14+41

| Materia | Size Range (mm) | | Count | % Range | %Cum. |
|---|---|---|---|---|---|
| silt/clay | 0 | - 0.062 | 4 | 4% | 9% |
| very fine sand | 0.062 | - 0.125 | 6 | 6% | 14% |
| fine sand | 0.125 | - 0.25 | 14 | 14% | 28% |
| medium sand | 0.25 | - 0.5 | 15 | 15% | 43% |
| coarse sand | 0.5 | - 1 | 20 | 20% | 63% |
| very coarse sand | 1 | - 2 | 24 | 24% | 87% |
| very fine gravel | 2 | - 4 | 11 | 11% | 98% |
| fine gravel | 4 | - 6 | 2 | 2% | 99% |
| fine gravel | 6 | - 8 | 3 | 3% | 99% |
| medium gravel | 8 | - 11 | 1 | 1% | 99% |
| medium gravel | 11 | - 16 | | 0% | 100% |
| coarse gravel | 16 | - 22 | | 0% | 100% |
| coarse gravel | 22 | - 32 | | 0% | 100% |
| very coarse gravel | 32 | - 45 | | 0% | 100% |
| very coarse gravel | 45 | - 64 | | 0% | 100% |
| small cobble | 64 | - 90 | | 0% | 100% |
| medium cobble | 90 | - 128 | | 0% | 100% |
| large cobble | 128 | - 180 | | 0% | 100% |
| very large cobble | 180 | - 256 | | 0% | 100% |
| small boulder | 256 | - 362 | | 0% | 100% |
| small boulder | 362 | - 512 | | 0% | 100% |
| medium boulder | 512 | - 1024 | | 0% | 100% |
| large boulder | 1024 | - 2048 | | 0% | 100% |
| very large boulder | 2048 | - 4096 | | 0% | 100% |
| total particle count: | | | 100 | 100% | |
| bedrock | ---------- | | | | |
| clay hardpan | ---------- | | | | |
| detritus/wood | ---------- | | | | |
| artificial | ---------- | | | | |
| total count: | | | 100 | | |

Note: Cross-X2

Cross Section 3 Pool Pebble Count Distribution and Histogram




| Size (mm) | |
|---|---|
| D16 | 0.17 |
| D35 | 0.42 |
| D50 | 0.73 |
| D65 | 1.2 |
| D84 | 2.1 |
| D95 | 4.9 |

| Size Distribution | |
|---|---|
| mean | 0.6 |
| dispersion | 3.6 |
| skewness | -0.08 |

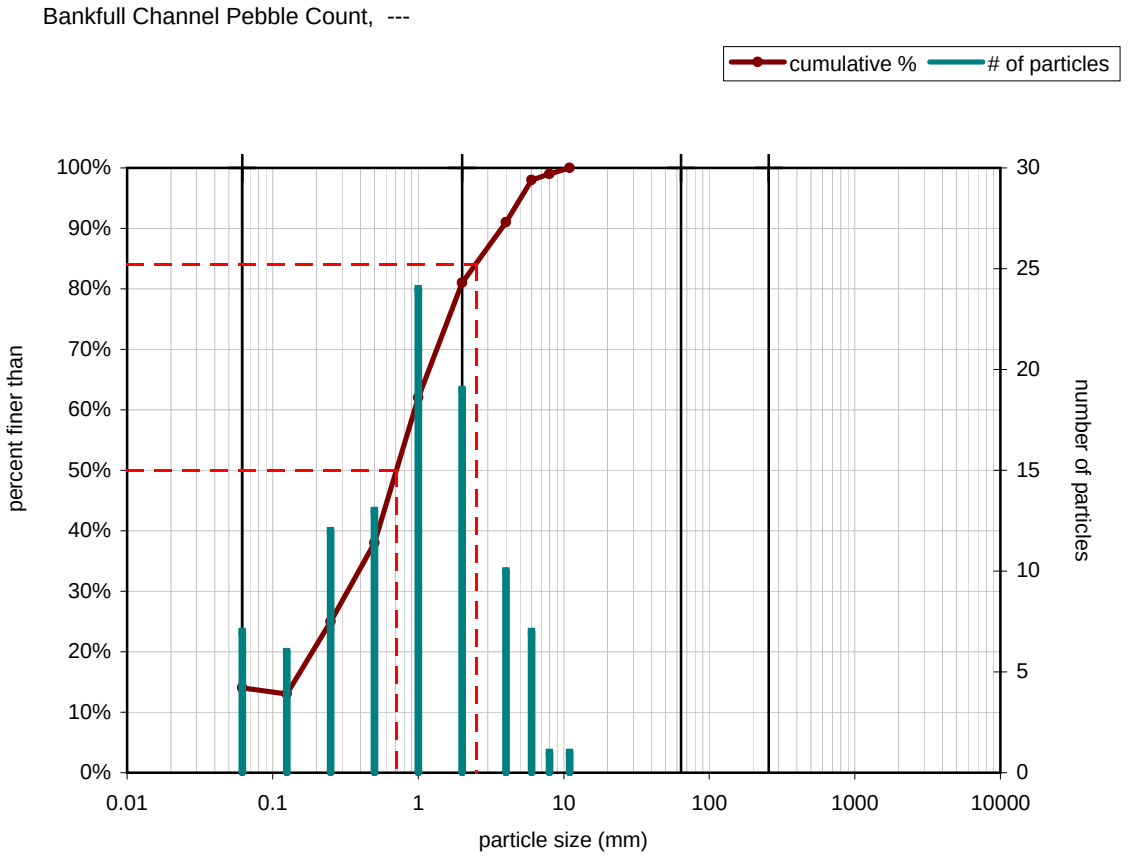
| Type | |
|---|---|
| silt/clay | 4% |
| sand | 79% |
| gravel | 17% |
| cobble | 0% |
| boulder | 0% |

## Year 4 Monitoring, Pebble Count Reach Wide

Hominy Swamp Creek Stream Restoration Project — Pebble Count Data Sheet
Project No: D050515 — Reach Wide Pebble Count
12/1/2005

| Materia | Size Range (mm) | | Count | % Range | %Cum. |
|---|---|---|---|---|---|
| silt/clay | 0 | - 0.062 | 7 | 7% | 14% |
| very fine sand | 0.062 | - 0.125 | 6 | 6% | 20% |
| fine sand | 0.125 | - 0.25 | 12 | 12% | 31% |
| medium sand | 0.25 | - 0.5 | 13 | 13% | 47% |
| coarse sand | 0.5 | - 1 | 24 | 24% | 70% |
| very coarse sand | 1 | - 2 | 19 | 19% | 90% |
| very fine gravel | 2 | - 4 | 10 | 10% | 97% |
| fine gravel | 4 | - 6 | 7 | 7% | 99% |
| fine gravel | 6 | - 8 | 1 | 1% | 99% |
| medium gravel | 8 | - 11 | 1 | 1% | 100% |
| medium gravel | 11 | - 16 | | 0% | 100% |
| coarse gravel | 16 | - 22 | | 0% | 100% |
| coarse gravel | 22 | - 32 | | 0% | 100% |
| very coarse gravel | 32 | - 45 | | 0% | 100% |
| very coarse gravel | 45 | - 64 | | 0% | 100% |
| small cobble | 64 | - 90 | | 0% | 100% |
| medium cobble | 90 | - 128 | | 0% | 100% |
| large cobble | 128 | - 180 | | 0% | 100% |
| very large cobble | 180 | - 256 | | 0% | 100% |
| small boulder | 256 | - 362 | | 0% | 100% |
| small boulder | 362 | - 512 | | 0% | 100% |
| medium boulder | 512 | - 1024 | | 0% | 100% |
| large boulder | 1024 | - 2048 | | 0% | 100% |
| very large boulder | 2048 | - 4096 | | 0% | 100% |
| total particle count: | | | 100 | 100% | |
| bedrock | ---------- | | | | |
| clay hardpan | ---------- | | | | |
| detritus/wood | ---------- | | | | |
| artificial | ---------- | | | | |
| total count: | | | 100 | | |

Note: Reach Wide




| Size (mm) | |
|---|---|
| D16 | 0.15 |
| D35 | 0.43 |
| D50 | 0.71 |
| D65 | 1.1 |
| D84 | 2.5 |
| D95 | 5 |

| Size Distribution | |
|---|---|
| mean | 0.6 |
| dispersion | 4.1 |
| skewness | -0.06 |

| Type | |
|---|---|
| silt/clay | 7% |
| sand | 74% |
| gravel | 19% |
| cobble | 0% |
| boulder | 0% |

## B.7 Table B.1 Categorical Stream Feature Visual Stability Assessment

| Table B1. Visual Morphological Stability Assessment<br>Project No. 180 (Hominy Swamp Creek) | | | | | | |
|---|---|---|---|---|---|---|
| Feature Category | Metric (per As-built and reference baselines) | (# Stable) Number Performing as Intended | Total number per As-built | Total Number /feet in unstable state | % Perform in Stable Condition | Feature Perform. Mean or Total |
| A. Riffles | 1. Present? | 2 | 6 | NA | 33 | |
| | 2. Armor stable(e.g. no displacement)? | 2 | 6 | NA | 33 | |
| | 3. Facet grade appears stable? | 2 | 6 | NA | 33 | |
| | 4. Minimal evidence of embedding/fining? | 2 | 6 | NA | 33 | |
| | 5. Length appropriate? | 2 | 6 | NA | 33 | 33% |
| B. Pools | 1. Present? (e.g. not subject to severe aggradation or migration? | NA* | NA* | NA* | NA* | |
| | 2. Sufficiently deep (Max Pool D:Mean Bkf>1.6) | NA* | NA* | NA* | NA* | |
| | 3. Length Appropriate? | NA* | NA* | NA* | NA* | NA* |
| C. Thalweg | 1. Upstream of meander bend (run/inflection) centering? | 12 | 20 | NA | 60 | |
| | 2. Downstream of meander (glide/inflection) centering? | 12 | 20 | NA | 60 | 60% |
| D. Meanders | 1. Outer bend in state of limited/controlled erosion? | 11 | 20 | NA | 55 | |
| | 2. Of those eroding, # w/concomitant point bar formation? | 2 | 9 | NA | 22 | |
| | 3. Apparent Rc within spec? | 20 | 20 | NA | 100 | |
| | 4. Sufficient floodplain access and relief? | 18 | 20 | NA | 90 | 67% |
| E. Bed General | 1. General channel bed aggradation areas (bar formation) | NA | NA | 5/85 | NA | 96% |
| | 2. Channel bed degradation-areas of increasing downcutting or head cutting? | NA | NA | 0 | NA | NA |
| F. Vanes | 1. Free of back or arm scour? | 25 | 31 | NA | 81 | |
| | 2. Height appropriate? | 28 | 31 | NA | 90 | |
| | 3. Angle and geometry appear appropriate? | 28 | 31 | NA | 90 | |
| | 4. Free of piping or other structural failures? | 31 | 31 | NA | 100 | 90% |
| G. Wads/Boulders | 1. Free of scour? | 11 | 13 | NA | 85 | |
| | 2. Footing stable? | 13 | 13 | NA | 100 | 93% |

**It is not clear in the as-built plans the total number of constructed pools. The channel is comprised mostly of pool sections, holding grade, and performing adequately.*