ANNE ARUNDEL COUNTY
MARYLAND

Prepared For:

**Anne Arundel County**
**Department of Public Works**

# Sloop Cove Stream Restoration

## Year 2 Monitoring Report
## 16-NT-0193/2016-60858

## November 2025

Prepared by:


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# 1. SUMMARY OF PROJECT DETAILS

## 1.1. Project Name

Sloop Cove Stream Restoration

## 1.2. Corps Application Tracking Number & State Permit Number

CENAB-OPR-MN-2016-60858
16-NT-0193

## 1.3. Location of Completed Work (Latitude/Longitude)

39.14833/-76.56278

## 1.4. Dates of Construction

October 2023 to June 2024

## 1.5. Applicant Contact Information

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## 2. PROJECT OVERVIEW AND PURPOSE

The Sloop Cove Stream Restoration Project (the Project) was intended to restore the incised banks and valley bottom of a channel that drains into Sloop Cove in Glen Burnie, Maryland.

The Project was undertaken to address the stability of a degraded channel, consisting of a North Branch (a perennial stream channel) and a South Branch (an intermittent stream channel). The two branches, located in a valley bottom, had deeply incised banks and were actively deteriorating, resulting in the erosion and deposition of sediment into Sloop Cove after rain events. To minimize shear stress and reduce erosion, the bottom of the channel was raised, and uniform valley slopes were implemented all along the project reach. The width of each valley bottom was maximized to reduce depth and connect the channel to its floodplain. Along with flow control, this provided water quality benefits for the watershed and increased stormwater attenuation. After construction, the North and South Branch observed intermittent flow.

Permit approvals included U.S. Army Corps of Engineers (USACE) Permit No. 2016-60858 issued on May 2, 2022 and the Maryland Department of the Environment (MDE) No. 16-NT-0193 issued on October 25, 2021. The permit authorized the permanent impacts to 2,435 linear feet (LF) of perennial channel and 2,310 square feet of palustrine forested wetland. The Project temporarily impacted 60,995 feet of floodplain and permanently impacted 8,213 square feet of nontidal wetlands buffer. The Project is located at 8042 High Oak Road, Glen Burnie, Anne Arundel County, Maryland.

In accordance with the conditions outlined in the USACE and MDE permit authorizations, the permittee is required to maintain the authorized structures in compliance with the terms and conditions of the permit, as well as the approved plans dated January 2023. Additionally, the permittee must submit an as-built report upon completion of construction and conduct post-construction monitoring over a three-year period. Monitoring reports for Years 1 through 3 are to be submitted by December 31 of the respective monitoring year, in accordance with the permit conditions. MDE requires monitoring for three out of five years on Years 1, 3, and 5 following the completion of construction. However, if the Project is determined to be stable at the end of Year 3, the Authorized Person may request an exemption from the Year 5 stream monitoring requirement.

At a minimum, the monitoring protocols must include baseline conditions, as-built plans, routine inspections, quantifiable measurements of appropriate project-specific parameters based on project goals, stream and project stability monitoring, percent coverage of planted and native vegetation, invasive plant reduction, and photo documentation. Monitoring frequency and success criteria are outlined in Table 1.

This report covers Year 2 (2025) monitoring requirements per Special Condition 5 of the USACE permit authorization (Appendix B). It includes a detailed assessment of structural stability and overall condition, evaluation of vegetation establishment and

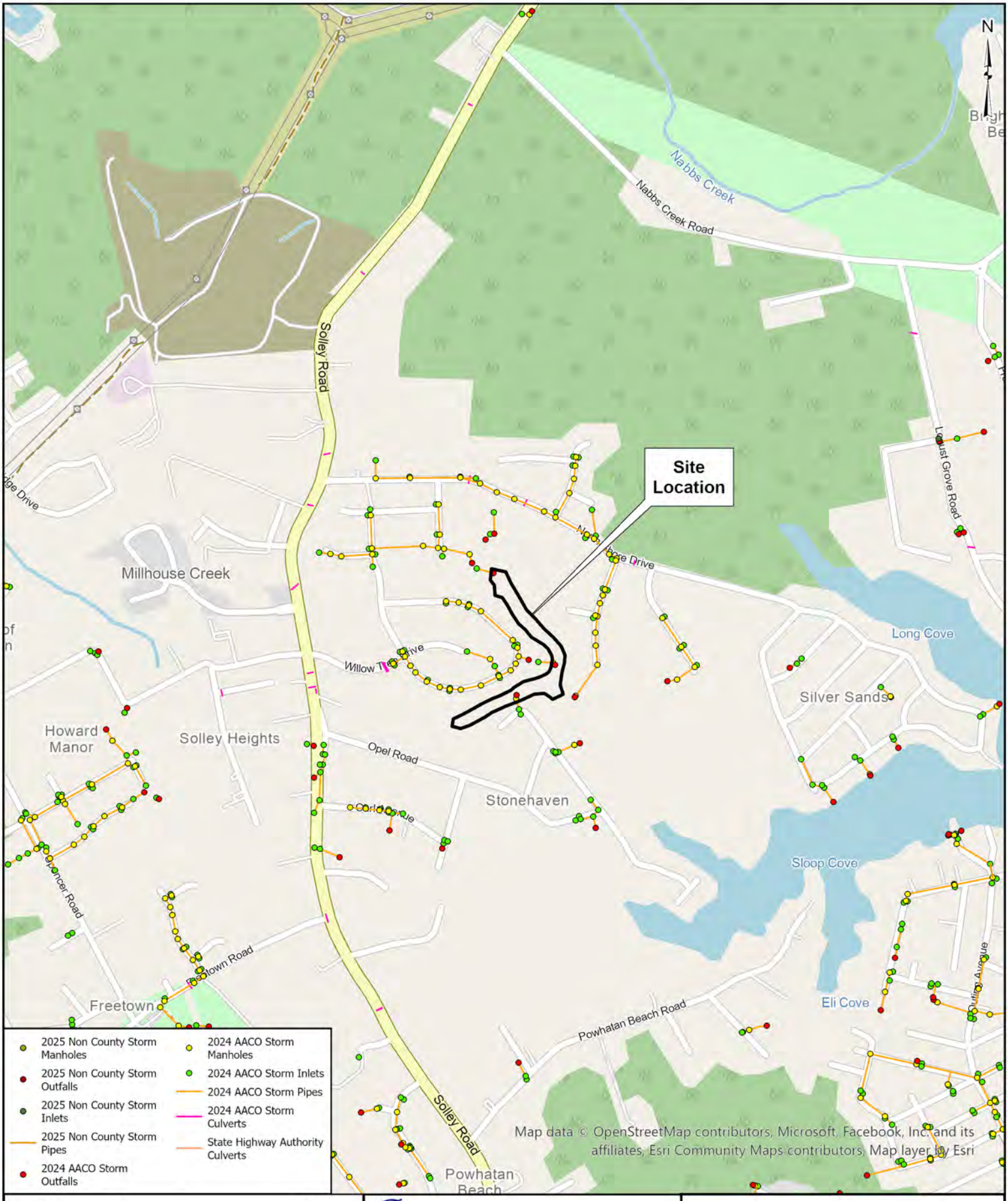
viability, and builds upon the baseline data collected during Year 1 (2024) monitoring. Table 1 shows performance standards for stream restoration as described in Condition 4 of the USACE permit authorization.

The Sloop Cove Stream is a multi-thread, partially perennial and partially intermittent channel. Year 2 photographs are included in Appendix A.

**Table 1- Success Criteria for Stream Restoration and Enhancement**

| Level and Category | Parameter | Measurement | Success Criteria | Monitoring Years |
|---|---|---|---|---|
| **Level 1 – Hydrology** | Flow Classification (Perennial, Intermittent) | Visual | Meets or exceeds baseline | PC, 3 |
| **Level 2 – Hydraulics** | NA | NA | NA | NA |
| **Level 3 – Geomorphology** | Photographs | Every 300 feet | No visual signs of problematic erosion | PC, 1, 2, 3 |
| | Vertical Stability | Monumented Cross Sections | <0.5 ft thalweg degradation from as-built | AB, 3 |
| | Lateral Stability | NA | NA | NA |
| | Habitat Assessment | EPA RBP high gradient | Exceeds Baseline | PC, 3 |
| | Vegetative Cover | % cover | >85% cover in LOD | 3 |
| **Level 4 – Water Quality** | NA | NA | NA | NA |
| **Level 5 – Biology** | Invasive Plant Reduction | % cover of invasive species in LOD | Less than Baseline | PC, 3 |

**AB=As-built, PC=Pre-construction, 1-7 corresponds to the monitoring year following construction, NA=Not applicable, EPA RBP= Environmental Protection Agency Rapid Bioassessment Protocol, LOD=Limits of Disturbance*




1,000 500 0 1,000 Feet

1" = 1000'

Location: 39.14833 / -76.56278 (Latitude/Longitude)

Address: 8042 High Oak Road, Glen Burnie
Anne Arundel County, Maryland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# Figure 1
# Sloop Cove
# Site Location Map

"P:\5_22301_Sloop Cove Stream Monitoring\02 Year 2 Monitoring\Figures

# 3. PRE-RESTORATION AND POST-CONSTRUCTION CONDITIONS

## 3.1. As-Built Plans

The as-built survey was conducted at Sloop Cove Stream on June 18, 2024 to document the current state of the reaches, evaluate stream stability, and establish a baseline condition for the USACE three-year monitoring period. Surveyed as-built drawings to scale with control depicting the final work, are included as Appendix C.

### 3.1.1. Vertical Stability

The vertical stability of as-built conditions was assessed by surveying and recording bed elevations at 16 monumented cross sections. The as-built cross sections are shown on Sheets 8 through 13 of the As-Built Plans. The surveyed cross-section elevations are consistent with the design plans, exhibiting minimal deviation between the as-built measurements and the proposed conditions specified in the design plans. The cross section measurements will be used as a baseline for comparing changes in the vertical stability for Year 3 (2025).

In Year 1, the as-built cross sections were evaluated, found to be consistent with design, and showed no evidence of thalweg degradation. A vertical stability assessment was not performed in Year 2, but this parameter will be evaluated again in Year 3 in order to document the stability of restoration conditions.

## 4. PHOTOGRAPHS OF SITE

Photographic documentation was performed during each site visit to establish a comprehensive record of the condition of all constructed features and structures within the project reaches. This photographic record serves to illustrate project success and identify any areas exhibiting instability or requiring corrective action.

During the Year 2 annual stream monitoring visit on October 7, 2025, photographs were systematically captured along the entire project work area at intervals of no more than 300 feet. Photographs were also established at nine locations and taken from consistent vantage points to facilitate direct comparison during subsequent monitoring events. Several pre-construction photos were also used to be able to compare pre- and post-restoration conditions at similar locations along the project reaches. This standardized approach ensures continuity and accuracy in the evaluation of project performance over time.

Photographic documentation provided a visual comparison of pre-construction and post-construction conditions (Appendix A), clearly illustrating improvements in channel stability, floodplain connectivity, and habitat quality. The images demonstrate the success of the stream restoration efforts, showcasing reduced bank erosion, enhanced floodplain connectivity, and the establishment of riparian vegetation. Compared to photographs taken in Year 1, the channel area along the North, South, and Main Stems is beginning to flourish with wetland vegetation. The banks and structures all remained stable, and the expected increase in vegetative growth will serve to further support a stable channel and productive ecosystem.

# 5. HYDROLOGY

## 5.1. Pre-Construction Conditions

The North Branch and South Branch are both tributaries of Sloop Cove. Pre-construction, the North Branch was a perennial channel, and the South Branch was an intermittent stream channel. The two branches join into a perennial main stem that is approximately 1,400 feet upstream to the mouth of Sloop Cove. The drainage area of the North Branch is approximately 93 acres, while the drainage area for the South Branch is approximately 56 acres. Prior to restoration, surface runoff after rain events would drain into the valley channel, which was already destabilized by past land manipulation, and flow downstream in a singular, high velocity stream. The force of the stormwater led to the vertical and horizontal degradation of the stream channel over time, creating an entrenched channel with deeply incised banks. The sediment that eroded from the banks would then be carried downstream into Sloop Cove, causing a slow build-up of sediment that impacted habitat and necessitated dredging (Land Studies, 2016).

Post-construction hydrology will be evaluated through visual assessments conducted during Year 3 monitoring to determine whether it meets or exceeds the established baseline conditions.

# 6. GEOMORPHOLOGY

## 6.1. Habitat Assessment

The EPA Rapid Bioassessment Protocol (RBP) habitat assessment is a standardized methodology used to evaluate physical habitat conditions within stream systems. This protocol assesses key habitat parameters, including substrate composition, channel morphology, bank stability, riparian buffer quality, and flow characteristics, to determine overall stream health and ecological functionality.

For the Project, the RBP habitat assessment was conducted to establish baseline conditions prior to construction and evaluate post-construction improvements. Metrics such as sediment deposition, embeddedness, and bank erosion were quantified to determine habitat quality and stability. The results of the assessment provide a comparative analysis of pre- and post-restoration conditions, serving as a performance indicator for the effectiveness of the implemented design.

The pre-construction RBP scoring results were estimated using pre-construction photos and the existing biology section of the *Functional Uplift Assessment Report* (Land Studies, 2016). The pre-construction RBP scoring results are included in Table 2 and indicate little to no macroinvertebrate or fish community exists within the channel. The channel bed has downcut through multiple feet of sandy loam and into the underlying clay parent material. As a result, the existing bed materials areas provide little to no habitat in terms of epifaunal substrate (Land Studies, 2016). This will be compared to post-construction conditions in Year 3.

**Table 2 – EPA RBP Results**

| Rating System | Measurement Index | Sloop Cove Pre-Restoration Score | Pre-Restoration Narrative Ranking |
|---|---|---|---|
| EPA RBP | Aquatic Habitat | 74 | Marginal Stream Conditions |

The EPA RBP will be assessed again in Year 3 and scores should increase across most parameters, especially as vegetation becomes established during the next few growing seasons.

## 6.2. Bed Material Characterization

Bed material was analyzed using the Wolman Pebble count methodology. Two pebble counts were taken in Year 1, including a representative count in the North Branch and at the Cross Section 1 weir step (Table 3).

A pebble count will be conducted again in Year 3, as it is a biennial requirement by MDE, and will be compared to the Year 1 pebble count results to quantify the mobilization of substrate material.

**Table 3 – 2024 Pebble Count Results**

| Parameter | XS-1 | Representative |
|---|---|---|
| $D_{35}$ | 0.062 | 0.062 |
| $D_{50}$ | 0.53 | 1.1 |
| $D_{84}$ | 3.8 | 9.6 |
| $D_{95}$ | 7.1 | 27 |

# 7. BIOLOGY

## 7.1. Invasive Plants Assessment

An assessment of pre-construction conditions was based on a *Simplified Forest Stand Delineation Report* (Wetland Studies and Solutions, Inc., 2019) and identified the presence and extent of invasive plant species based on 1/100$^{th}$ acre plot. The within the project Limits of Disturbance (LOD). Plot 1, located along the South Branch, was estimated to have 25 percent invasive vegetation cover, with *Celastrus orbiculatus* (Oriental bittersweet) identified as the dominant species. As Plot 1 is the only plot with available pre-construction data on invasive species cover, this area along the South Branch will be reassessed in Year 3 to evaluate changes and measure the effectiveness of invasive species management efforts.

During construction at a segment of the downstream end of the North Branch, invasive bamboo (*Phyllostachys spp.)* was eradicated using a combination of mechanical removal and targeted herbicide application. The removal of invasive bamboo in this area supports the restoration objectives by promoting the establishment of native plant species and enhancing riparian habitat quality. Monitoring will continue to ensure successful long-term suppression of bamboo and other invasive species.

This baseline data establishes a reference point for evaluating changes in invasive species coverage and the success of future riparian restoration and management efforts.

## 7.2. Vegetation Viability

Post-construction monitoring of vegetation viability is conducted to assess the establishment, health, and success of planted and naturally regenerating vegetation within the project area, as required by state permit conditions. Monitoring involves quantitative visual assessments of plant species composition, abundance, and percent ground cover within riparian and wetland zones. To facilitate consistent data collection, 10 permanent monitoring plots (Figure 2) were established in 2024 using rebar markers, allowing for precise replication in subsequent monitoring years.

Monitoring results will determine whether vegetation meets established success criteria outlined in the state permit and guide any necessary corrective actions, such as supplemental planting or invasive species management, to support long-term stabilization and ecological function.

### 7.2.1. Vegetation Identification and Description

Species composition and abundance were documented at the 10 monitoring plot locations within the restored channel's floodplain during a site visit conducted on August 6, 2025. This assessment was performed during the peak growing season to capture optimal vegetation conditions. Data collected includes the number of living trees and

shrubs exceeding 10 inches in height, presented in approximate order of percent cover, as detailed in Table 4. Additionally, the species of plants under 10 inches in height and the percentage of bare ground within each plot were recorded and are also summarized in Table 4.

| Table 4 – August 2025 Sloop Cove Vegetation Survey | | | | | | |
|---|---|---|---|---|---|---|
| **Cross Section** | **Plot #** | **Location** | **Number of Living Trees or Shrubs at Least 10" in Height** | **Tree/Shrub Plant Species (greater than 10" high)** | **Herbaceous Plant Species (less than 10" high)** | **Percent Bare Ground** |
| NA | 1 | Right Bank | 1 | • Bald cypress *(Taxodium distichum)* | • soft rush (*Juncus effusus*)<br>• white turtlehead *(Chelone glabra)*<br>• red maple (*Acer rubrum*)<br>• lurid sedge (*Carex lurida*)<br>• eastern redbud (Cercis canadensis)<br>• upland bentgrass (*Agrostis perennans)*<br>• crooked-stemmed aster *(Symphyotrichum prenanthoides)*<br>• small-spiked false nettle *(Boehmeria cylindrica)*<br>• Virginia wildrye *(Elymus virginicus)*<br>• wild bergamot *(Monarda fistulosa)*<br>• white clover *(Trifolium repens)*<br>• blue ridge blueberry *(Vaccinium pallidum)*<br>• roundleaf greenbrier *(Smilax rotundafolia)*<br>• sweet gum *(Liquidambar styraciflua)*<br>• late-flowering thoroughwort *(Eupatorium serotinum)* | 85 |
| NA | 2 | Left Bank | 2 | • Eastern redcedar (*Juniperus virginiana)*<br>• Sweetbay *(Magnolia virginiana)* | • white oak (*Quercus alba)*<br>• upland bentgrass *(Agrostis perennans)*<br>• trailing lespedeza (*Lespedeza procumbens*)<br>• white turtlehead *(Chelone glabra)*<br>• red maple *(Acer rubrum*)<br>• lurid sedge (*Carex lurida)*<br>• common boneset *(Eupatorium perfoliatum)*<br>• swamp milkweed *(Asclepias incarnata)*<br>• white clover *(Trifolium repens)*<br>• blue mistflower (*Conoclinium coelestinum)*<br>• Virginia wildrye *(Elymus virginicus)*<br>• dog fennel (*Eupatorium capillifolium*) | 90 |

| Table 4 – August 2025 Sloop Cove Vegetation Survey | | | | | | |
|---|---|---|---|---|---|---|
| **Cross Section** | **Plot #** | **Location** | **Number of Living Trees or Shrubs at Least 10" in Height** | **Tree/Shrub Plant Species (greater than 10" high)** | **Herbaceous Plant Species (less than 10" high)** | **Percent Bare Ground** |
| NA | 3 | Left Bank | 1 | • Eastern redcedar (*Juniperus virginiana)* | • lurid (*Carex lurida*)<br>• white turtlehead *(Chelone glabra)*<br>• soft rush (*Juncus effusus*)<br>• whitegrass *(Leersia virginica)*<br>• coastal sweet pepperbush *(Clethra alnifolia)*<br>• soft rush (*Juncus effusus*)<br>• poverty rush *(Juncus tenuis)*<br>• common boneset *(Eupatorium perfoliatum)*<br>• green bulrush (*Scirpus atrovirens*)<br>• marsh seedbox (*Ludwigia palustris*)<br>• Virginia wildrye *(Elymus virginicus)*<br>• late-flowering thoroughwort *(Eupatorium serotinum)* | 30 |

| Table 4 – August 2025 Sloop Cove Vegetation Survey | | | | | | |
|---|---|---|---|---|---|---|
| **Cross Section** | **Plot #** | **Location** | **Number of Living Trees or Shrubs at Least 10" in Height** | **Tree/Shrub Plant Species (greater than 10" high)** | **Herbaceous Plant Species (less than 10" high)** | **Percent Bare Ground** |
| NA | 4 | Right Bank | 1 | • Bald cypress *(Taxodium distichum)* | • lurid sedge (*Carex lurida*)<br>• trailing lespedeza (*Lespedeza procumbens)*<br>• coastal sweet pepperbush *(Clethra alnifolia)*<br>• roundleaf greenbrier *(Smilax rotundafolia)*<br>• red maple (*Acer rubrum*)<br>• lowbush blueberry *(Vaccinium angustifolium)*<br>• blue ridge blueberry *(Vaccinium pallidum)*<br>• common boneset *(Eupatorium perfoliatum)*<br>• butterfly milkweed *(Asclepias tuberosa)*<br>• late-flowering thoroughwort *(Eupatorium serotinum)*<br>• green bulrush (*Scirpus atrovirens*)<br>• common sowthistle (*Sonchus oleraceus*)<br>• hairy crabgrass *(Digitaria sanguinalis)*<br>• white mulberry (*Morus alba*)<br>• common yellow woodsorrel (*Oxalis stricta*)<br>• Allegheny hawkweed (*Hieracium paniculatum*)<br>• sweet gum *(Liquidambar styraciflua)* | 70 |

| Table 4 – August 2025 Sloop Cove Vegetation Survey | | | | | | |
|---|---|---|---|---|---|---|
| **Cross Section** | **Plot #** | **Location** | **Number of Living Trees or Shrubs at Least 10" in Height** | **Tree/Shrub Plant Species (greater than 10" high)** | **Herbaceous Plant Species (less than 10" high)** | **Percent Bare Ground** |
| NA | 5 | Right Bank | 0 | | • rough barnyardgrass (*Echinochloa muricata)*<br>• lurid sedge (*Carex lurida*)<br>• red maple (*Acer rubrum*)<br>• sericea lespedeza *(Lespedeza cuneata)*<br>• whitegrass *(Leersia virginica)*<br>• white clover *(Trifolium repens)*<br>• butterfly milkweed *(Asclepias tuberosa)*<br>• common boneset *(Eupatorium perfoliatum)*<br>• blue ridge blueberry *(Vaccinium pallidum)*<br>• porcelain berry *(Ampelopsis glandulosa)*<br>• green bulrush (*Scirpus atrovirens*)<br>• Allegheny hawkweed (*Hieracium paniculatum*)<br>• Virginia wildrye *(Elymus virginicus)* | 70 |
| NA | 6 | Right Bank | 3 | • 2 - Bald cypress *(Taxodium distichum)*<br>• Common winterberry *(Ilex verticillate)* | • common rush (*Juncus effusus*)<br>• red maple (*Acer rubrum*)<br>• poverty rush *(Juncus tenuis)*<br>• Virginia wildrye *(Elymus virginicus)*<br>• sericea lespedeza *(Lespedeza cuneata)*<br>• rough barnyardgrass (*Echinochloa muricata)*<br>• American burnweed (*Erechtites hieraciifolius)*<br>• redtop panicgrass (*Coleataenia rigidula)*<br>• hairy crabgrass *(Digitaria sanguinalis)* | 85 |

| Table 4 – August 2025 Sloop Cove Vegetation Survey | | | | | | |
|---|---|---|---|---|---|---|
| **Cross Section** | **Plot #** | **Location** | **Number of Living Trees or Shrubs at Least 10" in Height** | **Tree/Shrub Plant Species (greater than 10" high)** | **Herbaceous Plant Species (less than 10" high)** | **Percent Bare Ground** |
| NA | 7 | Right Bank | 4 | • Pin oak *(Quercus palustris)*<br>• Eastern redcedar (*Juniperus virginiana)*<br>• American holly (*Ilex opaca*)<br>• common winterberry (*Ilex verticillate*) | • trailing lespedeza (*Lespedeza procumbens)*<br>• red maple (*Acer rubrum*)<br>• whitegrass *(Leersia virginica)*<br>• red clover *(Trifolium pratense)*<br>• Virginia wildrye *(Elymus virginicus)*<br>• common boneset *(Eupatorium perfoliatum)*<br>• squarrose sedge (*Carex squarrosa)*<br>• lurid sedge *(Carex lurida)*<br>• blue vervain *(Verbena hastata)*<br>• sweet gum *(Liquidambar styraciflua)*<br>• crownvetch *(Securigera varia)*<br>• slender yellow woodsorrel *(Oxalis dillenii)*<br>• butterfly milkweed *(Asclepias tuberosa)* | 60 |
| NA | 8 | Left Bank | 1 | • Sweetbay *(Magnolia virginiana)* | • lurid sedge (*Carex lurida*)<br>• red maple (*Acer rubrum*)<br>• marsh seedbox (*Ludwigia palustris*)<br>• porcelain berry *(Ampelopsis glandulosa)*<br>• blue vervain *(Verbena hastata)*<br>• Virginia creeper *(Parthenocissus quinquefolia)*<br>• red maple (*Acer rubrum*)<br>• eastern gamagrass *(Tripsacum dactyloides)*<br>• Virginia wildrye *(Elymus virginicus)*<br>• butterfly milkweed *(Asclepias tuberosa)*<br>• Queen Anne's lace *(Dacus carota)* | 75 |

| Table 4 – August 2025 Sloop Cove Vegetation Survey | | | | | | |
|---|---|---|---|---|---|---|
| **Cross Section** | **Plot #** | **Location** | **Number of Living Trees or Shrubs at Least 10" in Height** | **Tree/Shrub Plant Species (greater than 10" high)** | **Herbaceous Plant Species (less than 10" high)** | **Percent Bare Ground** |
| NA | 9 | Left Bank | 1 | • Red maple (*Acer rubrum*) | • red maple (*Acer rubrum*)<br>• roundleaf greenbrier *(Smilax rotundafolia)*<br>• common rush (*Juncus effusus*)<br>• blue vervain *(Verbena hastata)*<br>• lurid sedge (*Carex lurida*)<br>• common boneset *(Eupatorium perfoliatum)*<br>• Virginia wildrye *(Elymus virginicus)*<br>• marsh seedbox (*Ludwigia palustris*)<br>• sweet gum *(Liquidambar styraciflua)*<br>• green bulrush (*Scirpus atrovirens*)<br>• redtop panicgrass (*Coleataenia rigidula)* | 40 |
| NA | 10 | Right Bank | 3 | • American holly (*Ilex opaca*)<br>• Eastern redcedar (*Juniperus virginiana)*<br>• Northern spicebush *(Lindera benzoin)* | • Chinese wisteria *(Wisteria sinensis)*<br>• Virginia wildrye *(Elymus virginicus)* | 95 |

### 7.2.2. Vegetation Density and Richness

Vegetation density was quantified by calculating the number of woody plants exceeding 10 inches in height relative to the surface area of each sample plot. Each plot consists of a six-foot radius circular area, encompassing a total surface area of 113.1 square feet. Species richness, defined as the total number of distinct plant species over 10 inches in height, was also recorded for each plot as a general indicator of biodiversity. While species richness provides insights into overall species diversity, it does not account for the proportional abundance or spatial distribution of individual species within the plots. The results of the vegetation density and species richness assessments conducted in September 2024 and 2025 are presented in Table 5.

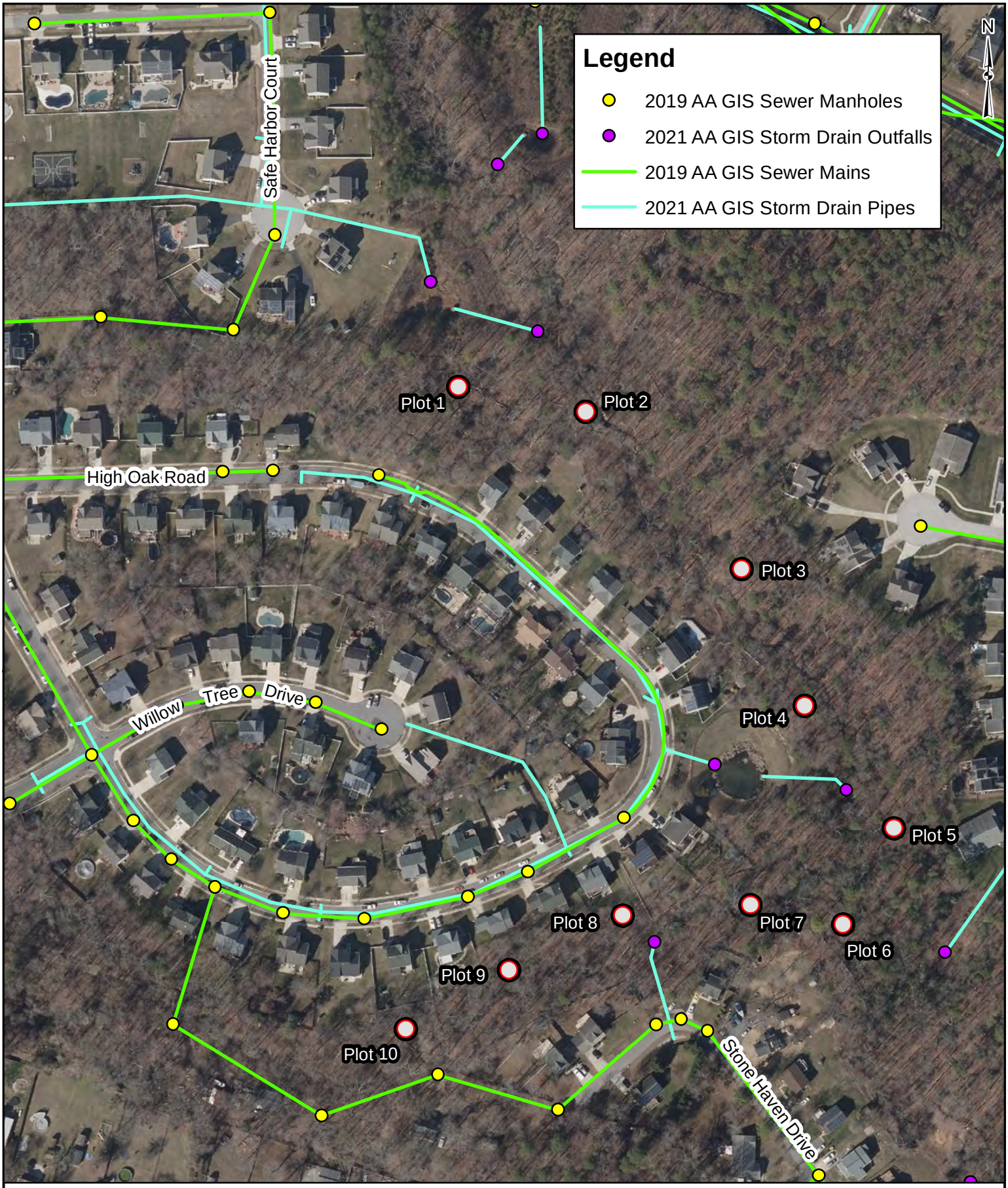
**Table 5 – Density and Richness of Shrubs & Trees Greater than 10 Inches High**

| **2024** | | | |
|---|---|---|---|
| **Plot #** | **Location of Plot Center Point** | **Plant Density (#/ft$^2$)** | **Species Richness** |
| 1 | Right bank | <0.01 | 1 |
| 2 | Left bank | 0.02 | 2 |
| 3 | Left bank | 0.02 | 2 |
| 4 | Right bank | 0.03 | 3 |
| 5 | Right bank | <0.01 | 1 |
| 6 | Left bank | 0.02 | 2 |
| 7 | Right bank | 0.04 | 4 |
| 8 | Left bank | <0.01 | 1 |
| 9 | Left bank | <0.01 | 1 |
| 10 | Right bank | 0.04 | 4 |
| **2025** | | | |
| **Plot #** | **Location of Plot Center Point** | **Plant Density (#/ft$^2$)** | **Species Richness** |
| 1 | Right bank | <0.01 | 1 |
| 2 | Left bank | 0.02 | 2 |
| 3 | Left bank | <0.01 | 1 |
| 4 | Right bank | <0.01 | 1 |
| 5 | Right bank | 0 | 0 |
| 6 | Right bank | 0.02 | 2 |
| 7 | Right bank | 0.04 | 4 |
| 8 | Left bank | <0.01 | 1 |
| 9 | Left bank | <0.01 | 1 |
| 10 | Right bank | 0.03 | 3 |

In Year 2, tree and shrub abundance and diversity decreased slightly compared to 2024 (Year 1). This reduction could be attributed to factors such as deer browsing, competition, or natural plant mortality. The decrease in abundance likely contributed to the lower species richness observed in Year 2. However, despite some evidence of browsing, most surviving trees and shrubs exhibited noticeable growth and were larger in 2025 than in 2024.

Plot #10 was the only plot found to have a decrease in plant cover (primarily herbaceous) from 2024 to 2025. The upstream extent of the southern reach appeared to have been treated for invasive plants using a broad-spectrum herbicide.

It is expected that Year 3 (2026) and future monitoring will demonstrate an increase in vegetation density as plants mature and additional growth occurs within the restored area. These trends will be assessed to ensure the site continues to meet performance standards and long-term ecological objectives.




200 100 0 200 Feet

1" = 200'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# Figure 2
# Sloop Cove
# Vegetation Monitoring
# Plot Locations

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# 8. CONCLUSION

The Sloop Cove Stream Restoration Project continues to demonstrate progress toward long-term stability and ecological recovery within the North and South Branch channels for Year 2. The Project's regenerative design has effectively stabilized previously incised banks, reestablished floodplain connectivity, and reduced sediment delivery to Sloop Cove. Construction was completed in compliance with USACE and MDE permit conditions, and the Year 1 monitoring results established a solid baseline for assessing subsequent site performance. Year 2 monitoring results were compared to Year 1 where applicable and will also be evaluated against Year 3 results to assess trends over time.

## 8.1. Key Findings

**Photographic Documentation**: Photo documentation at permanent photo stations confirmed continued stabilization of constructed features and floodplain benches. Comparison of Year 1 and Year 2 photographs shows increased vegetative cover, improved bank stability, and the development of emergent and riparian vegetation along the channel margins. Minor areas of bare soil observed immediately post-construction are now largely vegetated, and no significant signs of erosion or channel adjustment were noted.

**Vegetation Viability**: Monitoring at 10 permanent plots indicated relatively consistent tree and shrub density across the floodplain, with the exception of the upstream extent of the southern reach. Minor reductions in species richness were observed, which could be attributed to natural mortality or browsing pressure. Most surviving vegetation exhibited increased height and vigor, consistent with expectations for Year 2 growth.

Overall, the Year 2 results indicate that the Project remains stable and continues to progress toward meeting the performance standards outlined in the USACE and MDE permits. Observed conditions support the conclusion that the restored stream and floodplain are developing as intended, with improving vegetation structure and habitat function. Year 3 monitoring will provide a critical performance evaluation to confirm vertical stability, habitat enhancement, and vegetation viability and cover, ensuring the site remains on a positive trajectory toward achieving full ecological success and long-term sustainability.

## 9. REFERENCES

Land Studies. May 2016. *Sloop Cove Retrofit Design Report*.

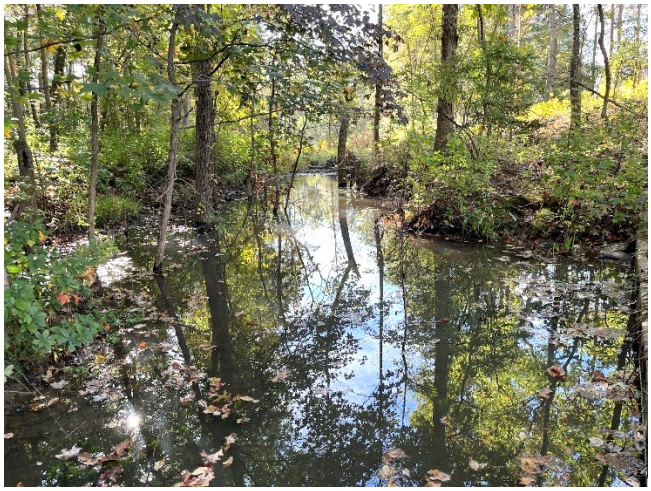
Land Studies. May 2016. *Sloop Cove Retrofit Functional Uplift Assessment Report*.

Wetland Studies and Solutions, Inc. January 2019. *Sloop Cove Stream Restoration Simplified Forest Stand Delineation Report.*

# APPENDIX A

# Photographs

# Sloop Cove Year 2 Monitoring Photos



*Upstream end of North Branch (October 7, 2025)*

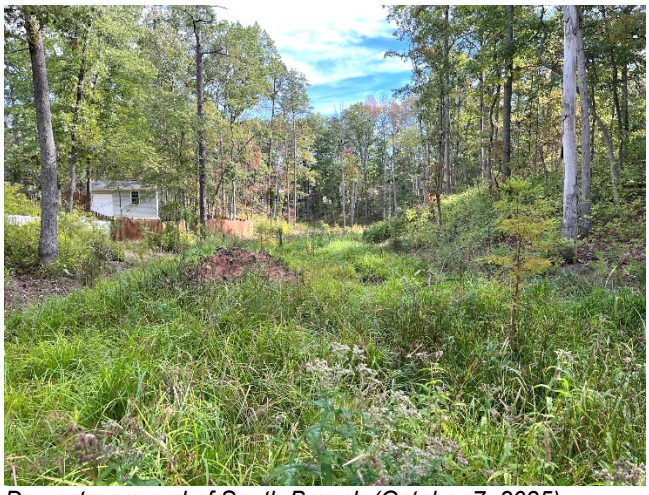
*Middle of North Branch (October 7, 2025)*

*Middle of North Branch (October 7, 2025)*

*Downstream end of North Branch (October 7, 2025)*

*Main stem (October 7, 2025)*

*Main stem (October 7, 2025)*



*Downstream end of South Branch (October 7, 2025)*

*Middle of South Branch (October 7, 2025)*

*Upstream end of South Branch (October 7, 2025)*

*Outfall upstream of North Branch (October 7, 2025)*

*Main stem that connects to Sloop Cove (October 7, 2025)*

*Tree near Photo Location 2 (October 7, 2025)*

## Pre-Construction AB-XS10

*February 2019 upstream*

## Post-Construction AB-XS10

*October 2024 downstream*

*October 2024 upstream*

*October 2025 downstream*

*October 2025 upstream*

## Pre-Construction AB-XS4

*January 2008 upstream*


*January 2008 downstream*

## Post-Construction AB-XS4

*October 2024 downstream*

*October 2024 upstream*

*October 2025 downstream*

*October 2025 upstream*

*Note: Pre- and post-construction photos are not located at the same exact location. However, post-construction photo locations will be replicated throughout the 3-year monitoring period.

## Photo Location 1

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

*October 2025 downstream (Year 2)*

## Photo Location 2

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

*October 2025 downstream (Year 2)*

## Photo Location 3

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

*October 2025 downstream (Year 2)*

## Photo Location 4

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

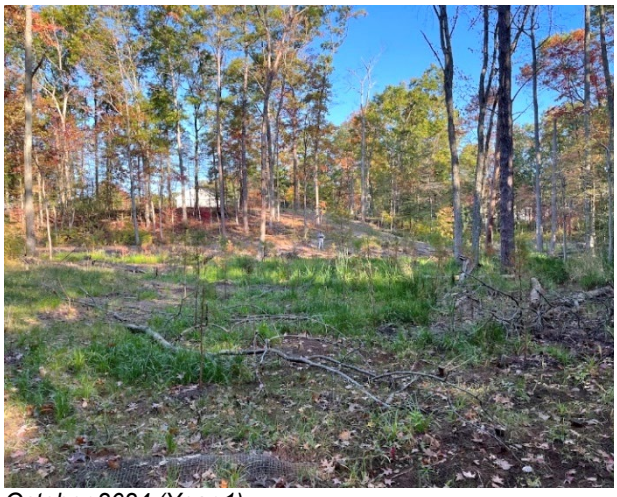
*October 2025 downstream (Year 2)*

## Photo Location 5

*October 2024 (Year 1)*

*October 2025 (Year 2)*

## Photo Location 6



*October 2024 (Year 1)*

*October 2025 (Year 2)*

## Photo Location 7

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

*October 2025 downstream (Year 2)*

## Photo Location 8

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

*October 2025 downstream (Year 2)*

## Photo Location 9

*October 2024 upstream (Year 1)*

*October 2024 downstream (Year 1)*

*October 2025 upstream (Year 2)*

*October 2025 downstream (Year 2)*

# APPENDIX B

# USACE and MDE Permit Authorizations

DEPARTMENT OF THE ARMY
U. S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
ATTN: BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MARYLAND 21201-2930

May 2, 2022

Operations Division

Ms. Melissa Harlinski
Anne Arundel County
Department of Public Works
2662 Riva Road, MS-7301
Annapolis, Maryland 21401

Dear Ms. Harlinski:

This is in reference to your application, **CENAB-OPR-MN-2016-60858 (AA DPW/Sloop Cove/Stream Restoration/TMDL),** dated May 2021, for Department of Army (DA) verification of Nationwide Permit (NWP) authorization to restore approximately 2,400 linear feet of Sloop Cove. In April 2022, you requested a new authorization letter, as your previous authorization has expired. The purpose of the project is to provide headwater stream conditions suitable for epifaunal colonization, reduce bank erosion, and reduce sediment pollution to the Chesapeake Bay. You propose to raise an incised stream bed and install log grade control structures, with minimal use of rock near project transitions. You propose to establish a multi-threaded stream with low shear stress conditions suitable for colonization by macroinvertebrate and semiaquatic fauna. Additionally, you propose to install native riparian plantings for terrestrial habitat and shading. The proposed work will result in permanent impacts to 2,435 linear feet (10,434 sq. ft.) of perennial streams, 2,310 sq. ft. of permanent impacts to palustrine forested wetlands, and temporary impacts to 100 linear feet (800 sq. ft.) of perennial stream during stream diversion. All stream and wetland impacts will be remediated onsite, and the project will provide a net gain in stream functions. The proposed project is located at 39.14833, -76.56278 in Pasadena, Anne Arundel County, Maryland.

This waterway has been determined to be within our regulatory jurisdiction and the activity proposed does require Department of the Army authorization.

Our evaluation has determined that the proposed work, if accomplished in accordance with the enclosed plan(s) is authorized by Nationwide Permit (NWP)s for purposes of Section 404 of the Clean Water Act as published in the January 13, 2021 Federal Register, Final Notice of Issuance, Reissuance, and Modification of NWPs (86 FR 2744) and/or the December 27, 2021 Federal Register, Final Notice of Issuance, Reissuance, and Modification of NWPs (86 FR 73522), NWP number(s) 27, provided all state authorizations are granted. If any of the information contained in the application and/or plan(s) is later found to be in error, this authorization may be subject to modification, suspension, or revocation.

Please note that you must comply with the general conditions and activity-specific impact limits and requirements for NWP 27**,** including Water Quality Certification (WQC) conditions, if appropriate, at the following link: https://www.nab.usace.army.mil/Missions/Regulatory/NWP/. If you are not able to access the conditions, please contact the project manager for a hard copy.

In addition, we have determined that the project-specific special conditions below must also be followed in performing the work to ensure that the project impacts to the aquatic environment are minimal:

1. You must contact Mr. Nick Ozburn of this office at (410) 395-4662 one day prior to commencing construction of the authorized work.

2. A copy of this DA permit and plans must be available on site at the time of construction. A final set of construction drawings (stamped) must be submitted to this office (Attn: Mr. Nick Ozburn, CENAB-OP-RMN) prior to commencement of construction.

3. The permittee must allow representatives of the Corps to enter the project area to inspect the ongoing or completed work.

4. The permittee must monitor the stream and wetland restoration project for three (3) years following the completion of the project and prepare monitoring reports. Monitoring requirements are listed below. Monitoring frequency and success criteria are outlined in Table 1.

At a minimum, the monitoring reports must:

a. Classify stream flow before and after construction (Perennial, intermittent, and ephemeral).

b. Evaluate stream stability by performing monumented valley-wide cross-sections to document channel shape, thalweg and elevations at riffle crests (or top of grade control). Cross-sections must be monumented using metal survey stakes, and locations must be noted on the as-built report. A minimum of 1 cross-section for every 300 linear feet of stream work is required. In general, two cross-sections must be installed near the downstream limits of the project, two near the upstream limits of the project, and at least one cross-section must be installed on each tributary where construction has occurred. Further, a monumented cross-section must occur upstream any abrupt elevation changes exceeding 1 ft (if they occur), and the remaining cross-sections must be distributed evenly throughout the remainder of the project area. Cross-sections must be shown in a graphical display which overlays previous cross-sections per location in annual reports.

c. Report vegetation species and cover.

d. Evaluate stream habitat quality using an assessment method such as EPAs Rapid Bioassessment Protocol (RBP) high gradient stream habitat form. Results of the stream habitat assessment must be shown for all monitoring years assessed at the time the report is submitted, including preconstruction in each monitoring report.

e. Photograph site conditions annually along the entire stream restoration project area at 300 foot intervals and at points demonstrating project success and locations of instability.

f. Identify any necessary corrective measures and provide notes on a copy of a project planset.

*Table 1. Success Criteria for Stream Restoration and Enhancement*

| Level and Category | Parameter | Measurement | Success Criteria | Monitoring Years |
|---|---|---|---|---|
| **1-Hydrology** | Flow Classification (Perennial, intermittent) | Visual | Meets or exceeds baseline | PC, 3 |
| **2-Hydraulics** | NA | NA | NA | NA |
| **3-Geomorphology** | Photographs | Every 300 feet | No visual signs of problematic erosion | PC, 1, 2, 3 |
| | Vertical Stability | Monumented Cross Sections | <0.5 ft thalweg degradation from as-built | AB, 3 |
| | Lateral Stability | NA | NA | NA |
| | Habitat Assessment | EPA RBP high gradient | Exceeds Baseline | PC, 3 |
| | Vegetative Cover | % cover | >85% cover in LOD | 3 |
| **4-Water Quality** | NA | NA | NA | NA |
| **5-Biology** | Invasive Plant Reduction | % cover invasive species in LOD | Less than Baseline | PC, 3 |

*Table 1 showing performance standards for stream restoration as described in Condition 4. AB=As-built, PC=Pre-construction, 1-7 corresponds to the monitoring year following construction, NA = Not applicable*

5. The permittee must submit annual reports to the USACE Baltimore District Office-Enforcement and Compliance Section. Please include your Corps permit number on your monitoring report and submit to the following link: NAB-Regulatory@usace.army.mil, for three (3) years after project construction, on

the results of the monitoring efforts by December 31 of the monitoring year. If necessary, the permittee must coordinate with the regulatory agencies concerning applicable remedial measures. Monitoring reports are required for years 2 and 3 as well as an as-built monitoring report upon project construction completion.

6. The permittee must prepare an invasive species eradication and maintenance plan to remove non-native invasive plant species within the project site if annual site visits document their presence. The plan must be submitted to the Corps for approval along with the annual monitoring report.

7. The permittee must maintain the as-built integrity of the authorized stream restoration project and must ensure that the restoration is functionally mature and self-sustaining**. The permittee must provide to the Corps an as-built survey of the project within 90 days of construction completion. The permittee must notify and provide to the Corps, a detailed description and construction plans for any necessary corrective measures, including maintenance and repair, or alteration in any way, of the permitted stream restoration 15 days prior to performance of such corrective measures for Corps review and approval**.

8. The permittee must assume all liability for accomplishing the corrective work should the Corps determine the project has not been fully satisfactory. If the Corps does not find the project satisfactory, the permittee will be required to develop a remediation plan and an extension of monitoring time may be required to cover any necessary remedial work.

9. Best management practices must be employed to minimize impacts to wetlands and waterways. Temporary disturbance to wetlands and waterways must be restored to preconstruction conditions or better, including replanting as necessary or directed by the Corps.

10. The project site will be seeded with a pollinator seed mix which includes milkweed (genus *Asclepias*) in areas with full sunlight to support declining monarch butterfly populations. A final planting plan must be submitted to the Corps with the as-built report. The Corps will provide example seed mix lists for guidance on the planting plan.

11. In order to minimize fish and wildlife mortality during construction, a good faith effort must be made by the contractor to flush and/or relocate fish and wildlife species from within the limit of disturbance prior to construction.

12. If the Corps determines the project to be successful and stable prior to year 3, some monitoring requirements may be abbreviated. If the Corps determines the project to be unstable and not meeting success criteria by year 3, the Corps may require remediation and additional monitoring.

Please note that as of the date of this authorization, your project is in compliance with Section 7 of the Endangered Species Act. However, new species may be listed, or additional populations found. Therefore, it is your responsibility to ensure that construction of the authorized work does not adversely affect any existing or newly listed federally endangered or threatened species. Information on threatened and endangered species and their critical habitat can be obtained from the offices of the U.S Fish and Wildlife Service and National Marine Fisheries Service or their web pages at: https://ecos.fws.gov/ipac and https://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/maps/index.html respectively.

Please note that you are required to submit a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. An example of the information that is required is posted on the Baltimore District webpage at: https://www.nab.usace.army.mil/Portals/63/NAB-xxxx-xxxxx_XXXX_Universal_CompCert_Final.pdf. The signed certification should be emailed to the Regulatory Branch email at nab-regulatory@usace.army.mil **within 60 days** with **CENAB-OPR-MN-2016-60858 (AA DPW/Sloop Cove/Stream Restoration/TMDL),** in the subject line following completion of the authorized work and any required mitigation. Your signature on the certification verifies your understanding that the work was completed in accordance with the terms and conditions associated with your Department of the Army permit.

This verification is valid until the NWP is modified, reissued, or revoked. The NWPs issued in the January 13, 2021, Federal Register, Final Notice of Issuance, Reissuance, and Modification of NWPs (86 FR 2744) and/or the December 27, 2021, Federal Register, Final Notice of Issuance, Reissuance, and Modification of NWPs (86 FR 73522) expire on March 14, 2026. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

After you have obtained all required federal, state, and/or local authorizations, you may proceed with the authorized work.

When the structures or work authorized by this NWP are still in existence at the time the property is transferred, the terms and conditions of this NWP, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this NWP and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below. A copy of this NWP verification signed by the transferee must be submitted to the Baltimore District to validate the transfer.

If you have any questions concerning this matter, please contact me by phone or email at **(410) 395-4662 or Nicholas.R.Ozburn@usace.army.mil.**

Sincerely,

Nick Ozburn

Nick Ozburn
Senior Project Manager

Cc: Ms. Randah Kamel, MDE Waterway Construction Division
(Randah.Kamel@maryland.gov)

**CENAB-OPR-MN-2016-60858**
**(AA DPW/Sloop Cove/Stream Restoration/TMDL)**

_____

TRANSFEREE SIGNATURE DATE TELEPHONE NO.

_____

PRINTED NAME

_____

ADDRESS

To identify how we can better serve you, we need your help. Please take the time to fill out our customer service survey at: https://regulatory.ops.usace.army.mil/customer-service-survey/

## CONSTRUCTION SEQUENCE

CONTRACTOR WILL CONTACT A.A. COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS, 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITIES TO CONDUCT AN ON-SITE PRE-CONSTRUCTION MEETING (410-222-7780). WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS.

EXISTING TOPOGRAPHY MUST BE FIELD VERIFIED FOR THE SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCING WORK.

### PHASE I: ESTABLISHMENT OF ACCESS AND PROJECT LIMITS – 5 DAYS

1. INSTALL REINFORCED SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE(S) AND TEMPORARY STAGING AREAS. (1 DAY)
2. INSTALL TEMPORARY ORANGE CONSTRUCTION FENCE ALONG THE ENTIRE LENGTH OF THE PROPOSED LIMIT OF DISTURBANCE (LOD) PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. (3 DAYS)
3. INSTALL FILTER LOGS TO ACT AS PERIMETER CONTROLS AROUND THE PROPOSED TEMPORARY STOCKPILE AREA LOCATED AT THE CONFLUENCE OF THE NORTH BRANCH AND SOUTH BRANCH. (1 DAY)
4. INSTALL TEMPORARY ACCESS BRIDGE NEAR EXISTING SB 10+85. (0 DAYS)

### PHASE II: TIE-IN GRADING ZONE (NB 11+00 TO NB 12+00) – 6 DAYS

5. BEGIN TEMPORARY PUMP-AROUND BYPASS (TPB) WITH INTAKE AT THE NB/SB CONFLUENCE AND THE DISCHARGE NEAR NB 12+05, WHICH IS JUST DOWNSTREAM OF THE PROPOSED TIE-IN LOCATION. (0 DAYS)
6. PERFORM CLEARING AND GRUBBING AS NECESSARY. SALVAGE REMOVED TREES AND ALREADY FALLEN TREES AND STOCKPILE WHERE APPROPRIATE WITHIN LOD. (1 DAY)
7. GRADE VALLEY BOTTOM AND SIDE SLOPES TO PROPOSED SUBGRADE (4-6" BELOW FINAL GRADE) BETWEEN NB 11+00 AND NB 11+70. STOCKPILE EXCESS CUT FROM THE TIE-IN GRADING ZONE AT TEMPORARY STOCKPILE LOCATION #1 TO BE USED AS FILL IN NORTH BRANCH GRADING ZONE. (1 DAY)
8. INSTALL SUB-SURFACE ARMORING (SA-3 AND SA-4), ROCK SILLS (RS-30 AND RS-31), AND WOODY DEBRIS / BURIED LOG STRUCTURES AT PROPOSED ELEVATIONS AND LOCATIONS WHILE GRADING VALLEY BOTTOM. (2 DAYS)
9. INSTALL FURNISHED COMPOST PER DETAILS TO MATCH PROPOSED FINAL GRADE FROM NB 11+00 TO NB 11+45. (0.5 DAYS)
10. SEED VALLEY BOTTOM WITH PROPOSED FLOODPLAIN SEED MIX UPON FINAL GRADE FROM NB 11+00 TO NB 11+45. INSTALL TYPE D SOIL STABILIZATION MATTING ALONG VALLEY BOTTOM ACCORDING TO DETAILS FROM NB 11+00 TO NB 11+45. (0.5 DAYS)
11. SEED SIDE SLOPES WITH PROPOSED STABILIZATION SEED MIX. INSTALL TYPE A SOIL STABILIZATION MATTING ON SIDE SLOPES. (0.5 DAYS)
12. END (TPB) TEMPORARY PUMP-AROUND BYPASS (0 DAYS)
13. REMOVE TEMPORARY ACCESS BRIDGE NEAR EXISTING SB 10+85. (0.5 DAYS)

### PHASE III: SOUTH BRANCH GRADING ZONE (SB 0+70 TO SB 8+25) – 33 DAYS

14. ESTABLISH TEMPORARY ACCESS PATHS USING WOOD CHIP MULCH AS A BASE AND TEMPORARY ACCESS BRIDGES (TB) ACROSS THE EXISTING CHANNEL AS NECESSARY TO ACCESS THE SOUTH BRANCH WITHIN THE LOD. (2 DAYS)
15. INSTALL TEMPORARY BYPASS CHANNEL #1. IF NECESSARY, PUMP ACTIVE FLOW AROUND WORK AREA WHILE CONNECTING THE TEMPORARY BYPASS CHANNEL TO THE EXISTING CHANNEL. AS NECESSARY, PUMP SEDIMENT-LADEN WATER THAT COLLECTS IN THE UNFILLED EXISTING CHANNEL NEAR THE CONFLUENCE THROUGH A FILTER BAG AT AN UNDISTURBED AREA OR PREVIOUSLY COMPLETED (AND STABILIZED) AREA WITHIN THE LOD (1 DAY).
16. PERFORM CLEARING AND GRUBBING AS NECESSARY. SALVAGE REMOVED TREES AND ALREADY FALLEN TREES AND STOCKPILE WHERE APPROPRIATE WITHIN LOD. (5 DAYS)
17. BEGIN TPB WITH INTAKE AT THE SB 0+60 AND THE DISCHARGE JUST DOWNSTREAM OF PROJECT REACH NEAR NB 12+05. (0 DAYS)
18. IN AN UPSTREAM TO DOWNSTREAM DIRECTION, GRADE VALLEY BOTTOM AND SIDE SLOPES TO PROPOSED SUBGRADE (4-6" BELOW FINAL GRADE) BETWEEN SB 0+70 AND SB 8+25. STOCKPILE EXCESS CUT FROM THE SOUTH BRANCH GRADING ZONE AT TEMPORARY STOCKPILE LOCATION #1 TO BE USED AS FILL IN NORTH BRANCH GRADING ZONE. (7 DAYS)
19. INSTALL ROCK SILLS (RS-1 THROUGH RS-14), LOG SILLS (LS-1 THROUGH LS-17), AND WOODY DEBRIS / BURIED LOG STRUCTURES AT PROPOSED ELEVATIONS AND LOCATIONS WHILE GRADING VALLEY BOTTOM. (8 DAYS)
20. INSTALL FURNISHED COMPOST PER DETAILS TO MATCH PROPOSED FINAL GRADE FROM SB 0+70 TO SB 8+25. (4 DAYS)
21. SEED VALLEY BOTTOM WITH PROPOSED FLOODPLAIN SEED MIX UPON FINAL GRADE. INSTALL TYPE D SOIL STABILIZATION MATTING ALONG VALLEY BOTTOM ACCORDING TO DETAILS. (3 DAYS)
22. SEED SIDE SLOPES WITH PROPOSED STABILIZATION SEED MIX. INSTALL TYPE A SOIL STABILIZATION MATTING ON SIDE SLOPES. (2 DAYS)
23. REMOVE TEMPORARY ACCESS BRIDGES AS NECESSARY TO COMPLETE GRADING OPERATIONS. (1 DAY)
24. END TPB. (0 DAYS)
25. REPEAT STEPS 17 THROUGH 24 ON A DAILY BASIS UNTIL SOUTH BRANCH GRADING ZONE IS COMPLETED AND STABILIZED ACCORDINGLY. (0 DAYS)
    AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL ESTABLISH STABLE TEMPORARY CONNECTIONS FROM THE WORK AREA TO THE EXISTING SOUTH BRANCH CHANNEL

### PHASE IV: NORTH BRANCH GRADING ZONE (NB 0+90 TO NB 11+00 AND SB 8+25 TO 9+20) – 39 DAYS

26. ESTABLISH TEMPORARY ACCESS PATHS USING WOOD CHIP MULCH AS A BASE AND TEMPORARY ACCESS BRIDGES (TB) ACROSS THE EXISTING CHANNEL AS NECESSARY TO ACCESS THE NORTH BRANCH WITHIN THE LOD. (2 DAYS)
27. PERFORM CLEARING AND GRUBBING AS NECESSARY. SALVAGE REMOVED TREES AND ALREADY FALLEN TREES AND STOCKPILE WHERE APPROPRIATE WITHIN LOD. (5 DAYS)
28. BEGIN TPB WITH INTAKE AT THE NB 0+70 AND SB 0+60 AND THE DISCHARGE JUST DOWNSTREAM OF PROJECT REACH NEAR NB 12+05. (0 DAYS)
29. IN DOWNSTREAM TO UPSTREAM DIRECTION, GRADE VALLEY BOTTOM AND SIDE SLOPES TO PROPOSED SUBGRADE (4-6" BELOW FINAL GRADE) FROM NB 0+90 TO NB 11+00 AND SB 8+25 TO SB 9+20 USING EXCESS CUT AND STOCKPILED SOIL NEAR THE NB/SB CONFLUENCE TO FILL THE NORTH BRANCH VALLEY BOTTOM. (9 DAYS)
30. INSTALL SUB-SURFACE ARMORING (SA-1 AND SA-2), ROCK SILLS (RS-15 THROUGH RS-29), LOG SILLS (LS-18 THROUGH LS-26), AND WOODY DEBRIS / BURIED LOG STRUCTURES AT PROPOSED ELEVATIONS AND LOCATIONS AND REMOVE TEMPORARY BY-PASS CHANNEL #1 WHILE GRADING VALLEY BOTTOM. (10 DAYS)
31. INSTALL FURNISHED COMPOST PER DETAILS TO MATCH PROPOSED FINAL GRADE FROM NB 0+90 TO NB 11+00 AND SB 8+25 TO SB 9+20 0+90 TO SB 8+25. (5 DAYS)
32. SEED VALLEY BOTTOM WITH PROPOSED FLOODPLAIN SEED MIX UPON FINAL GRADE. INSTALL TYPE D SOIL STABILIZATION MATTING ALONG VALLEY BOTTOM ACCORDING TO DETAILS. (4 DAYS)
33. SEED SIDE SLOPES WITH PROPOSED STABILIZATION SEED MIX. INSTALL TYPE A SOIL STABILIZATION MATTING ON SIDE SLOPES. (3 DAYS)
34. REMOVE TEMPORARY ACCESS BRIDGES AS NECESSARY TO COMPLETE GRADING OPERATIONS. (1 DAY)
35. END TPB. (0 DAYS)
36. REPEAT STEPS 28 THROUGH 35 ON A DAILY BASIS UNTIL NORTH BRANCH GRADING ZONE IS COMPLETED AND STABILIZED ACCORDINGLY. (0 DAYS)
    AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL ESTABLISH STABLE TEMPORARY CONNECTIONS FROM THE WORK AREA TO THE EXISTING SOUTH BRANCH CHANNEL AND THE COMPLETED PROPOSED NORTH BRANCH VALLEY BOTTOM.

### PHASE V: FINAL STABILIZATION & PLANTING – 6 DAYS

37. UPON PERMANENT STABILIZATION OF THE WORK AREA AND WITH WRITTEN APPROVAL FROM THE ANNE ARUNDEL COUNTY INSPECTOR, THE CONTRACTOR SHALL REMOVE EROSION AND SEDIMENT CONTROLS. ANY AREAS DISTURBED BY THE REMOVAL OF THE EROSION AND SEDIMENT CONTROLS SHALL BE STABILIZED IMMEDIATELY. (1 DAY)
38. INSTALL PROPOSED TREES AND SHRUBS ACCORDING TO PROPOSED LANDSCAPE PLAN. (5 DAYS)

## STANDARD RESPONSIBILITY NOTES

1. I (We) certify that:
   a. All development and construction will be done in accordance with this sediment and erosion control plan, and further, authorize the right of entry for periodic on-site evaluation by the Anne Arundel Soil Conservation District (AASCD) Board of Supervisors or their authorized agents.
   b. Any responsible personnel involved in the construction project will have a certificate of attendance from the Maryland Department of the Environment's approved training program for the control of sediment and erosion before beginning the project.

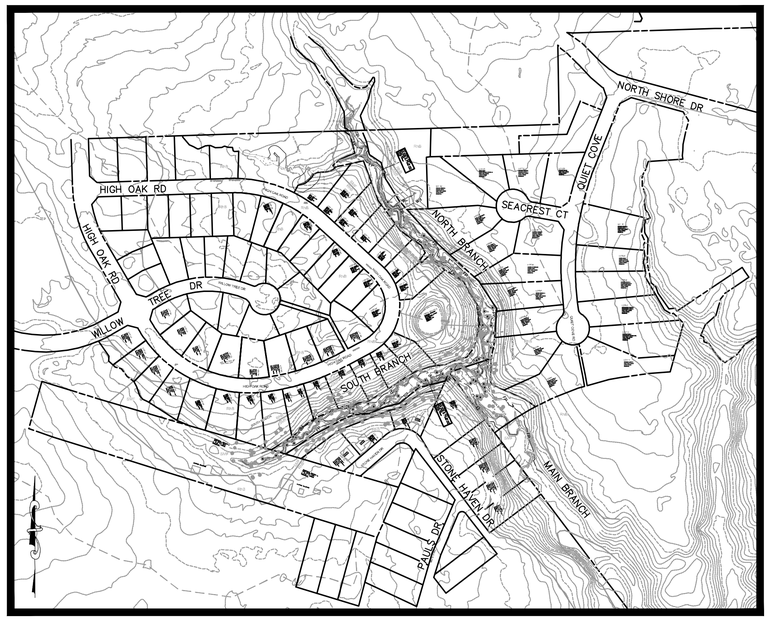
      Responsible personnel on site : _____

   c If applicable, the appropriate enclosure will be constructed and maintained on sediment basin(s) included in this plan. Such structure(s) will be in compliance with the Anne Arundel County Code.
2. The developer is responsible for the acquisition of all easements, right, and/or rights-of-way that may be required for the sediment and erosion control practices, storm water management practices and the discharge of storm water onto or across adjacent or downstream properties included in the plan.
3. For initial soil disturbance or re-disturbance, permanent and/or temporary stabilization per the AASCD Vegetative Establishment shall be completed within three calendar days for the surface of all controls, dikes, swales, ditches, perimeter slopes and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven days for all other disturbed or graded areas on the project site.
4. The grading and sediment control approval on this plan extends only to those areas within the limits of disturbance.
5. The approval of this plan for sediment and erosion control does not relieve the developer/consultant from complying with Federal, State or County requirements pertaining to environmental issues.
6. The developer must request that the sediment and erosion control inspector approve work completed in accordance with the approved erosion and sediment control plan, the grading or building permit, and the ordinance.
7. All material shall be taken to a site with an approved sediment and erosion control plan.
8. First phase inspection and approval of the sediment and erosion control inspector shall be required upon completion of the installation of erosion and sediment controls prior to proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until the initial approval by the sediment and erosion control inspector is given. Inspection and Permits may also require that an inspection and certification of the installation of sediment control also be performed by a design professional prior to construction commencing.
9. Approval from the inspector must be requested on final stabilization of all sites prior to removal of sediment and erosion controls.
10. Existing topography must be field verified by responsible personnel to the satisfaction of the sediment control inspector prior to commencing work.

Signature:

Name: Bruce Wright
Title: Chief Engineer
Affiliation: Anne Arundel County Department of Public Works
Address: 2662 Riva Road, Annapolis, MD 21401
Telephone Number: 410-222-7540
Email Address: BWRIGHT@AACOUNTY.ORG

# ANNE ARUNDEL COUNTY MARYLAND
## DEPARTMENT OF PUBLIC WORKS
## SLOOP COVE RETROFIT SITE 1- RESTORATION OF THE NORTH BRANCH AND SOUTH BRANCH TRIBUTARIES
## AA CO. CONTRACT #Q514103/AA CO. PROJECT #Q514100




PATAPSCO TIDAL WATERSHED
02-13-09-03

## LOCATION MAP

SCALE: 1"=250'

GRAPHIC SCALE
0 250' 500'
1 inch=250 FT

### CONSULTANT'S CERTIFICATION

"The Developer's plan to control silt and erosion is adequate to contain the silt and erosion on the property covered by the plan. I certify that this plan of erosion and sediment control represents a practical and workable plan based on my personal knowledge of this site, and was prepared in accordance with the requirements of the Anne Arundel Soil Conservation District Plan Submittal Guidelines and the current Maryland Standards and Specifications for Sediment and erosion Control. I have reviewed this erosion and sediment control plan with the owner/developer.

Printed Name Joanne M. Cheok, P.E., Senior Associate
MD P.E. License #18095 Expiration: 12/21/2022
Firm Name Dewberry Consultants, LLC
Street Address 2101 Gaither Road
Suite 340
Rockville MD 20850
Phone: 301.337.2856
Email: jcheok@Dewberry.com

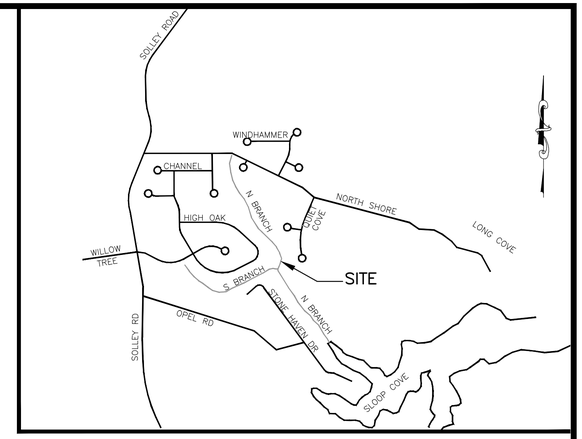
STATE OF MARYLAND – JOANNE MARIE CHEOK – No. 18095 – PROFESSIONAL ENGINEER

### UTILITY NOTE

INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION BY DIGGING TEST PITS BY HAND AT ALL UTILITY CROSSINGS WELL IN ADVANCE OF THE START OF EXCAVATION.
IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER AND THE APPROPRIATE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION.

### "MISS UTILITY" NOTE

CALL "MISS UTILITY" AT 8-1-1 OR 1-800-257-7777, 48 HOURS PRIOR TO THE START OF GROUND DISTURBING ACTIVITIES OR LOG ON TO: WWW.CALL811.COM OR WWW.MISSUTILITY.NET. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.




## VICINITY MAP

SCALE: 1"=1000'
ADC MAP 505 GRID K6/K7

## SHEET INDEX




OWNER/DEVELOPER/APPLICANT
Land Studies
717-627-4440
fax: 717-627-4660
landstudies.com
land@landstudies.com
315 North Street | Lititz, PA 17543
PA 022234

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A.A. County ID #721
Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND – JOANNE MARIE CHEOK – No. 18095 – PROFESSIONAL ENGINEER
2/18/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| 1 | Revise 100-yr floodplain | LSI/ DEW | 1/2021 |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 1 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

COVER SHEET
SLOOP COVE RETROFIT SITE 1
3rd District — Tax Map 16 Grid 05 — Anne Arundel County

P:\PROJECT\2008 File\Sloop Cove_50017963\C:ADC\CIVIL\Site Plan - Construction\1.SP-COVR.dwg, 2/10/2021 3:46:28 PM, nemejulu

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
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- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

NORTH

HORIZONTAL CONTROLS SHOWN ON THESE DRAWINGS ARE BASED ON MARYLAND STATE PLANE NAD83 DATUM, ANNE ARUNDEL COUNTY.

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TOPOGRAPHIC AND BOUNDARY DATA SHOWN ON THESE DRAWINGS WAS ESTABLISHED FROM A FIELD SURVEY BY DEWBERRY.

## SOILS DATA

SMF Sassafras and Crooms 25% to 40% Slopes
– Hydrologic Soil Group "C" – Slow Infiltration

RhB Russett–Christiana–Hambrook Complex
– Hydrologic Soil Group "C" – Slow Infiltration

## CERTIFICATION:

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## NOTES:

TO THE BEST OF OUR KNOWLEDGE AND BELIEF AND AS SHOWN ON THE FIELD SURVEY BY DEWBERRY,

THIS PROJECT CONTAINS THE FOLLOWING SENSITIVE AREAS:

1. WETLANDS
2. STREAMS
3. 100 YEAR FLOODPLAIN PER SURVEY
4. SLOPES 25% AND GREATER
5. BUFFERS

THIS PROJECT DOES NOT CONTAIN THE FOLLOWING

6. CRITICAL AREAS INDEX MAP 7 GRID S9
7. BOGS
8. FOREST
9. HISTORICAL, ARCHAEOLOGICAL RESOURCES, OR CEMETERIES
10. SITE IS NOT LOCATED ON A SCENIC OR HISTORIC ROAD.

PROJECT IS SHOWN ON FEMA MAP 24003C0064F AND 24003C0068F DATED 02/18/2015

STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER

Joanne M. Cheok P.E., Senior Associate
License No. 18095,
Expiration Date: 12/21/2017.

MATCHLINE -- SEE SHEET 3 OF 39

0' 40' 80'
SCALE 1"=40'

OWNER/DEVELOPER/APPLICANT

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED DATE | APPROVED DATE | SCALE: As Shown |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheok |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 2 OF 39 |
| | | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

STREAM RESTORATION PLAN

# EXISTING CONDITIONS
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

P:\PROJECT\20068 Field\Sloop Cove_50017963\CAD\CIVIL\Site Plan - Construction\2-3 SP-PR2.dwg, 2/10/2021 3:46:54 PM, nemejalu

MATCHLINE -- SEE SHEET 2 OF 39

HIGH OAK ROAD

SOUTH BRANCH

NORTH BRANCH

MAIN BRANCH

STONE HAVEN DR

LOT 53 — HALE SCOTT J / HALE DIANNE M / L.10574 F.00178 / RESIDENTIAL

LOT 54 — LOT 54 / HOUSE NO. 1 / HIGH OAK ROAD / RESIDENTIAL

LOT 55 — LOT 55 / HOUSE NO. 2 / HIGH OAK ROAD / RESIDENTIAL

LOT 56 — KREGG MARK / LOT 56 SC 1 / WILLOW RUN / RESIDENTIAL / L.00012 F.00315

LOT 57 — STEVENSON ROBERT L / LOT 57 SC 1 / WILLOW RUN / RESIDENTIAL / L.00047 F.00273

LOT 58 — WOOD JR MARION G / LOT 58 SC 1 / WILLOW RUN / RESIDENTIAL / L.00145 F.00466

LOT 59 — BROWN HOWARD V / BROWN SONJA L / LOT 22 SC 1 / WILLOW RUN / L.10427 F. 00688 / RESIDENTIAL

LOT 60 — COOPER BARBARA A / COOPER ROGER W / LOT 22 SC 1 / WILLOW RUN / L.10022 F. 00258 / RESIDENTIAL

LOT 18 — BERGKAMP DONALD / BERGKAMP JANELA / LOT 18 SC 1 / WILLOW RUN / L.10150 F.00654 / RESIDENTIAL

LOT 17 — HANKINS BILLY W / HANKINS SHARON L / LOT 17 SC 1 / WILLOW RUN / L.09599 F.00353 / RESIDENTIAL

LOT 08 — COHEN SHANNON R SC 1 / WILLOW RUN / L.12024 F.00049 / RESIDENTIAL

LOT 09 — COHEN SHANNON R SC 1 / WILLOW RUN / L.12024 F.00049 / RESIDENTIAL

LOT 10 — REICK JR ROBERT D / LOT 10 SC 1 / WILLOW RUN / L.00047 F.00115 / RESIDENTIAL

LOT 11 — WALLPRUNER A SC 1 / WILLOW RUN / L.12024 F.00402 / RESIDENTIAL

LOT 11 — WALLPRUNER A SC 1 / WILLOW RUN / L.12024 F.00402 / RESIDENTIAL

LOT 12 — REICK JR ROBERT D / GAGNE DANIEL / LOT 12 SC 1 / WILLOW RUN / L.00047 F.00211 / RESIDENTIAL

LOT 13 — HOUSTON DEAN / LOT 13 SC 1 / WILLOW RUN / L.00047 F.00322 / RESIDENTIAL

LOT 14 — HOUSTON DEAN W / LOT 14 SC 1 / WILLOW RUN / L.00047 F.00270 / RESIDENTIAL

LOT 15 — SANDERS JR BILLIE J / LOT 15 SC 1 / WILLOW RUN / L.00047 F.00115 / RESIDENTIAL

LOT 16 — SMELLEY JAMES / SMELLEY ANNA / LOT 16 SC 1 / WILLOW RUN / L.00047 F. 00136 / RESIDENTIAL

LOT 74 — CARROLL DAVID E / CARROLL JACQUELINE A / LOT 74 SC 1 / WILLOW RUN / 11709 FORAD / RESIDENTIAL

LOT 75 — LOT 75 / HOUSE NO. 3 / STONE HAVEN DR / RESIDENTIAL

LOT 76 — LOT 76 / HOUSE NO. 4 / STONE HAVEN DR / RESIDENTIAL

LOT 39 — LOT 39 / HOUSE NO. 5 / STONE HAVEN DR / RESIDENTIAL

LOT 38 — LOT 38 / HOUSE NO. 6 / STONE HAVEN DR / RESIDENTIAL

ZIMMERMAN, JOSEPH A. — 7955 SOLLEY ROAD — L.00047 F.00085 — RESIDENTIAL

ANNE ARUNDEL COUNTY — C/O DANE HALE, PRESIDENT — 0.7 ACRES OF REAL EST MTG — WILLOW RUN SC 1 FLOOD PLAIN — EXEMPT F.00037

OPEN SPACE 5 — WILLOW RUN HOMEOWNERS ASSOCIATION — C/O DANE HALE, PRESIDENT — 10.24 ACRES SC 1 — WILLOW RUN — L.08518 F. 00186 — RESIDENTIAL

EXISTING BUILDINGS

EXISTING BUILDING

RhB — SMF — WB — BM — FP — WL — US

## EXISTING LEGEND

- INLET — STORM — SD — MH — STORM DRAIN
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- CHAIN LINK FENCE
- UTILITY POLE
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PA 002324

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2/8/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
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Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

| APPROVED / DATE | APPROVED / DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | SCALE: As Shown |
| APPROVED / DATE | APPROVED / DATE | DRAWN BY: BJF/R. Anchors |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | CHECKED BY: J. Cheok |
| | | SHEET NO: 3 OF 39 |
| | | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

# EXISTING CONDITIONS
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

P:\PROJECT\2008 Pine\Sloop Cove_50017963\CAD\CTech\Site Plan - Construction\2-3 SP-PRJ.dwg, 2/10/2021 3:47:02 PM, nemajulu

**CONSTRUCTION NOTES**

1. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) WATER MANAGEMENT ADMINISTRATION (WMA) AT (410) 537-3510 SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF WMA.

2. MAINTAIN ALL SEDIMENT CONTROL PRACTICES ACCORDING TO MARYLAND 2011 STANDARDS UNTIL THE ENTIRE SITE IS STABILIZED.

3. STAGING AND STOCKPILING SHALL BE LOCATED WITHIN THE LOD AS DETERMINED BY THE PROJECT DESIGNER AND CONTRACTOR AND WITH THE MDE INSPECTOR'S APPROVAL OR ON AN AS NEEDED BASIS DURING CONSTRUCTION. THIS MOSTLY APPLIES TO FURNISHED ROCK AND/OR SALVAGED WOODY MATERIALS BEING TEMPORARILY STORED IN CLOSE PROXIMITY TO LOCATIONS WHERE THEY WILL BE USED FOR PROPOSED STRUCTURES. EXCESS CUT WILL BE HAULED TO THE TEMPORARY STOCKPILE LOCATED NEAR THE NORTH BRANCH (NB) / SOUTH BRANCH (SB) CONFLUENCE UNTIL IT IS USED FOR FILL ALONG THE NORTH BRANCH.

4. ACTIVE FLOW SHALL BE DIVERTED AROUND THE WORK AREA USING A SERIES OF TEMPORARY PUMP-AROUND BYPASS (TPB). ALTHOUGH THE EXISTING CHANNEL IS TYPICALLY DRY DURING THE SUMMER MONTHS, THE TPB SHOULD HAVE PUMP CAPACITY TO EFFECTIVELY MANAGE A DISCHARGE OF AT LEAST 2 CFS. IF NECESSARY, SUMPS SHALL BE CREATED TO PROVIDE ADEQUATE DEPTH FOR PUMP WITHDRAWAL. UNDER LOW FLOW CONDITIONS, FLOW MAY BE DISCHARGED THROUGH A FILTER BAG AT AN UNDISTURBED AREA OR PREVIOUSLY COMPLETED (AND STABILIZED) AREA WITHIN THE LOD. IF FLOW EXCEEDS CAPACITY OF A FILTER BAG, FLOW MAY BE DISCHARGED INTO THE EXISTING CHANNEL DOWNSTREAM OF THE PROJECT REACH UTILIZING A FOUNTAIN OR OTHER ENERGY DISSIPATION DEVICE AS AGREED TO BY THE PROJECT DESIGNER AND CONTRACTOR AND WITH THE MDE INSPECTOR'S APPROVAL.

5. TEMPORARY ACCESS BRIDGE (TB) CROSSINGS SHALL BE INSTALLED ACROSS THE EXISTING CHANNEL AS NECESSARY TO PROVIDE ACCESS TO BOTH SIDES OF THE CHANNEL. THE LOCATIONS OF TB's MAY VARY FROM PLANS IF NECESSARY.

6. TEMPORARY BYPASS CHANNELS SHALL BE CONSTRUCTED AS NECESSARY TO MINIMIZE TEMPORARY ACCESS BRIDGE CROSSINGS AND IMPROVE THE EFFICIENCY OF CONSTRUCTION WHILE MAINTAINING CONVEYANCE OF ACTIVE FLOW.

7. CLEARING AND GRUBBING OF THE UNDERSTORY SHALL BE LIMITED ONLY TO THOSE AREAS WITHIN THE PROPOSED LIMIT OF DISTURBANCE.

8. EVERY ATTEMPT SHALL BE MADE TO PROTECT EXISTING TREES WITHIN THE PROPOSED LIMIT OF DISTURBANCE ESPECIALLY THOSE WITH DBH'S GREATER THAN 12 INCHES. TREES THAT MUST BE REMOVED AS WELL AS OTHER PREVIOUSLY FALLEN TREES SHALL BE SALVAGED, PROCESSED, AND STOCKPILED ON-SITE TO BE USED FOR PROPOSED LOG SILLS AND WOODY DEBRIS / BURIED LOG STRUCTURES. NO WOODY MATERIAL WILL BE EXPORTED FROM THE SITE.

9. THE PROPOSED VALLEY BOTTOM AND SIDE SLOPES SHALL BE FILLED OR EXCAVATED TO SUBGRADE ELEVATIONS 4-6" BELOW PROPOSED FINAL GRADE.

10. 4-6" OF FURNISHED COMPOST COMPOSED OF A MIXTURE OF UNPROCESSED WOOD CHIPS AND SOIL (SEE SPECIFICATIONS IN PROJECT MANUAL) SHALL BE INSTALLED OVER THE PROPOSED VALLEY BOTTOM AND SIDE SLOPES TO MEET PROPOSED FINAL GRADE.

11. 31 ROCK SILL GRADE CONTROL STRUCTURES SHALL BE INSTALLED ACCORDING TO DETAILS AT LOCATIONS INDICATED ON PLANS.

12. 26 LOG SILL GRADE CONTROL STRUCTURES SHALL BE INSTALLED ACCORDING TO DETAILS AT LOCATIONS INDICATED ON PLANS

13. A MINIMUM OF 80 WOODY DEBRIS / BURIED LOG STRUCTURES SHALL BE INSTALLED ACCORDING TO DETAILS AT LOCATIONS INDICATED ON PLANS OR AS IDENTIFIED BY PROJECT DESIGNER OR CONSTRUCTION MANAGER.

14. PROPOSED STRUCTURES (ROCK SILLS, LOG SILLS, AND WOODY DEBRIS / BURIED LOG STRUCTURES) SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF AND/OR SUBJECT TO THE APPROVAL OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER. IF STRUCTURE INSTALLATION AND PERFORMANCE ARE NOT IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS, THE STRUCTURE SHALL BE RE-SET OR REINSTALLED IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS.

15. THE LOCATION, ORIENTATION, COMPOSITION, AND AMOUNT OF ALL PROPOSED STRUCTURES MAY BE MODIFIED FROM THE PLANS UNDER DIRECTION OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER AS NECESSARY DURING CONSTRUCTION.

16. IT HAS BEEN CALCULATED THAT THE TOTAL CUT AND FILL WILL BE BALANCED WHEN TAKING INTO ACCOUNT THE VOLUME ASSOCIATED WITH FURNISHED COMPOST AND PROPOSED STRUCTURES. CONSTRUCTION HAS BEEN SEQUENCED IN A MANNER IN WHICH EXCESS CUT MATERIAL WILL BE GENERATED AND TRANSPORTED TO AREAS REQUIRING FILL AS EFFICIENTLY AS POSSIBLE. FOR EXAMPLE, THE MAJORITY OF CUT WILL OCCUR NEAR THE NB/SB CONFLUENCE, WHILE A SIGNIFICANT AMOUNT OF FILL IS REQUIRED ALONG THE MAJORITY OF NORTH BRANCH. AS SUCH, MATERIAL GENERATED NEAR THE CONFLUENCE MUST BE HAULED OR PUSHED IN AN UPSTREAM DIRECTION TO BRING THE VALLEY BOTTOM OF NORTH BRANCH UP TO PROPOSED SUBGRADE ELEVATIONS. IT IS ANTICIPATED THAT A RELATIVE EQUAL BALANCE OF CUT AND FILL WILL OCCUR ALONG THE MAJORITY OF THE SOUTH BRANCH. AS A RESULT, THE SOUTH BRANCH SHALL BE CONSTRUCTED IN AN UPSTREAM TO DOWNSTREAM DIRECTION AND THE NORTH BRANCH SHALL BE CONSTRUCTED IN A DOWNSTREAM TO UPSTREAM DIRECTION.

17. IF NECESSARY, SEDIMENT-LADEN WATER WITHIN UNFILLED PORTIONS OF THE EXISTING CHANNEL SHALL BE PUMPED THROUGH A FILTER BAG, AS SPECIFIED IN DETAILS, AND DISCHARGED WITHIN AN STABLE, UNDISTURBED AREA OR A PREVIOUSLY COMPLETED / STABILIZED AREA WITHIN THE LOD.

18. AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL ESTABLISH STABLE TEMPORARY CONNECTIONS FROM THE WORK AREA TO THE EXISTING CHANNEL (ALONG THE SOUTH BRANCH GRADING ZONE) OR THE COMPLETED PROPOSED VALLEY BOTTOM (ALONG THE NORTH BRANCH GRADING ZONE).

19. TYPE D SOIL STABILIZATION MATTING SHALL BE INSTALLED OVER THE PROPOSED VALLEY BOTTOM SURFACE UPON FINAL GRADE. THE ENDS OF THE MATTING SHALL BE KEYED INTO THE EXISTING GROUND BY 6" (MINIMUM). THE PROPOSED VALLEY BOTTOM SHALL BE SEEDED WITH THE PROPOSED FLOODPLAIN SEED MIX PRIOR TO INSTALLING MATTING.

20. TYPE A SOIL STABILIZATION MATTING SHALL BE INSTALLED ON GRADED SIDE SLOPES. THE PROPOSED SIDE SLOPES SHALL BE SEEDED WITH THE PROPOSED STABILIZATION SEED MIX PRIOR TO INSTALLING MATTING.

21. ALL REMAINING DISTURBED AREAS SHALL BE STABILIZED WITH THE PROPOSED STABILIZATION SEED MIX AND MULCH.



OWNER/DEVELOPER/APPLICANT

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 4 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | STREAM RESTORATION OVERVIEW<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

P:\PROJECT\2006 Fine\Sloop Cove_50017963\CAD\CIVIL\Site Plan - Constructions\4-10 - SP-STRM-REST.dwg, 2/10/2021 3:47:28 PM, rennejulu

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
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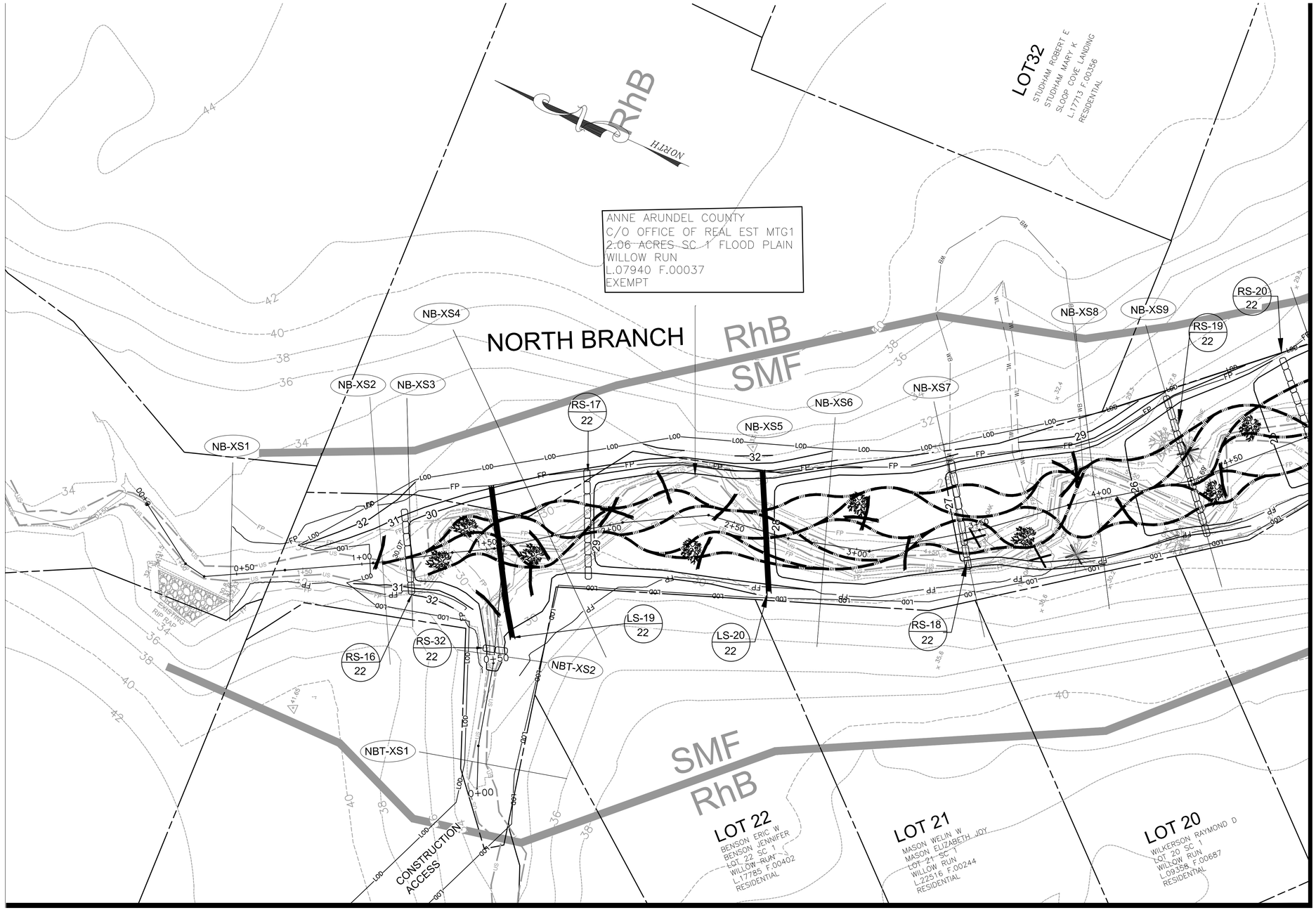
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19, 22)
- ROCK SILL (RS-16, 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.




MATCHLINE SITE PLAN 3 (SHEET 7 OF 39)

MATCHLINE SITE PLAN 2 (SHEET 6 OF 39)

0' 20' 40'
SCALE 1"=20'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DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE | APPROVED DATE | SCALE: As Shown | STREAM RESTORATION PLAN |
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors | |
| | | CHECKED BY: J. Cheok | |
| APPROVED DATE | APPROVED DATE | SHEET NO: 5 OF 39 | RESTORATION SITE PLAN 1 |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | PROJECT NO: 50017963 | SLOOP COVE RETROFIT SITE 1 |
| | | PROPOSAL NO: | 3rd District Tax Map 16 Grid 05 Anne Arundel County |

## EXISTING LEGEND

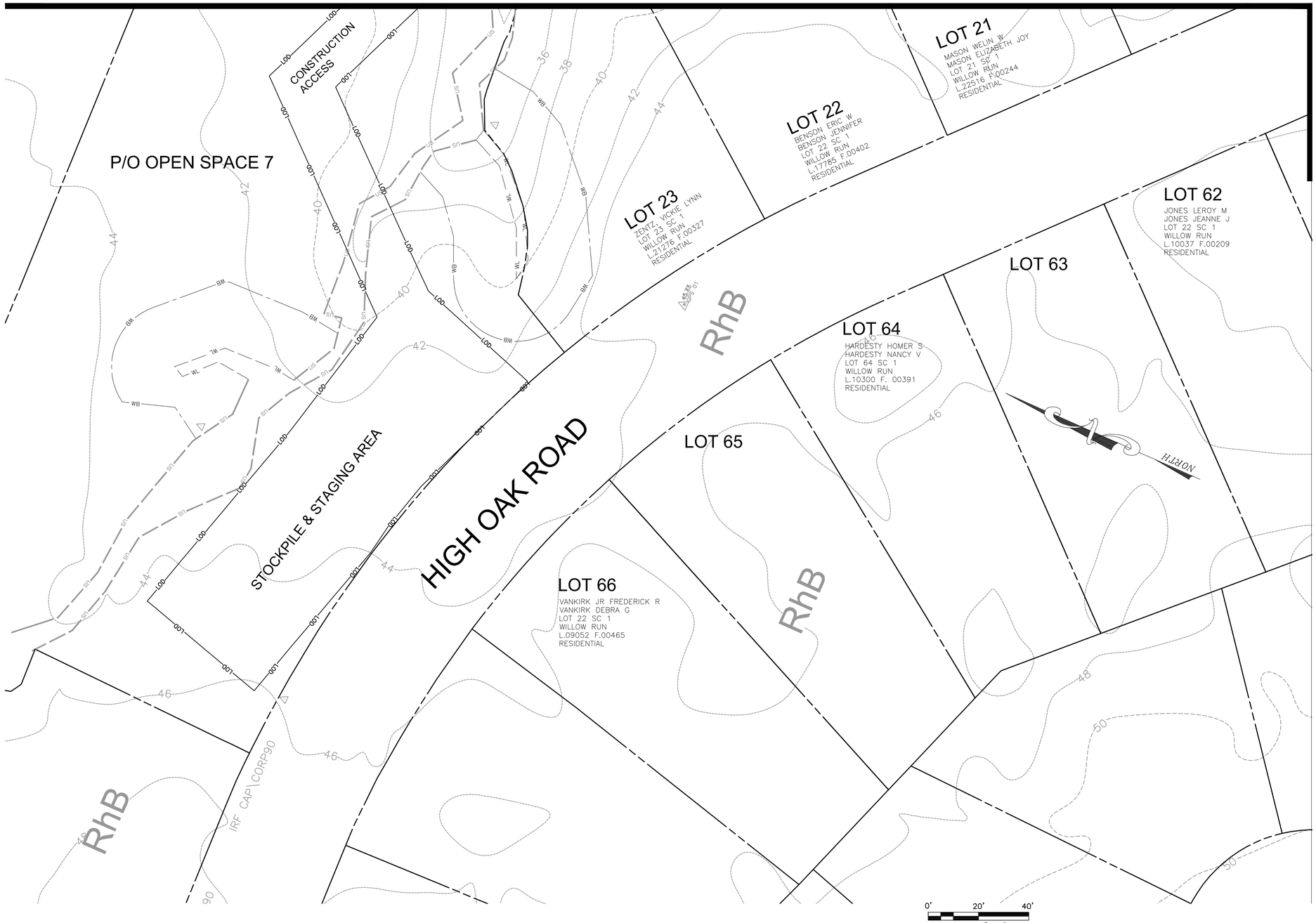
- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

# MATCHLINE SITE PLAN 1 (SHEET 5 OF 39)




MATCHLINE SITE PLAN 3 (SHEET 7 OF 39)


OWNER/DEVELOPER/APPLICANT

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land@landstudies.com
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PA 0023574

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A.A. County ID #721

Dewberry
2101 Gaither Road
Suite #340
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Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/18/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors | RESTORATION SITE PLAN 2 |
| | | CHECKED BY: J. Cheok | SLOOP COVE RETROFIT SITE 1 |
| | | SHEET NO: 6 OF 39 | 3rd District — Tax Map 16 Grid 05 — Anne Arundel County |
| | | PROJECT NO: 50017963 | |
| | | PROPOSAL NO: | |

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## EXISTING LEGEND

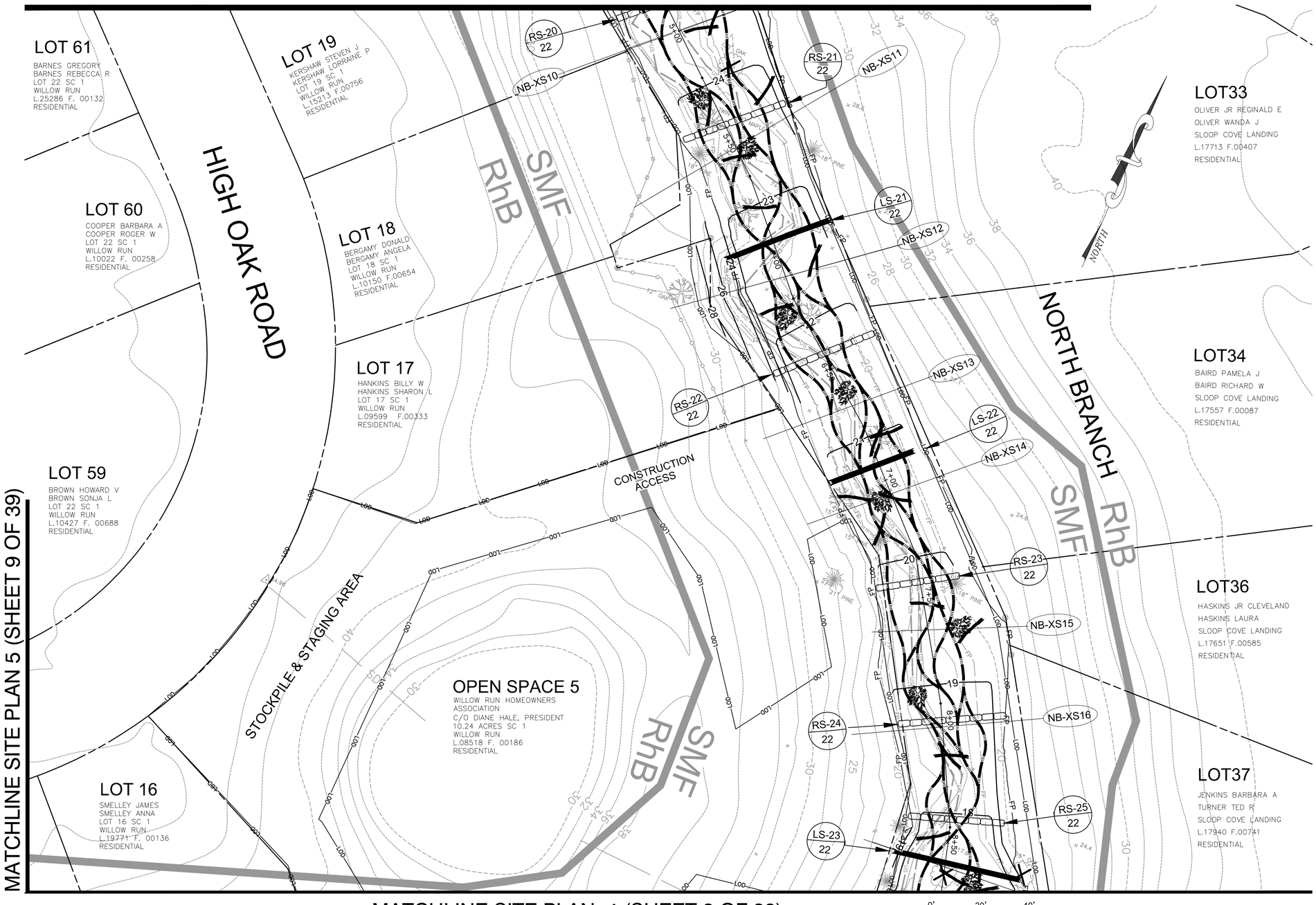
- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

MATCHLINE SITE PLAN 1 (SHEET 5 OF 39)

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| REVISONS | | | |
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| NO | Description | BY | DATE |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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|---|---|---|---|
| APPROVED DATE / CHIEF ENGINEER | APPROVED DATE / PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE / ASSISTANT CHIEF ENGINEER | APPROVED DATE / CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 7 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | RESTORATION SITE PLAN 3<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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# MATCHLINE SITE PLAN 3 (SHEET 7 OF 39)

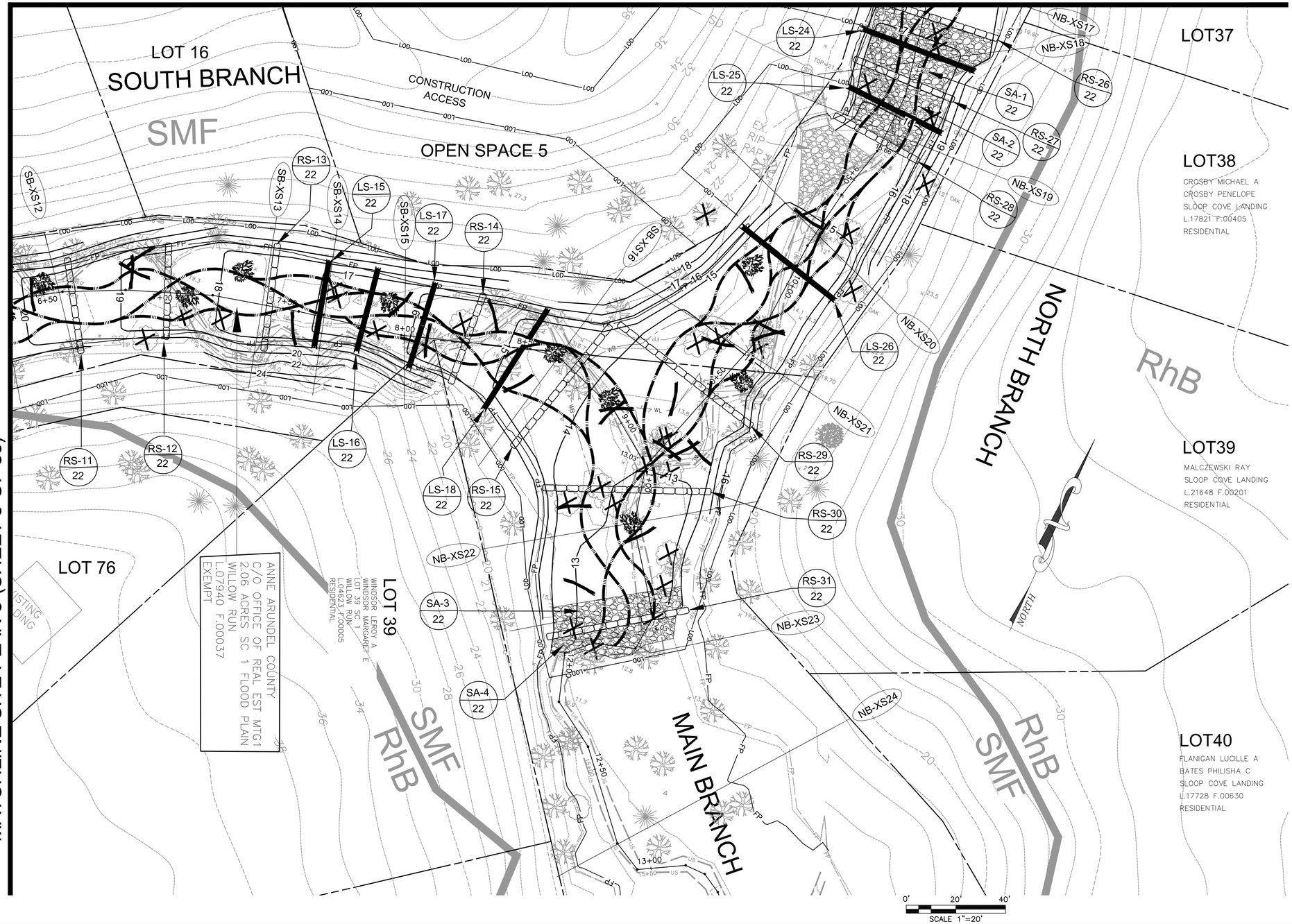
## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.





OWNER/DEVELOPER/APPLICANT

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PA 19254

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Fax: (301) 258-7607


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Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 8 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | RESTORATION SITE PLAN 4<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19, 22)
- ROCK SILL (RS-16, 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

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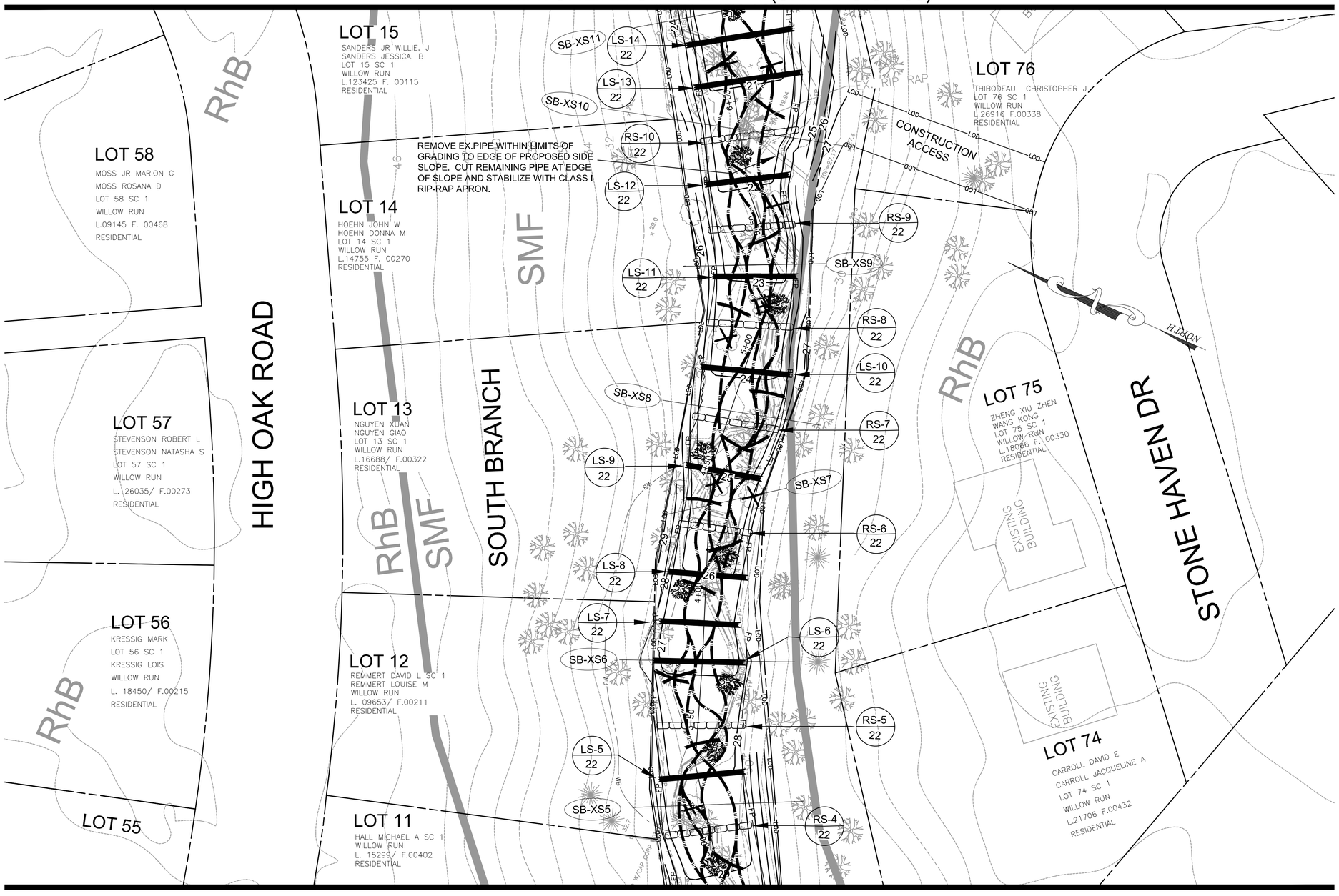
MATCHLINE SITE PLAN 4 (SHEET 8 OF 39)




MATCHLINE SITE PLAN 6 (SHEET 10 OF 39)

0' 20' 40'
SCALE 1"=20'

OWNER/DEVELOPER/APPLICANT
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Fax: (301) 258-7607

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

| REVISONS | | | |
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| NO | Description | BY | DATE |

ANNE ARUNDEL COUNTY
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| APPROVED / DATE | APPROVED / DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | |
| APPROVED / DATE | APPROVED / DATE | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | |

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 9 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# RESTORATION SITE PLAN 5
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

# MATCHLINE SITE PLAN 5 (SHEET 9 OF 39)

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

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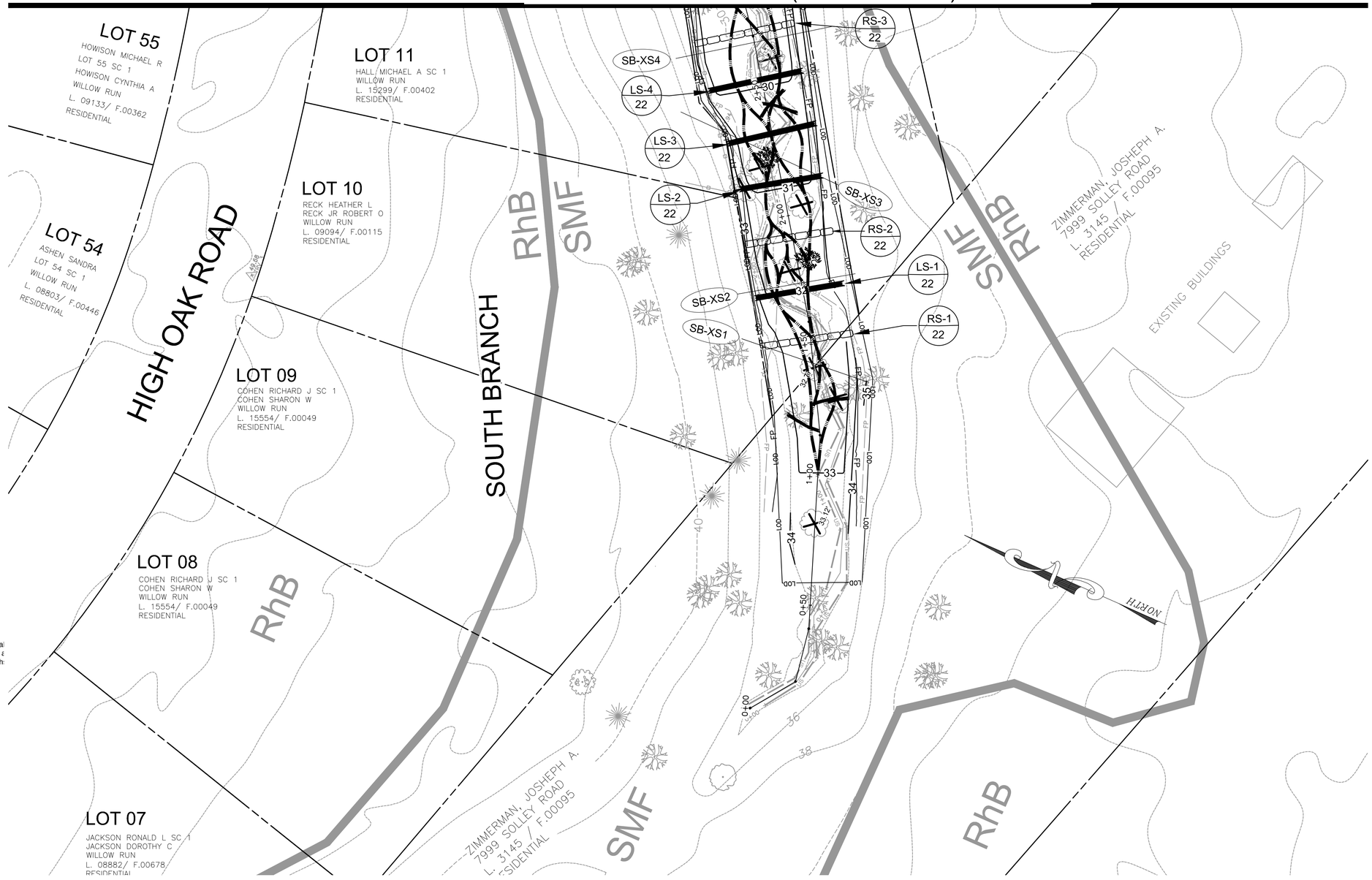



OWNER/DEVELOPER/APPLICANT

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land@landstudies.com
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Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18095, Expiration Date: 12/21/2022.

| REVISONS | | | |
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| NO | Description | BY | DATE |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 10 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | RESTORATION SITE PLAN 6<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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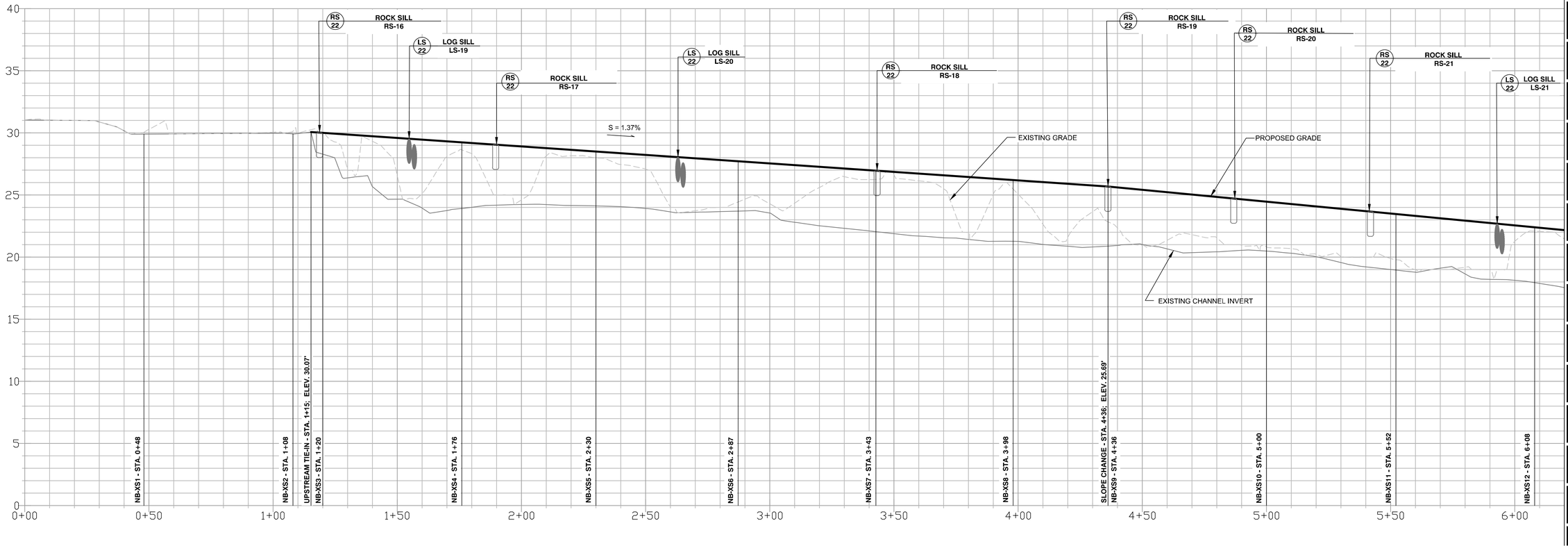
# N. BRANCH LONGITUDINAL PROFILE




MATCHLINE STA. 6+20, (SEE SHEET 12 OF 39)

HORIZ: 1"= 20'
VERT: 1"= 4'
0' 20' 40'

OWNER/DEVELOPER/APPLICANT

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land@landstudies.com

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PA 042234

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STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — PROFESSIONAL ENGINEER
2/18/2022

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
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REVISONS

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 11 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | NORTH BRANCH PROFILE 1<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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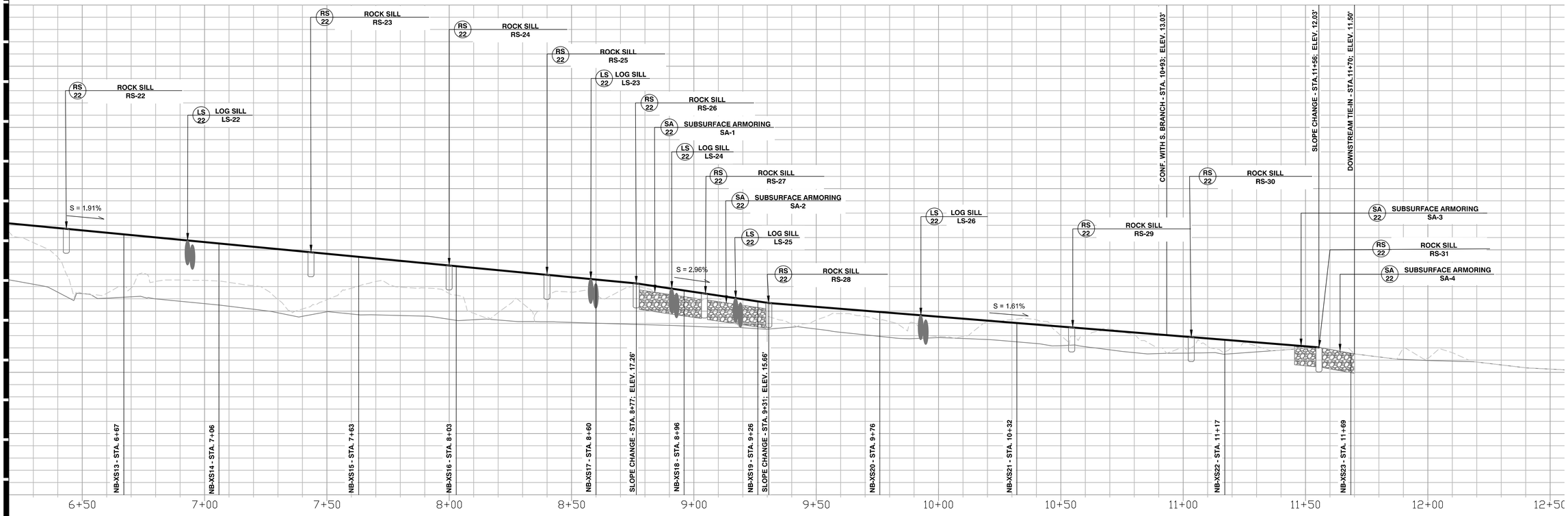
# N. BRANCH LONGITUDINAL PROFILE

MATCHLINE STA. 6+20 (SEE SHEET 11 OF 39)




HORIZ: 1"= 20'
VERT: 1"= 4'
0' 20' 40'


OWNER/DEVELOPER/APPLICANT

Land Studies

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STATE OF MARYLAND — JOANNE MARIE CHEOK — 18095 — REGISTERED PROFESSIONAL ENGINEER
12/21/22

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
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| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

| | | | |
|---|---|---|---|
| APPROVED DATE | APPROVED DATE | SCALE: As Shown | |
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors | |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheok | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 12 OF 39 | |
| | | PROJECT NO: 50017963 | |
| | | PROPOSAL NO: | |

NORTH BRANCH PROFILE 2

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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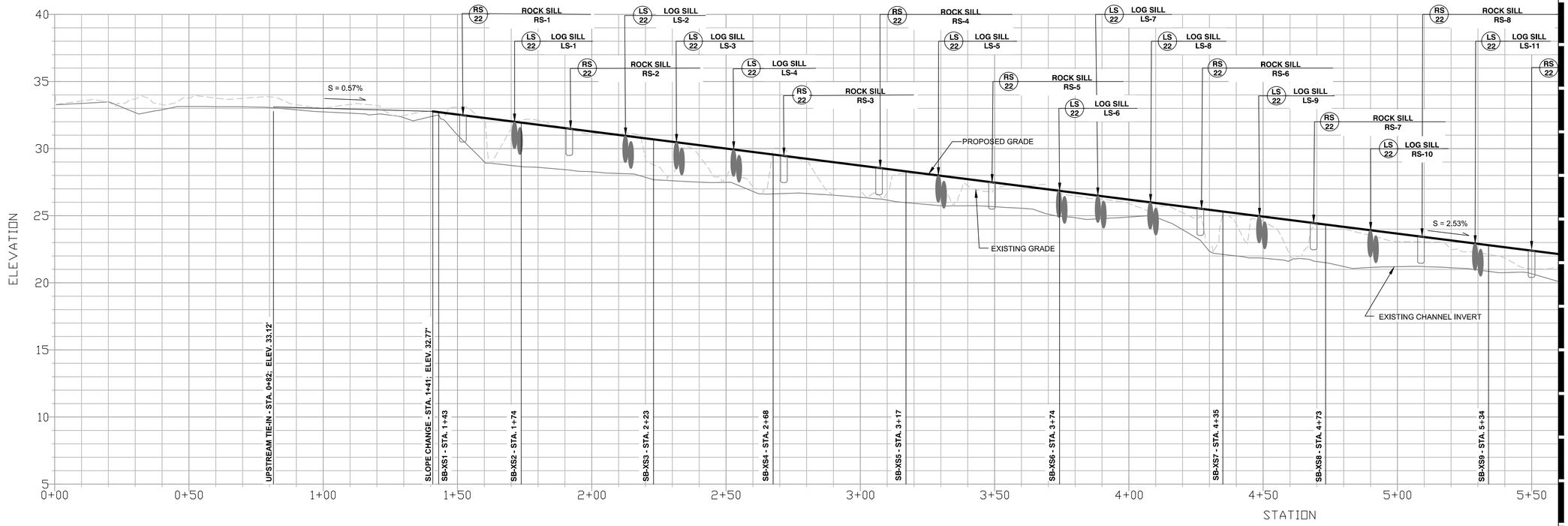
## S. BRANCH LONGITUDINAL PROFILE




MATCHLINE STA. 5+60 (SEE SHEET 14 OF 39)

HORIZ: 1"= 20'
VERT: 1"= 4'
0' 20' 40'

OWNER/DEVELOPER/APPLICANT

Land Studies

717-627-4440
fax: 717-627-4660

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land@landstudies.com

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CIVIL ENGINEER
A.A. County ID #721

PA 042324

**Dewberry**

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Fax: (301) 258-7607

STATE OF MARYLAND — JOANNE MARIE CHEOK — 21704 — REGISTERED PROFESSIONAL ENGINEER
2/10/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
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| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 13 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# SOUTH BRANCH PROFILE 1

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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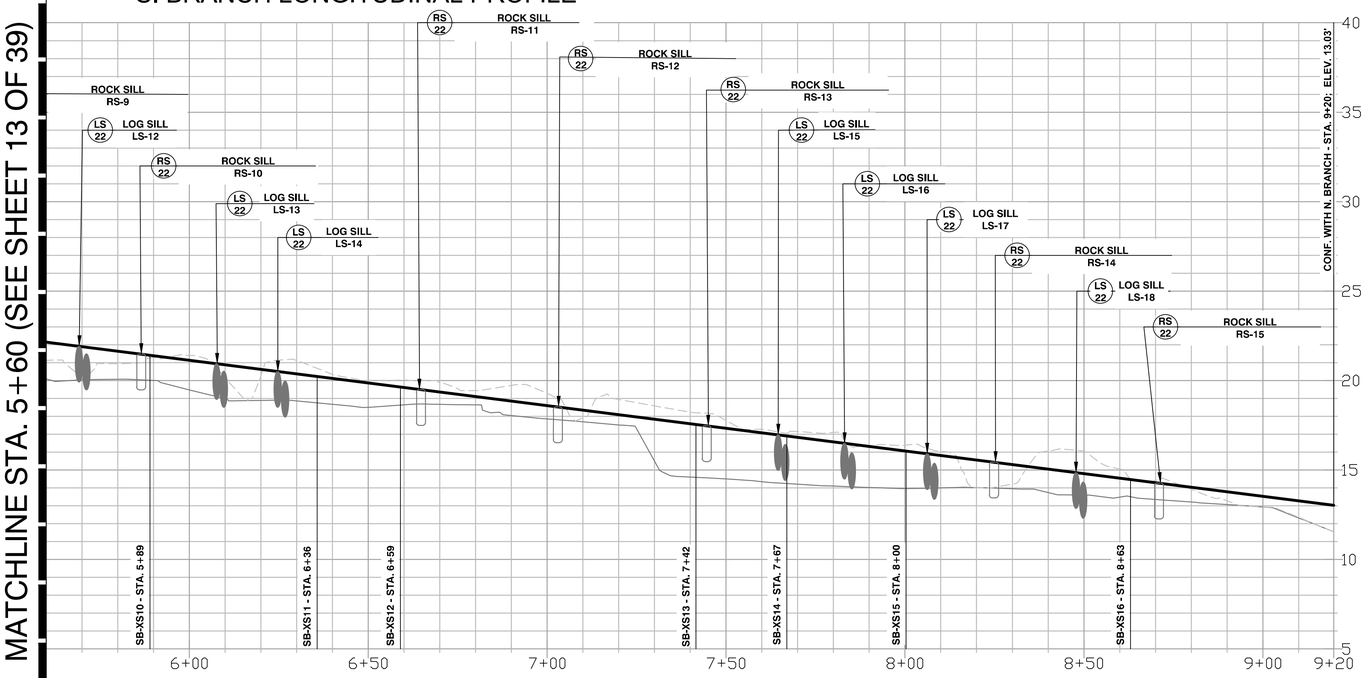
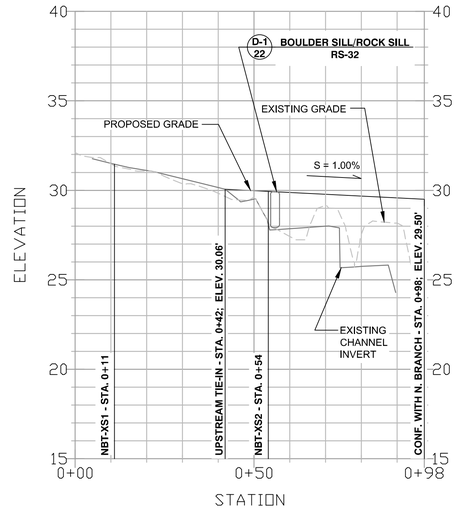
## S. BRANCH LONGITUDINAL PROFILE




## N. BRANCH TRIBUTARY LONGITUDINAL PROFILE




HORIZ: 1"= 20'
VERT: 1"= 4'
0' 20' 40'

OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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315 North Street | Lititz, PA 17543

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2/18/2021

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Expiration Date: 12/21/2022.

REVISONS

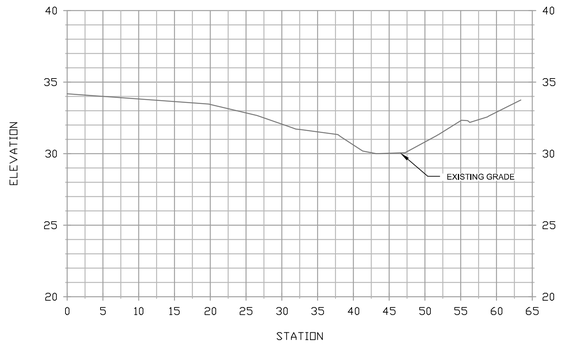
| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

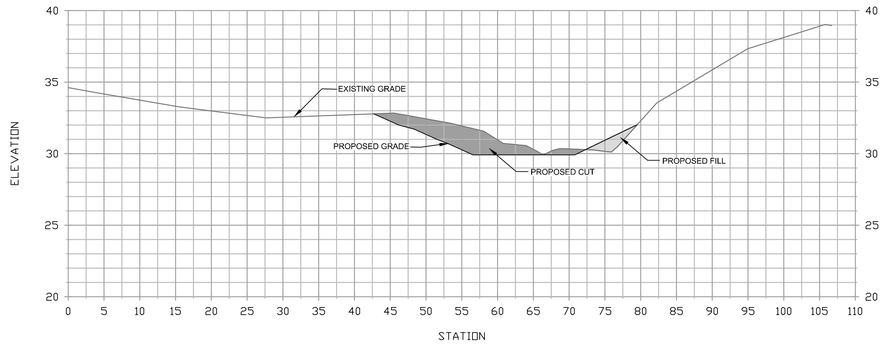
| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 14 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | SOUTH BRANCH PROFILE 2<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

P:\PROJECT\2008 Fire\Sloop Cove_50017963\CADCIVIL\Site Plan - Construction\11-14 SP-Profiles.dwg, 2/10/2021 3:49:24 PM, nemigalu

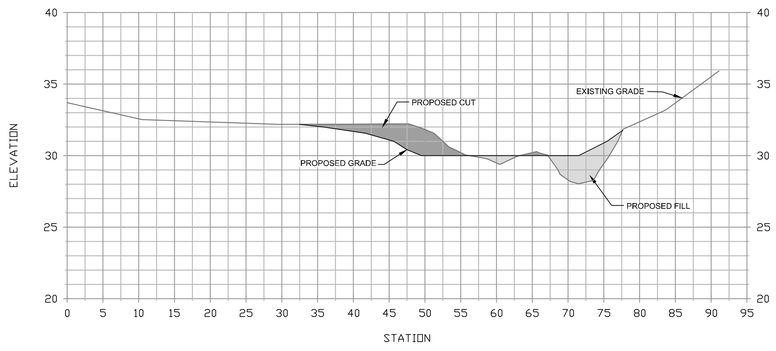
**NB-XS1 - STA. 0+48**




**NB-XS2 - STA. 1+08**




**NB-XS3 - STA. 1+20**

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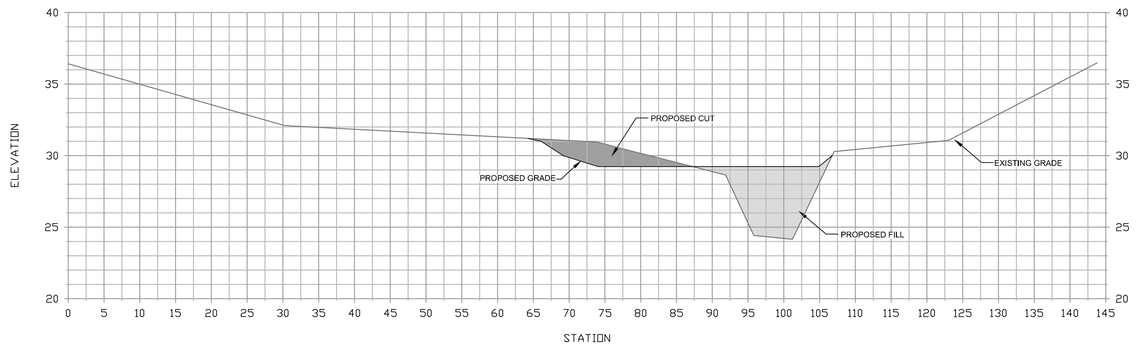
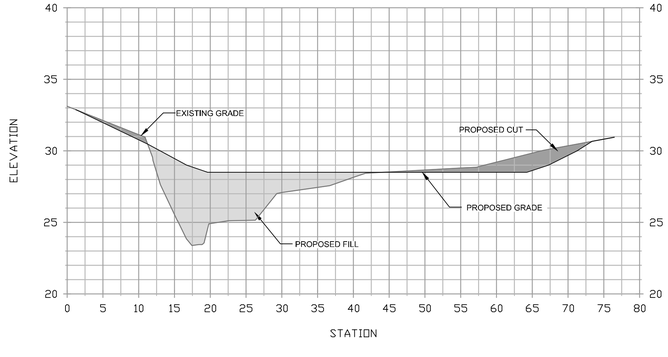



**NB-XS5 - STA. 2+30**

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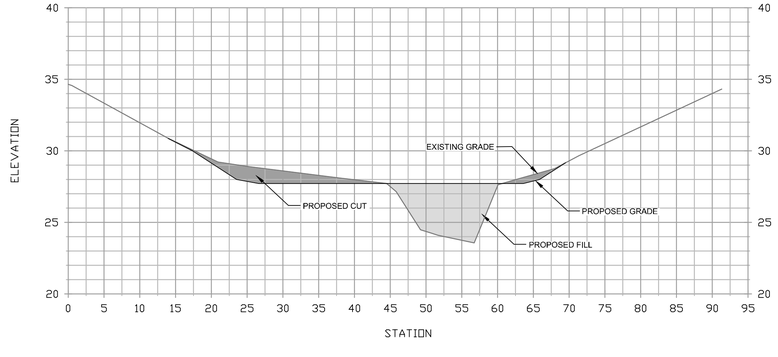


HORIZ: 1"= 10'
VERT: 1"= 5'
0' 10' 20'


OWNER/DEVELOPER/APPLICANT

Land Studies

717-627-4440
fax: 717-627-4660

landstudies.com
land@landstudies.com

315 North Street | Lititz, PA 17543

PA 6284

CIVIL ENGINEER
A.A. County ID #721

Dewberry
2101 Gaither Road
Suite #340
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Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHEOK — 21724 — REGISTERED PROFESSIONAL ENGINEER
2/8/2024

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

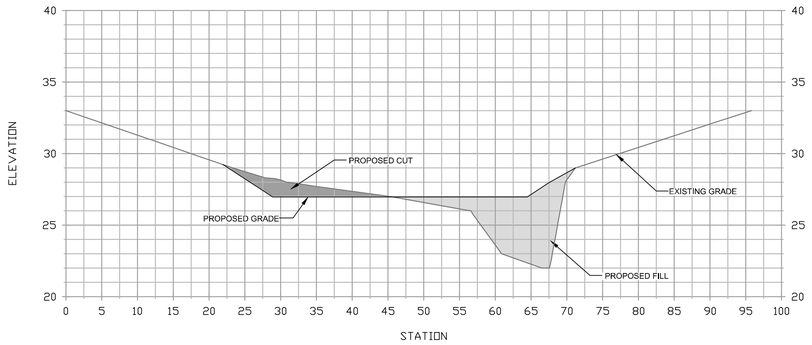
| REVISONS | | | |
|---|---|---|---|
| NO | Description | BY | DATE |
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 15 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | NORTH BRANCH CROSS SECTION 1<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

P:\PROJECT\2008 Fish\Sloop Cove_50017963\CAD\CIVIL\Site Plan - Construction\15-19 - SP-Cross Sections-North.dwg, 2/10/2021 3:49:58 PM, hemejalu

**NB-XS7 - STA. 3+43**

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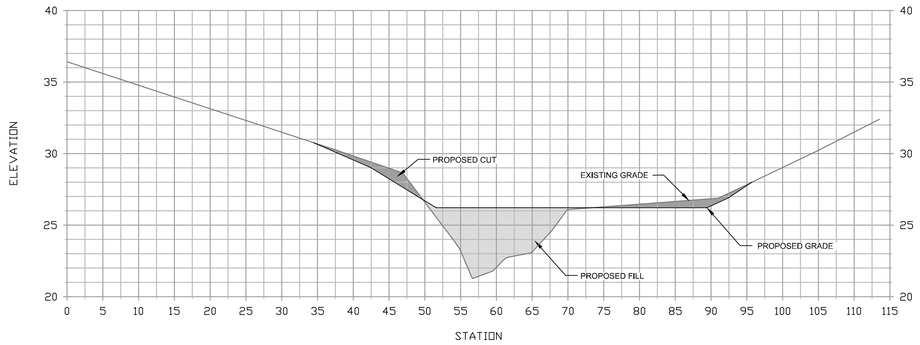
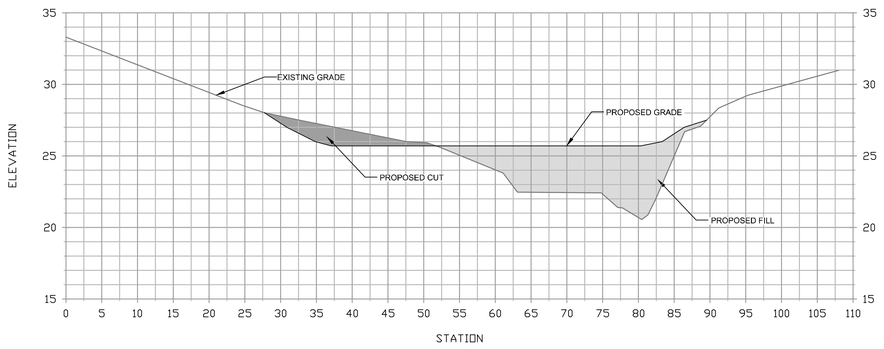



**NB-XS9 - STA. 4+36**

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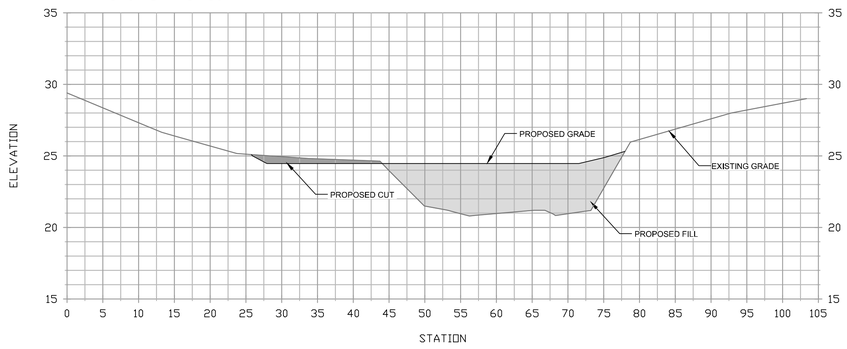
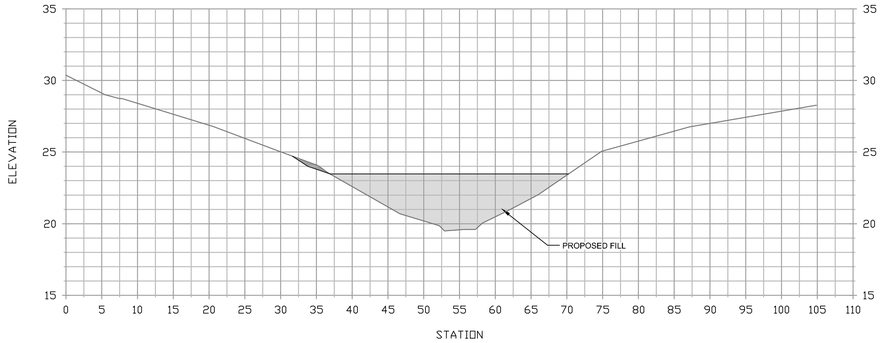
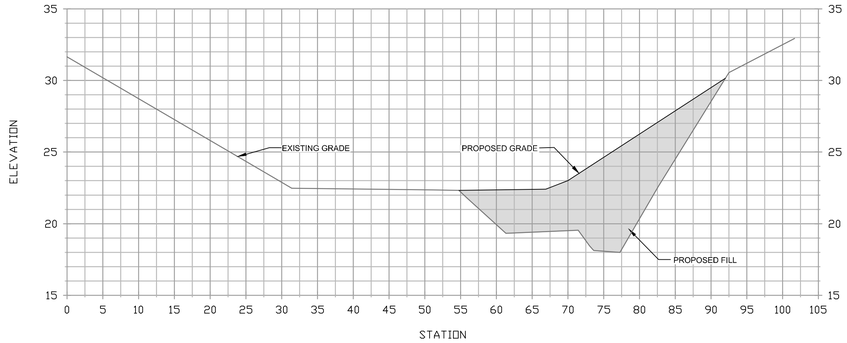



**NB-XS11 - STA. 5+52**




**NB-XS12 - STA. 6+08**




HORIZ: 1"= 10'
VERT: 1"= 5'
0' 10' 20'

OWNER/DEVELOPER/APPLICANT

Land Studies

717-627-4440
fax: 717-627-4660
landstudies.com
land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
A.A. County ID #721

Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850

Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 16 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# NORTH BRANCH CROSS SECTION 2

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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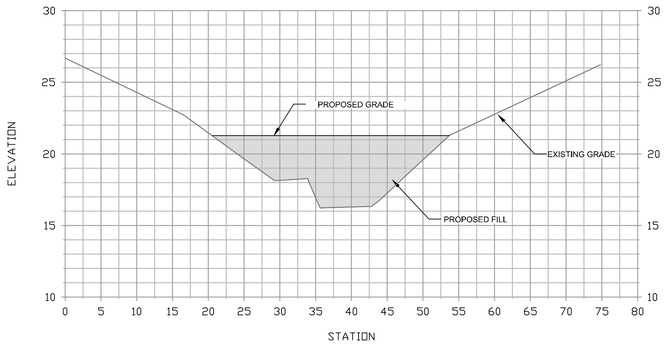
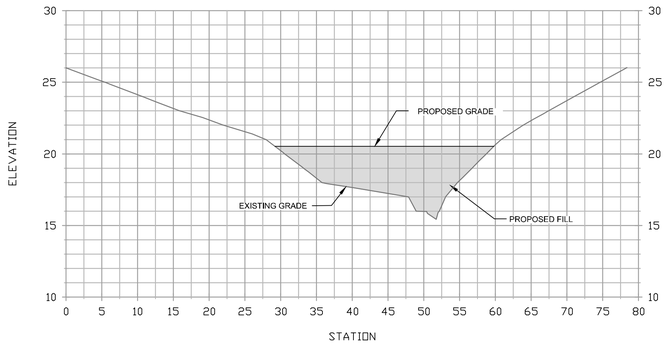
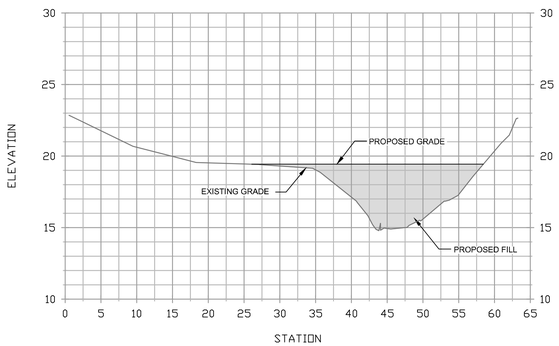
**NB-XS13 - STA. 6+67**



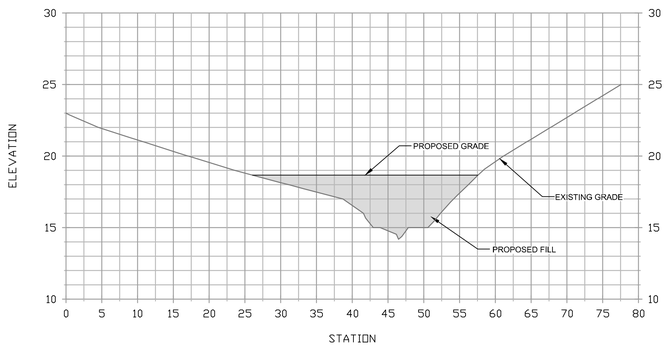

**NB-XS14 - STA. 7+06**



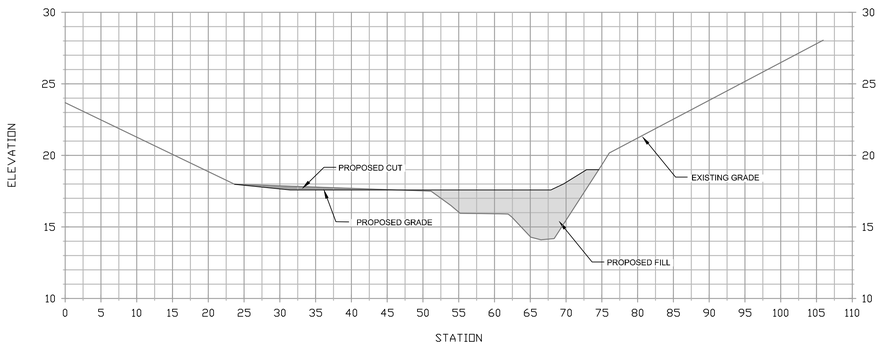

**NB-XS15 - STA. 7+63**



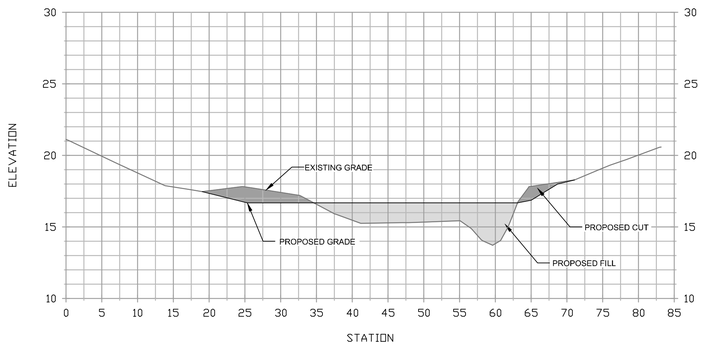

**NB-XS16 - STA. 8+03**




**NB-XS17 - STA. 8+60**




**NB-XS18 - STA. 8+96**




HORIZ: 1"= 10'
VERT: 1"= 5'
0' 10' 20'


OWNER/DEVELOPER/APPLICANT

Land Studies

717-627-4440
fax: 717-627-4660
landstudies.com
land@landstudies.com
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PA 042234
Dewberry
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Rockville, MD 20850
Contact: Joanne M. Check, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE MICHECK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/18/2022

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Check
SHEET NO: 17 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# NORTH BRANCH CROSS SECTION 3
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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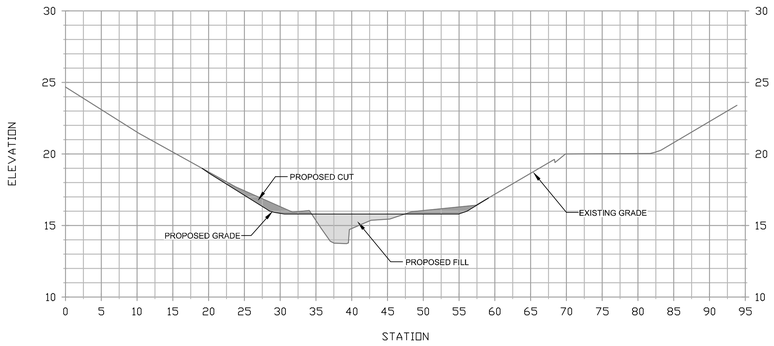
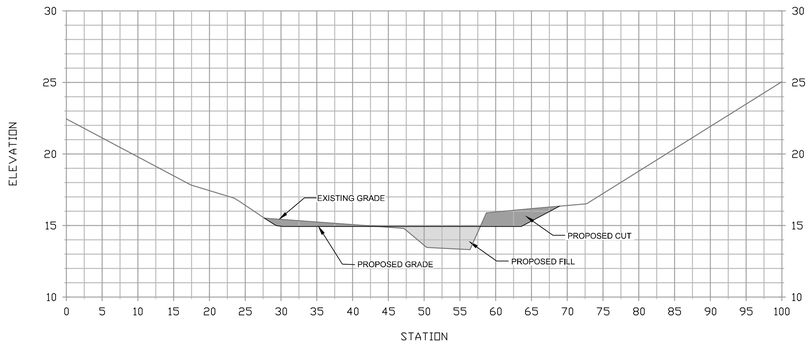
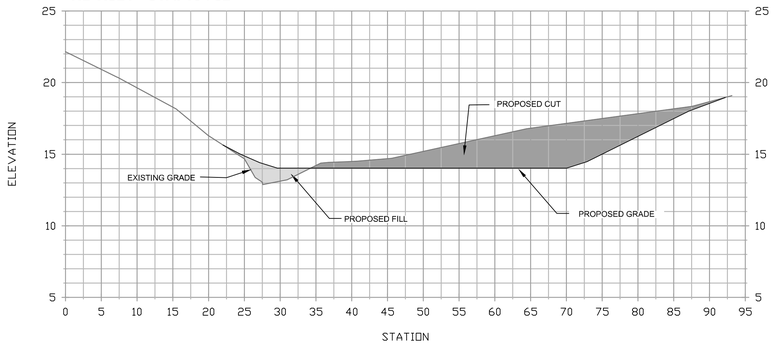
**NB-XS19 - STA. 9+26**



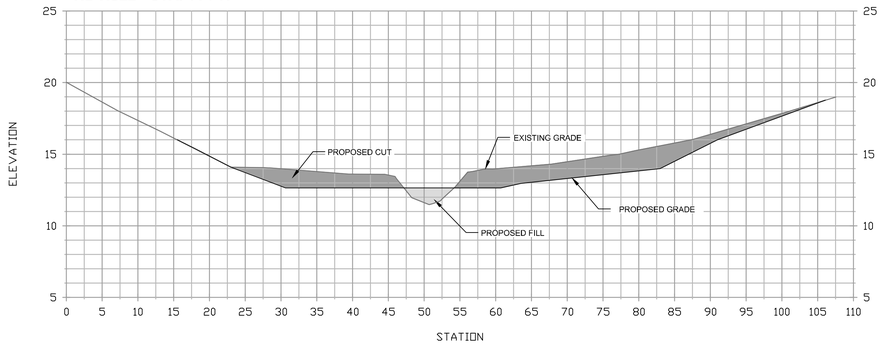

**NB-XS20 - STA. 9+76**



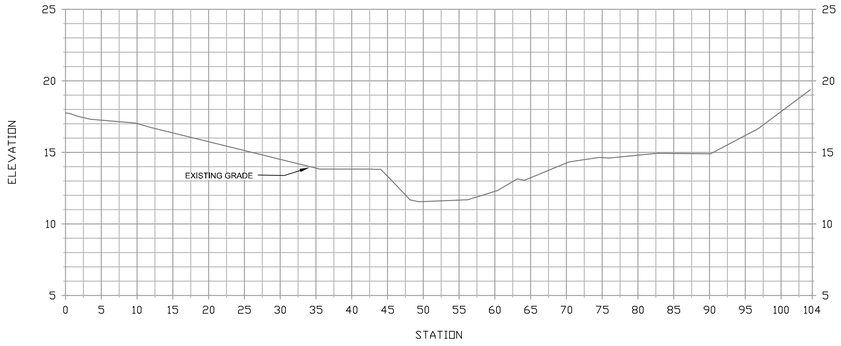

**NB-XS21 - STA. 10+32**



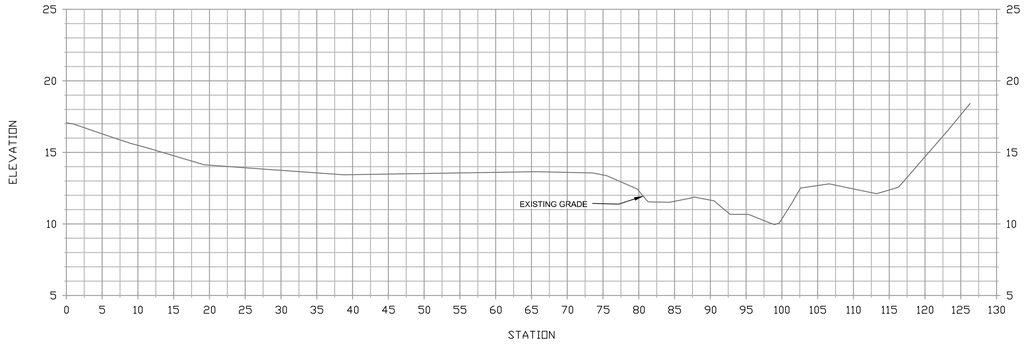

**NB-XS22 - STA. 11+17**




**NB-XS23 - STA. 11+69**




**NB-XS24 - STA. 12+82**




HORIZ: 1"= 10'
VERT: 1"= 5'
0' 10' 20'


OWNER/DEVELOPER/APPLICANT

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CIVIL ENGINEER
A.A. County ID #721
PA 62234

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Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHECK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/18/2022

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE<br>CHIEF ENGINEER | APPROVED DATE<br>PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE<br>ASSISTANT CHIEF ENGINEER | APPROVED DATE<br>CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Check<br>SHEET NO: 18 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | NORTH BRANCH CROSS SECTION 4<br>SLOOP COVE RETROFIT SITE 1<br>3rd District Tax Map 16 Grid 05 Anne Arundel County |

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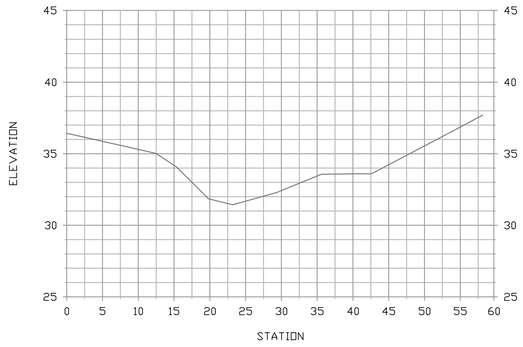
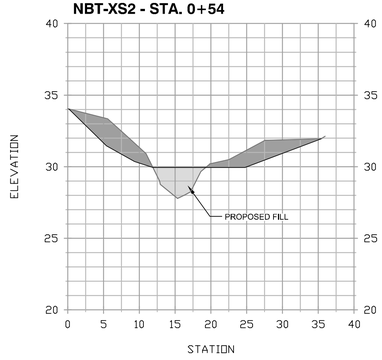
**NBT-XS1 - STA. 0+11**




**NBT-XS2 - STA. 0+54**




HORIZ: 1"= 10'
VERT: 1"= 5'
0' 10' 20'


OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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CIVIL ENGINEER
A.A. County ID #721

PA 24234

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Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/17/21

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 19 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# NORTH BRANCH CROSS SECTION 5

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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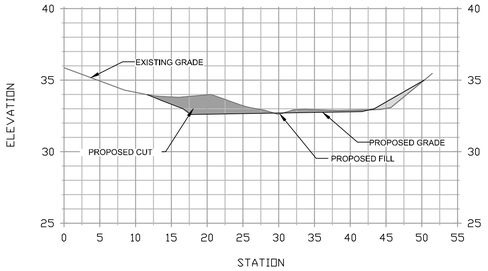
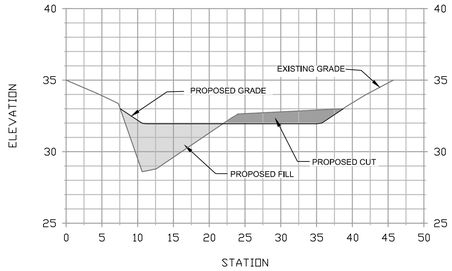
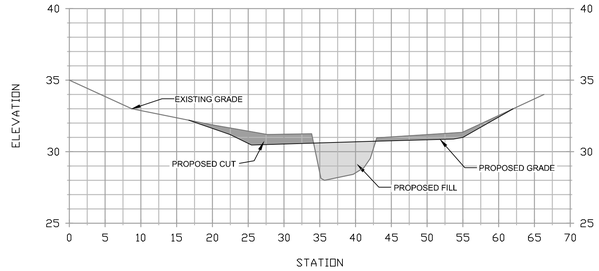
**SB-XS1 - STA. 1+43**



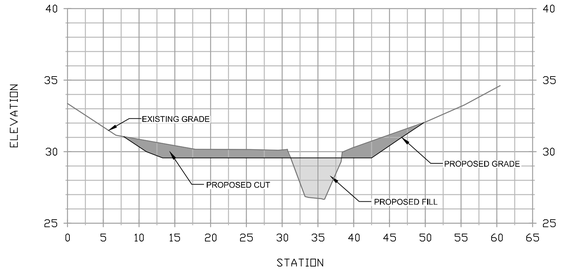

**SB-XS2 - STA. 1+74**



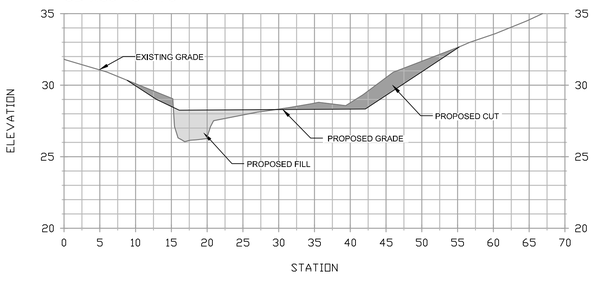

**SB-XS3 - STA. 2+23**



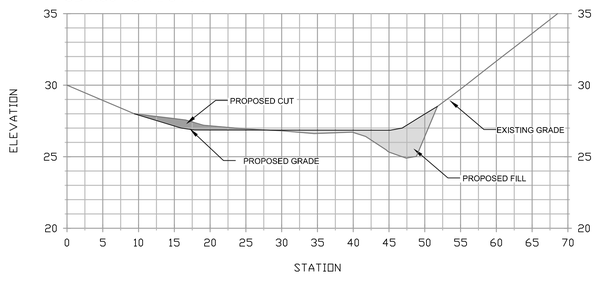

**SB-XS4 - STA. 2+68**



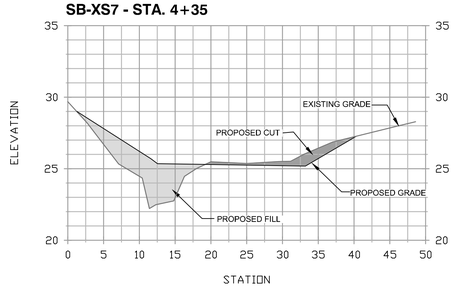

**SB-XS5 - STA. 3+17**



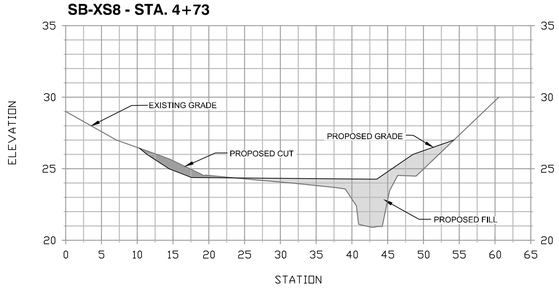

**SB-XS6 - STA. 3+74**



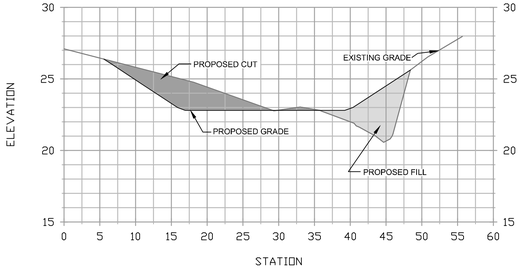

**SB-XS7 - STA. 4+35**




**SB-XS8 - STA. 4+73**




**SB-XS9 - STA. 5+34**

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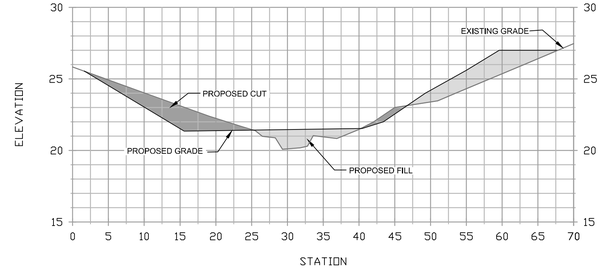
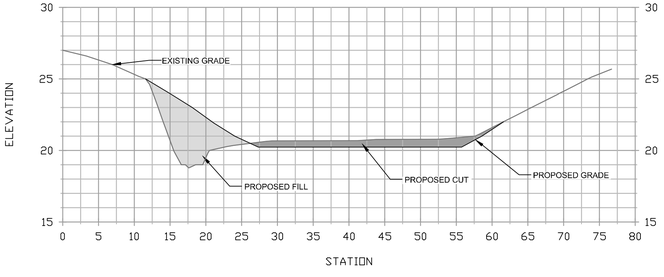
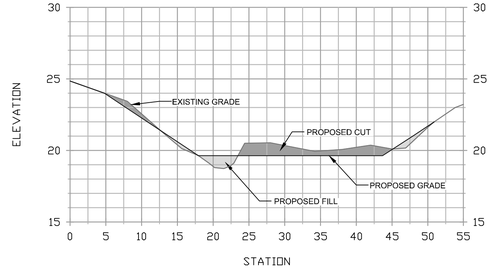



**SB-XS11 - STA. 6+36**




**SB-XS12 - STA. 6+59**




HORIZ: 1"= 10'
VERT: 1"= 5'
0' 10' 20'

OWNER/DEVELOPER/APPLICANT

Land Studies

717-627-4440
fax: 717-627-4660

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315 North Street | Lititz, PA 17543

PA 043222A

CIVIL ENGINEER
A.A. County ID #721

Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850

Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

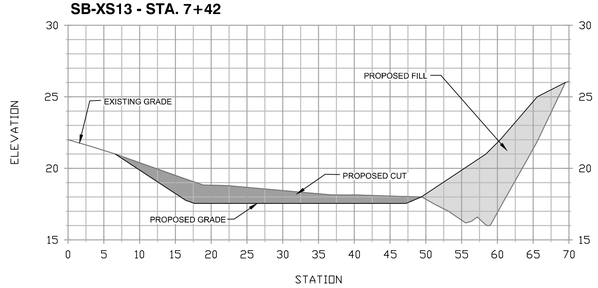
| REVISONS | | | |
|---|---|---|---|
| NO | Description | BY | DATE |
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

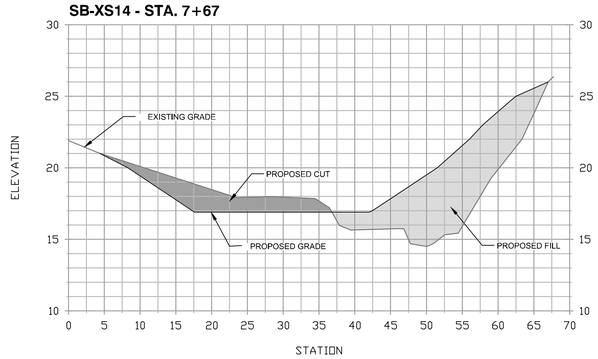
| | | | |
|---|---|---|---|
| APPROVED DATE | APPROVED DATE | SCALE: As Shown | STREAM RESTORATION PLAN |
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors | SOUTH BRANCH CROSS SECTION 1 |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheok | SLOOP COVE RETROFIT SITE 1 |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 20 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | 3rd District Tax Map 16 Grid 05 Anne Arundel County |

P:\PROJECT\2008 Flet\Sloop Cove_50017963\CAD\CIVIL\Site Plan - Construction\20-21 - SP-Cross Sections-South.dwg, 2/10/2021 3:51:02 PM, nemejalu

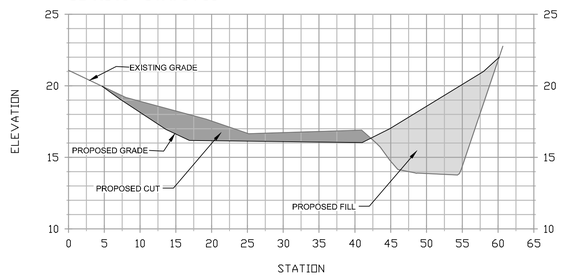
**SB-XS13 - STA. 7+42**



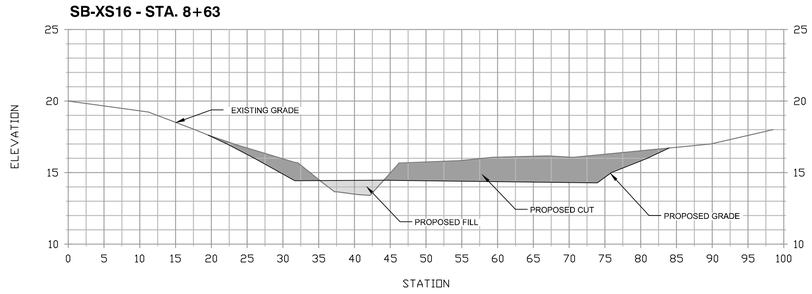

**SB-XS14 - STA. 7+67**




**SB-XS15 - STA. 8+00**




**SB-XS16 - STA. 8+63**




HORIZ: 1"= 10'
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0' 10' 20'


OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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CIVIL ENGINEER
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PA 24242

Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850

Contact: Joanne M. Cheak, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

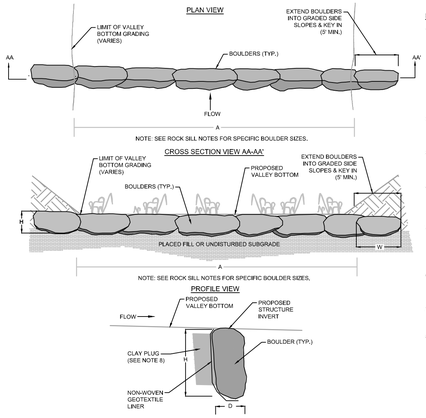
License No. 18095,
Expiration Date: 12/21/2022.

| REVISONS | | | |
|---|---|---|---|
| NO | Description | BY | DATE |
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE | APPROVED DATE | SCALE: As Shown | STREAM RESTORATION PLAN |
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors | SOUTH BRANCH CROSS SECTION 2 |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheak | SLOOP COVE RETROFIT SITE 1 |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 21 OF 39 | |
| | | PROJECT NO: 50017963 | |
| | | PROPOSAL NO: | 3rd District Tax Map 16 Grid 05 Anne Arundel County |

P:\PROJECTS\008 Fish\Sloop Cove_50017963\CAD\CIVIL\Site Plan - Construction\20-21 - SP-Cross Sections-South.dwg, 2/10/2021 3:51:14 PM, nemejulu




RS 22 ROCK SILL (GRADE CONTROL STRUCTURE)
NOT TO SCALE

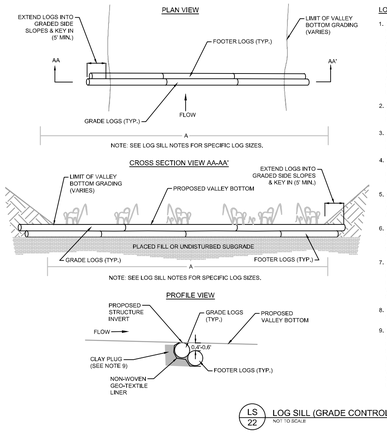
PLAN SYMBOL

ROCK SILL NOTES:

1. ALL PROPOSED ROCK SILL STRUCTURES SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF AND/OR SUBJECT TO THE APPROVAL OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER. IF STRUCTURE INSTALLATION AND PERFORMANCE ARE NOT IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS, THE STRUCTURE SHALL BE RE-SET OR REINSTALLED IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS. ALL ROCKS MUST BE APPROVED FOR DURABILITY BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER PRIOR TO PLACEMENT. TOLERANCES FOR PROPOSED ROCK SILL STRUCTURES ARE AS FOLLOWS: THE AVERAGE TOP SURFACE ELEVATION (INVERT ELEVATION) OF PROPOSED ROCK SILL STRUCTURES SHALL NOT DEVIATE VERTICALLY GREATER THAN 0.4' FROM GRADE CONTROL INVERT DESIGN ELEVATIONS.
2. THE SIZE, LOCATION AND ORIENTATION OF PROPOSED ROCK SILL STRUCTURES MAY BE FIELD-MODIFIED BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER BASED ON SITE CONDITIONS DURING CONSTRUCTION.
3. ROCK SILLS SHALL BE CONSTRUCTED OF FURNISHED ROCKS (SANDSTONE OR GRANITE IS PREFERABLE) OR HARVESTED FROM ON-SITE IF APPLICABLE. ROCK SHALL HAVE MINIMUM DIMENSIONS = 3'(W) X 2'(H) X 2'(D) AS SHOWN. NO LIMESTONE SHALL BE ALLOWED.
4. ROCK SHALL BE PLACED INDIVIDUALLY AT A SLIGHT ANGLE LEANING UPSTREAM. ROCK SILLS ARE INTENDED TO PROVIDE GRADE CONTROL. THEREFORE, THE TOP SURFACE OF THE ROCK SILL SHALL BE PLACED AT THE PROPOSED VALLEY BOTTOM INVERT ELEVATION. AS A RESULT, ONLY THE TOP SURFACE WILL BE NOTICEABLE UPON FINAL GRADE.
5. NO SIGNIFICANT VOIDS (GREATER THAN 3") SHALL EXIST BETWEEN ADJOINING ROCK. ALL UNDESIRABLE VOIDS SHALL BE FILLED (BY HAND IF NECESSARY) WITH ROCK FRAGMENTS (COBBLES AND GRAVELS) FROM FURNISHED RIPRAP. A THIN LAYER OF FURNISHED COMPOST (MIXTURE OF UNPROCESSED WOOD CHIPS AND SOIL) SHALL BE SPREAD ALONG THE TOP SURFACE OF THE ROCK SILL TO FILL ANY REMAINING VOIDS AND LOW SPOTS.
6. ROCK SILLS SHALL EXTEND ACROSS THE ENTIRE PROPOSED VALLEY BOTTOM AND SHALL BE KEYED INTO GRADED SIDE SLOPES BY A MINIMUM OF 5 FEET OR AS DETERMINED BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER BASED ON SITE CONDITIONS DURING CONSTRUCTION.
7. NON-WOVEN GEOTEXTILE LINER SHALL BE INSTALLED ALONG THE UPSTREAM SURFACE OF THE ROCK SILL TO PREVENT WATER-PIPING THROUGH THE STRUCTURE.
8. MATERIAL WITH A HEAVY CLAY OR CLAYEY SILT CONTENT SHALL BE USED TO CONSTRUCT A CLAY PLUG ON THE UPSTREAM SIDE OF THE ROCK SILL. THE CLAY PLUG SHALL BE TIED INTO THE EXISTING CLAY LAYER BELOW THE BASE OF THE STRUCTURE AND SHALL EXTEND UPWARDS TO WITHIN 2 INCHES OF THE TOP OF THE STRUCTURE. THE CLAY PLUG SHALL HAVE A WIDTH OF 1 FOOT UPSTREAM OF THE ROCK SILL AND EXTEND ACROSS THE ENTIRE VALLEY BOTTOM IN ORDER TO FURTHER PREVENT WATER-PIPING THROUGH THE STRUCTURE. MATERIAL EXCAVATED FOR THE ROCK SILLS MAY BE USED AT THE DISCRETION OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER TO CONSTRUCT THE CLAY PLUG.

PROPOSED ROCK SILL GRADE CONTROL STRUCTURE SCHEDULE

| STRUCTURE ID | REACH | STATION | INVERT ELEVATION (FT) | WIDTH UP/DOWNSTREAM (FT) | LENGTH ACROSS FLOODPLAIN (FT) |
|---|---|---|---|---|---|
| RS-1 | S. BRANCH | 1+52 | 32.49 | 2-3' | 34.0 |
| RS-2 | S. BRANCH | 1+92 | 31.48 | 2-3' | 34.0 |
| RS-3 | S. BRANCH | 2+72 | 29.46 | 2-3' | 39.0 |
| RS-4 | S. BRANCH | 3+07 | 28.56 | 2-3' | 34.0 |
| RS-5 | S. BRANCH | 3+49 | 27.50 | 2-3' | 34.0 |
| RS-6 | S. BRANCH | 4+27 | 25.53 | 2-3' | 29.0 |
| RS-7 | S. BRANCH | 4+69 | 24.46 | 2-3' | 34.0 |
| RS-8 | S. BRANCH | 5+09 | 23.45 | 2-3' | 34.0 |
| RS-9 | S. BRANCH | 5+50 | 22.50 | 2-3' | 34.0 |
| RS-10 | S. BRANCH | 5+87 | 21.48 | 2-3' | 39.0 |
| RS-11 | S. BRANCH | 6+65 | 19.49 | 2-3' | 39.0 |
| RS-12 | S. BRANCH | 7+03 | 18.53 | 2-3' | 39.0 |
| RS-13 | S. BRANCH | 7+45 | 17.47 | 2-3' | 44.0 |
| RS-14 | S. BRANCH | 8+25 | 15.44 | 2-3' | 39.0 |
| RS-15 | S. BRANCH | 8+71 | 14.27 | 2-3' | 63.0 |
| RS-16 | N.BRANCH | 1+19 | 30.33 | 2-3' | 34.0 |
| RS-17 | N.BRANCH | 1+90 | 29.05 | 2-3' | 44.0 |
| RS-18 | N.BRANCH | 3+43 | 26.96 | 2-3' | 44.0 |
| RS-19 | N.BRANCH | 4+36 | 25.69 | 2-3' | 58.0 |
| RS-20 | N.BRANCH | 4+87 | 24.72 | 2-3' | 53.0 |
| RS-21 | N.BRANCH | 5+42 | 23.67 | 2-3' | 44.0 |
| RS-22 | N.BRANCH | 6+44 | 21.72 | 2-3' | 44.0 |
| RS-23 | N.BRANCH | 7+44 | 19.81 | 2-3' | 34.0 |
| RS-24 | N.BRANCH | 8+00 | 18.72 | 2-3' | 44.0 |
| RS-25 | N.BRANCH | 8+40 | 17.96 | 2-3' | 40.0 |
| RS-26 | N.BRANCH | 8+77 | 17.26 | 2-3' | 53.0 |
| RS-27 | N.BRANCH | 9+04 | 16.44 | 2-3' | 39.0 |
| RS-28 | N.BRANCH | 9+31 | 15.66 | 2-3' | 68.0 |
| RS-29 | N.BRANCH | 10+54 | 13.66 | 2-3' | 68.0 |
| RS-30 | N.BRANCH | 11+03 | 12.87 | 2-3' | 58.0 |
| RS-31 | N.BRANCH | 11+56 | 12.03 | 2-3' | 56.0 |
| RS-32 | N.BRANCH TRIB | 0+56 | 29.92 | 2-3' | 10.0 |




LS 22 LOG SILL (GRADE CONTROL STRUCTURE)
NOT TO SCALE

PLAN SYMBOL

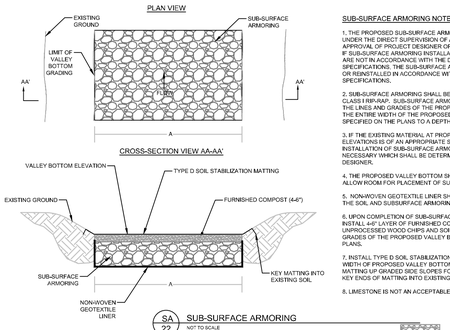
LOG SILL NOTES:

1. ALL PROPOSED LOG SILL STRUCTURES SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF AND/OR SUBJECT TO THE APPROVAL OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER. IF STRUCTURE INSTALLATION AND PERFORMANCE ARE NOT IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS, THE STRUCTURE SHALL BE RE-SET OR REINSTALLED IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS. ALL LOGS MUST BE APPROVED FOR DURABILITY BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER PRIOR TO PLACEMENT. TOLERANCES FOR PROPOSED LOG SILL STRUCTURES ARE AS FOLLOWS: THE AVERAGE TOP SURFACE ELEVATION (INVERT ELEVATION) OF PROPOSED LOG SILL STRUCTURES SHALL NOT DEVIATE VERTICALLY GREATER THAN 0.4' FROM GRADE CONTROL INVERT DESIGN ELEVATIONS.
2. THE SIZE, LOCATION AND ORIENTATION OF PROPOSED LOG SILL STRUCTURES MAY BE FIELD-MODIFIED BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER BASED ON SITE CONDITIONS DURING CONSTRUCTION.
3. LOG SILLS SHALL BE CONSTRUCTED OF LOGS HARVESTED AND STORED ON-SITE. INDIVIDUAL GRADE LOGS AND FOOTER LOGS SHALL HAVE AN 12" MINIMUM DIAMETER.
4. LOG SILLS ARE INTENDED TO PROVIDE GRADE CONTROL. THEREFORE, THE TOP SURFACE OF THE LOG SILL SHALL BE PLACED AT THE PROPOSED VALLEY BOTTOM INVERT ELEVATION. AS A RESULT, ONLY THE TOP SURFACE WILL BE NOTICEABLE UPON FINAL GRADE.
5. GRADE LOGS SHALL BE PLACED INDIVIDUALLY IMMEDIATELY UPSTREAM AND BETWEEN 0.4' TO 0.6' VERTICALLY ABOVE FOOTER LOGS AS SHOWN. THE ENDS OF ADJOINING GRADE LOGS SHALL OVERLAP OR BE ENTIRELY FLUSH WITH ONE ANOTHER.
6. LOG SILLS SHALL EXTEND ACROSS THE ENTIRE PROPOSED VALLEY BOTTOM AND SHALL BE KEYED INTO THE GRADED SIDE SLOPES BY A MINIMUM OF 5 FT OR AS DETERMINED BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER BASED ON SITE CONDITIONS DURING CONSTRUCTION.
7. NO SIGNIFICANT VOIDS (GREATER THAN 1") SHALL EXIST BETWEEN ADJOINING LOGS. ALL UNDESIRABLE VOIDS SHALL BE FILLED (BY HAND IF NECESSARY) WITH ROCK FRAGMENTS (SMALL BOULDERS, COBBLES, AND GRAVELS) FROM FURNISHED RIPRAP. A THIN LAYER OF FURNISHED COMPOST (MIXTURE OF UNPROCESSED WOOD CHIPS AND SOIL) SHALL BE SPREAD ALONG THE TOP SURFACE OF THE LOG SILL TO FILL ANY REMAINING VOIDS AND LOW SPOTS.
8. NON-WOVEN GEOTEXTILE LINER SHALL BE INSTALLED ALONG THE UPSTREAM SURFACE OF THE LOG SILL TO PREVENT WATER-PIPING THROUGH THE STRUCTURE.
9. MATERIAL WITH A HEAVY CLAY OR CLAYEY SILT CONTENT SHALL BE USED TO CONSTRUCT A CLAY PLUG ON THE UPSTREAM SIDE OF THE LOG SILL. THE CLAY PLUG SHALL BE TIED INTO THE SUBSTRATE AT THE BASE OF THE STRUCTURE AND SHALL EXTEND UPWARDS TO WITHIN 2 INCHES OF THE TOP OF THE STRUCTURE. THE CLAY PLUG SHALL HAVE A WIDTH OF 1 FOOT UPSTREAM OF THE LOG SILL AND EXTEND ACROSS THE ENTIRE VALLEY BOTTOM IN ORDER TO FURTHER PREVENT WATER-PIPING THROUGH THE STRUCTURE. MATERIAL EXCAVATED FOR THE LOG SILLS MAY BE USED AT THE DISCRETION OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER TO CONSTRUCT THE CLAY PLUG.

PROPOSED LOG SILL GRADE CONTROL STRUCTURE SCHEDULE

| STRUCTURE ID | REACH | STATION | INVERT ELEVATION (FT) | WIDTH UP/DOWNSTREAM* (FT) | LENGTH ACROSS FLOODPLAIN (FT) |
|---|---|---|---|---|---|
| LS-1 | S. BRANCH | 1+71 | 32.00 | 2-4' | 34.7 |
| LS-2 | S. BRANCH | 2+13 | 30.95 | 2-4' | 32.6 |
| LS-3 | S. BRANCH | 2+32 | 30.47 | 2-4' | 35.1 |
| LS-4 | S. BRANCH | 2+53 | 29.93 | 2-4' | 37.2 |
| LS-5 | S. BRANCH | 3+29 | 28.00 | 2-4' | 34.3 |
| LS-6 | S. BRANCH | 3+74 | 26.86 | 2-4' | 36.4 |
| LS-7 | S. BRANCH | 3+89 | 26.50 | 2-4' | 31.9 |
| LS-8 | S. BRANCH | 4+08 | 26.00 | 2-4' | 31.9 |
| LS-9 | S. BRANCH | 4+49 | 25.00 | 2-4' | 30.5 |
| LS-10 | S. BRANCH | 4+90 | 23.92 | 2-4' | 36.2 |
| LS-11 | S. BRANCH | 5+29 | 22.94 | 2-4' | 33.6 |
| LS-12 | S. BRANCH | 5+69 | 21.91 | 2-4' | 33.6 |
| LS-13 | S. BRANCH | 6+08 | 20.94 | 2-4' | 42.8 |
| LS-14 | S. BRANCH | 6+25 | 20.51 | 2-4' | 43.0 |
| LS-15 | S. BRANCH | 7+45 | 16.97 | 2-4' | 36.5 |
| LS-16 | S.BRANCH | 7+83 | 16.50 | 2-4' | 35.7 |
| LS-17 | S.BRANCH | 8+06 | 15.91 | 2-4' | 37.1 |
| LS-18 | S.BRANCH | 8+48 | 14.86 | 2-4' | 49.0 |
| LS-19 | N.BRANCH | 1+55 | 29.53 | 2-4' | 61.9 |
| LS-20 | N.BRANCH | 2+63 | 28.05 | 2-4' | 49.2 |
| LS-21 | N.BRANCH | 5+93 | 22.69 | 2-4' | 45.5 |
| LS-22 | N.BRANCH | 6+93 | 20.77 | 2-4' | 36.5 |
| LS-23 | N.BRANCH | 8+58 | 17.62 | 2-4' | 53.1 |
| LS-24 | N.BRANCH | 8+91 | 16.83 | 2-4' | 49.2 |
| LS-25 | N.BRANCH | 9+17 | 16.06 | 2-4' | 43.1 |
| LS-26 | N.BRANCH | 9+93 | 14.65 | 2-4' | 48.8 |

* Includes grade log and footer log each with diameter of 1.0'-2.0'.




SA 22 SUB-SURFACE ARMORING
NOT TO SCALE

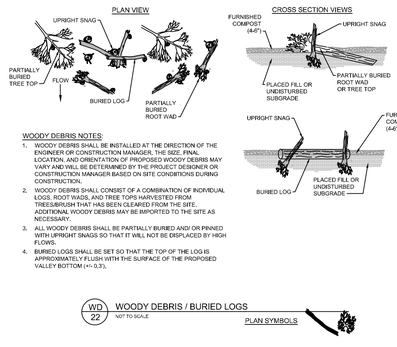
PLAN SYMBOL

SUB-SURFACE ARMORING NOTES:

1. THE PROPOSED SUB-SURFACE ARMORING SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF AND/OR SUBJECT TO THE APPROVAL OF PROJECT DESIGNER OR CONSTRUCTION MANAGER. IF SUB-SURFACE ARMORING INSTALLATION AND PERFORMANCE ARE NOT IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS, THE SUB-SURFACE ARMORING SHALL BE RE-SET OR REINSTALLED IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS.
2. SUB-SURFACE ARMORING SHALL BE COMPOSED OF FURNISHED CLASS I RIP-RAP". SUB-SURFACE ARMORING SHALL BE PLACED TO THE LINES AND GRADES OF THE PROPOSED ELEVATIONS ACROSS THE ENTIRE WIDTH OF THE PROPOSED VALLEY BOTTOM AS SPECIFIED ON THE PLANS TO A DEPTH OF APPROXIMATELY 19".
3. IF THE EXISTING MATERIAL AT PROPOSED SUB-SURFACE ELEVATIONS IS OF AN APPROPRIATE SIZE/GRADATION, INSTALLATION OF SUB-SURFACE ARMORING MAY NOT BE NECESSARY WHICH SHALL BE DETERMINED BY THE PROJECT DESIGNER.
4. THE PROPOSED VALLEY BOTTOM SHALL BE OVEREXCAVATED TO ALLOW ROOM FOR PLACEMENT OF SUB-SURFACE ARMORING.
5. NON-WOVEN GEOTEXTILE LINER SHALL BE INSTALLED BETWEEN THE SOIL AND SUBSURFACE ARMORING
6. UPON COMPLETION OF SUB-SURFACE ARMORING INSTALLATION, INSTALL 4-6" LAYER OF FURNISHED COMPOST (MIXTURE OF UNPROCESSED WOOD CHIPS AND SOIL) TO THE LINES AND GRADES OF THE PROPOSED VALLEY BOTTOM SPECIFIED ON THE PLANS.
7. INSTALL TYPE D SOIL STABILIZATION MATTING ACROSS ENTIRE WIDTH OF PROPOSED VALLEY BOTTOM. EXTEND LIMITS OF MATTING UP GRADED SIDE SLOPES FOR APPROXIMATELY 3' AND KEY ENDS OF MATTING INTO EXISTING SOIL BY A MINIMUM OF 6".
8. LIMESTONE IS NOT AN ACCEPTABLE MATERIAL FOR THE RIP RAP.

PROPOSED SUBSURFACE ARMORING SCHEDULE

| ID | REACH | STATION | D50 (IN) | THICKNESS (IN) | RIP-RAP SIZE |
|---|---|---|---|---|---|
| SA-1 | N. BRANCH | 8+78 TO 9+03 | 12" | 19" | CLASS I |
| SA-2 | N. BRANCH | 9+05 TO 9+29 | 12" | 19" | CLASS I |
| SA-3 | N. BRANCH | 11+45 TO 11+54 | 12" | 19" | CLASS I |
| SA-4 | N. BRANCH | 11+56 TO 11+70 | 12" | 19" | CLASS I |




WOODY DEBRIS NOTES:

1. WOODY DEBRIS SHALL BE INSTALLED AT THE DIRECTION OF THE ENGINEER OR CONSTRUCTION MANAGER. THE SIZE, FINAL LOCATION, AND ORIENTATION OF PROPOSED WOODY DEBRIS MAY VARY AND WILL BE DETERMINED BY THE PROJECT DESIGNER OR CONSTRUCTION MANAGER BASED ON SITE CONDITIONS DURING CONSTRUCTION.
2. WOODY DEBRIS SHALL CONSIST OF A COMBINATION OF INDIVIDUAL LOGS, ROOT WADS, AND TREE TOPS HARVESTED FROM TREES/BRUSH THAT HAS BEEN CLEARED FROM THE SITE. ADDITIONAL WOODY DEBRIS MAY BE IMPORTED TO THE SITE AS NECESSARY.
3. ALL WOODY DEBRIS SHALL BE PARTIALLY BURIED AND/ OR PINNED WITH UPRIGHT SNAGS SO THAT IT WILL NOT BE DISPLACED BY HIGH FLOWS.
4. BURIED LOGS SHALL BE SET SO THAT THE TOP OF THE LOG IS APPROXIMATELY 9" FLUSH WITH THE SURFACE OF THE PROPOSED VALLEY BOTTOM (+/- 0.3').

WD 22 WOODY DEBRIS / BURIED LOGS
NOT TO SCALE

PLAN SYMBOLS


OWNER/DEVELOPER/APPLICANT

Land Studies

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PA 042224

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A.A. County ID #721

Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850

Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHEOK — 18095 — REGISTERED PROFESSIONAL ENGINEER — 2/10/21

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED DATE | APPROVED DATE | SCALE: As Shown |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheok |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 22 OF 39 |
| | | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

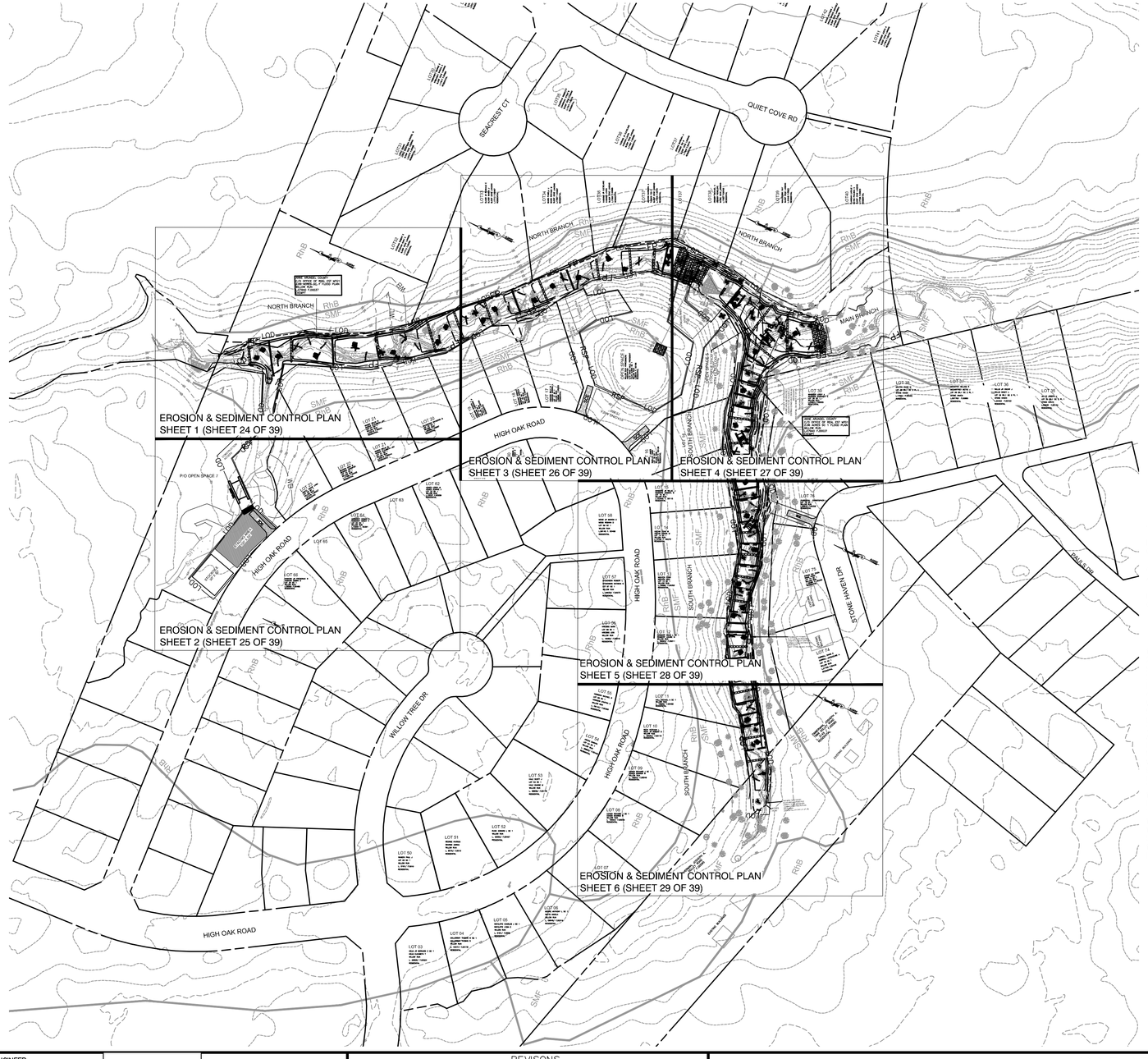
STREAM RESTORATION PLAN

# DESIGN DETAILS

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

P:\PROJECTS\2008 Flet\Sloop Cove_50017963\CAD\CIVIL\Site Plan - Construction\22 - DESIGN-DETL.dwg, 2/10/2021 3:51:42 PM, remiajlu




## STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

**DEFINITION**
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

**PURPOSE**
TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

**CONDITIONS WHERE PRACTICE APPLIES**
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

**CRITERIA**
1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH STANDARD B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS TO THE STOCKPILE AREA SHOULD BE FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT.

## 8-4-7 STANDARDS AND SPECIFICATIONS FOR HEAVY USE AREA PROTECTION

**DEFINITION**

THE STABILIZATION OF AREAS FREQUENTLY AND INTENSIVELY USED BY SURFACING WITH SUITABLE MATERIALS (E.G., MULCH AND AGGREGATE).

TO PROVIDE A STABLE NON-ERODING SURFACE FOR AREAS FREQUENTLY USED AND TO IMPROVE THE WATER QUALITY FROM THE RUNOFF OF THESE AREAS.

CONDITIONS WHERE PRACTICE APPLIES

THIS PRACTICE APPLIES TO INTENSIVELY USED AREAS (E.G., EQUIPMENT AND MATERIAL STORAGE, STAGING AREAS, HEAVILY USED TRAVEL LANES).

I . A MINIMUM 4-INCH BASE COURSE OF CRUSHED STONE OR OTHER SUITABLE MATERIAL S INCLUDING WOOD CHIPS OVER NONWOVEN GEOTEXTILE SHOULD BE PROVIDED AS SPECIFIED IN SECTION H- 1 MATERIALS.
SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
THE TRANSPORT OF SEDIMENTS, NUTRIENTS, OILS, CHEMICALS, PARTICULATE MATTER ASSOCIATED WITH VEHICULAR TRAFFIC AND EQUIPMENT, AND MATERIAL STORAGE NEEDS TO BE CONSIDERED IN THE SELECTION OF MATERIAL.
ADDITIONAL CONTROL MEASURES MAY BE NECESSARY TO CONTROL SOME OF THESE POTENTIAL POLLUTANTS.
SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSIVE VELOCITIES NEED TO BE CONSIDERED.

MAINTENANCE
THE HEAVY USE AREAS MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES EROSION. THIS MAY REQUIRE ADDING SUITABLE MATERIAL, AS SPECIFIED ON THE APPROVED PLANS TO MAINTAIN A CLEAN SURFACE.

## TEMPORARY STABILIZATION

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN

a.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

b.) SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

## EROSION AND SEDIMENT CONTROL NOTES

1. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON UPSTREAM SIDE OF TRENCH.
2. IMMEDIATELY FOLLOWING PIPE INSTALLATION, THE TRENCH SHALL BE BACKFILLED, COMPACTED AND IMMEDIATELY STABILIZED (MULCHED, SEEDED AND/OR SODDED, MECHANICAL STABILIZATION) AT THE END OF EACH WORKING DAY.
3. THE CONTRACTOR SHALL DISTURB THE MINIMUM PRACTICAL AREA REQUIRED TO ACCOMPLISH THE WORK DESIGNATED FOR EACH DAY
4. ALL SEDIMENT AND EROSION CONTROL PRACTICES AND VEGETATIVE STABILIZATION SHALL BE IN ACCORDANCE WITH THE, "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL."
5. WHEN DE-WATERING TRENCHES, WATER SHALL BE DISCHARGED INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
6. POSITIVE DRAINAGE WILL BE MAINTAINED AT ALL TIMES. PONDING OF WATER WILL NOT BE PERMITTED.
7. SURFACED STREETS AND PARKING AREAS WILL BE MAINTAINED IN A CLEAN CONDITION, MUD AND DUST FREE AT ALL TIMES. ADEQUATE MEANS WILL BE PROVIDED TO CLEAN TRUCKS AND EQUIPMENT. CONTRACTOR WILL PROVIDE DUST CONTROL MEASURES AS SPECIFIED BY MARYLAND DEPARTMENT OF THE ENVIRONMENT.
8. DURING THE PROGRESS OF THE PROJECT, SEDIMENT CONTROL MEASURES NOT REQUIRED MAY BE REMOVED WITH THE APPROVAL OF THE INSPECTOR.
9. SURROUNDING FACILITIES ARE TO REMAIN IN OPERATION DURING CONSTRUCTION. ALL WORK WILL BE PERFORMED IN AN EXPEDITIOUS MANNER AND WILL BE CONDUCTED SO AS TO MAINTAIN ACCESS AND MINIMIZE THE DISTURBANCE TO THOSE FACILITIES.
10. THE CONTRACTOR IS PERMITTED TO STAGE HIS CONSTRUCTION OPERATIONS IN THE LOCATION SHOWN ON THE PLANS. NO OTHER AREA IS ACCEPTABLE UNLESS PRIOR WRITTEN PERMISSION IS RECEIVED FROM THE OWNER. ALL TOOLS AND EQUIPMENT THAT REMAIN ON-SITE WILL BE STORED WITHIN THE CONTRACTOR'S STAGING AREA.
11. CONTRACTOR WILL ONLY DISTURB AS LARGE AN AREA THAT CAN BE STABILIZED BY THE END OF THE WORK DAY.
12. CONTRACTOR WILL INSTALL CHAIN LINK FENCE, REINFORCED SILT FENCE AND INLET PROTECTIONS WTHIN THE STAGING AREAS PRIOR TO BRINGING TRAILERS, MATERIALS OR EQUIPMENT ONTO THE SITE.
13. DEMOLISHED/DELETERIOUS MATERIAL SHALL BE IMMEADIATELY REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT A LOCATION WITH A CURRENT SEDIMENT CONTROL PERMIT.


OWNER/DEVELOPER/APPLICANT

Land Studies
717-627-4440
fax: 717-627-4660
landstudies.com
land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
A.A. County ID #721
Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
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Fax: (301) 258-7607


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 23 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | EROSION & SEDIMENT CONTROL PLAN OVERVIEW |

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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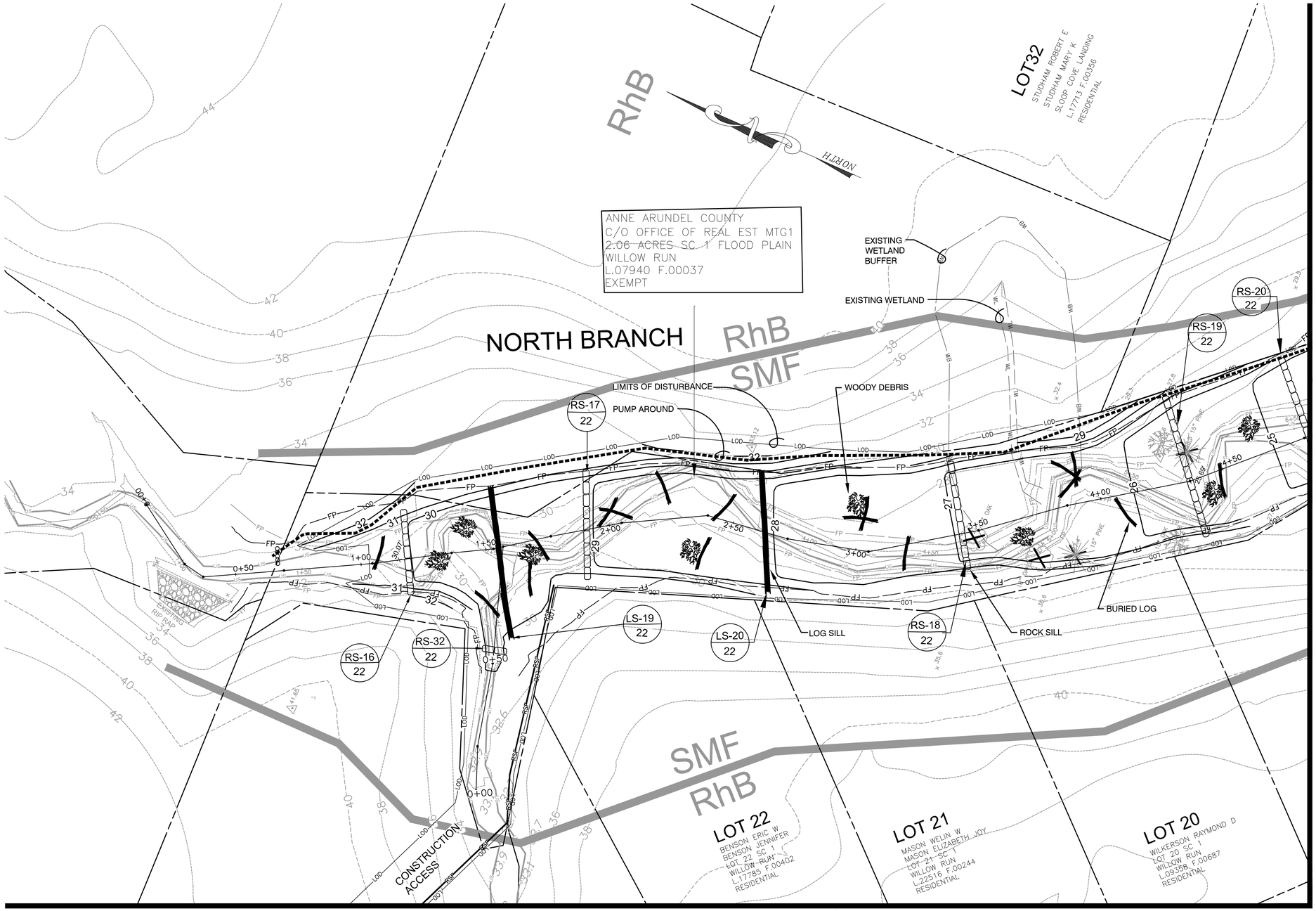
## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)




MATCHLINE SHEET 3 (SHEET 26 OF 39)

MATCHLINE SHEET 2 (SHEET 25 OF 39)

0' 20' 40'
SCALE 1"=20'


OWNER/DEVELOPER/APPLICANT
Land Studies
717-627-4440
fax: 717-627-4660
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land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
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Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/8/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 24 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | EROSION & SEDIMENT CONTROL PLAN 1<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)

MATCHLINE SHEET 1 (SHEET 24 OF 39)

MATCHLINE SHEET 3 (SHEET 26 OF 39)

P/O OPEN SPACE 7

CONSTRUCTION ACCESS

TEMP BRIDGE

TB

MB

SCF

EXISTING WETLAND BUFFER

EXISTING WETLAND

STAGING AREA
100' X 50'

STOCKPILE
50' X 50'

HIGH OAK ROAD

LOT 21
MASON WELIN W
MASON ELIZABETH JOY
LOT 21 SC 1
WILLOW RUN
L.22516 F.00244
RESIDENTIAL

LOT 22
BENSON ERIC W
BENSON JENNIFER
LOT 22 SC 1
WILLOW RUN
L.17785 F.00402
RESIDENTIAL

LOT 23
ZENTZ, VICKIE LYNN
LOT 23 SC 1
WILLOW RUN
L.21276 F.00327
RESIDENTIAL

LOT 62
JONES LEROY M
JONES JEANNE J
LOT 22 SC 1
WILLOW RUN
L.10037 F.00209
RESIDENTIAL

LOT 63

LOT 64
HARDESTY HOMER S
HARDESTY NANCY V
LOT 64 SC 1
WILLOW RUN
L.10300 F. 00391
RESIDENTIAL

LOT 65

LOT 66
VANKIRK JR FREDERICK R
VANKIRK DEBRA G
LOT 22 SC 1
WILLOW RUN
L.09052 F.00465
RESIDENTIAL

RhB

IRF CAP\CORP90

NORTH

0' 20' 40'
SCALE 1"=20'

STOCKPILE AREA – 50'X50'
STOCKPILE DATA (315CY)
MAXIMUM HEIGHT = 5 FEET
MAXIMUM SLOPE = 2:1

TEMPORARILY STABILIZE STOCKPILE AS PER THE STABILIZATION SPECIFICATIONS OR COVER THE STOCKPILE WITH PLASTIC TARP AND ANCHOR AT END OF WORK DAY. BORROW MATTERIAL TO BE TAKEN OFF SITE TO A LOCATION WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.

OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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2101 Gaither Road
Suite #340
Rockville, MD 20850

Contact: Joanne M. Cheok, Senior Associate
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Fax: (301) 258-7607

VA 0425234

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 25 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | EROSION & SEDIMENT CONTROL PLAN 2<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)

MATCHLINE SHEET 1 (SHEET 24 OF 39)

MATCHLINE SHEET 5 (SHEET 28 OF 39)

MATCHLINE SHEET 4 (SHEET 27 OF 39)

LOT 61
BARNES GREGORY
BARNES REBECCA R
LOT 22 SC 1
WILLOW RUN
L.25286 F. 00132
RESIDENTIAL

LOT 60
COOPER BARBARA A
COOPER ROGER W
LOT 22 SC 1
WILLOW RUN
L.10022 F. 00258
RESIDENTIAL

LOT 59
BROWN HOWARD V
BROWN SONJA L
LOT 22 SC 1
WILLOW RUN
L.10427 F. 00688
RESIDENTIAL

LOT 16
SMELLEY JAMES
SMELLEY ANNA
LOT 16 SC 1
WILLOW RUN
L.19771 F. 00136
RESIDENTIAL

LOT 19
KERSHAW STEVEN J
KERSHAW LORRAINE P
LOT 19 SC 1
WILLOW RUN
L.15213 F.00756
RESIDENTIAL

LOT 18
BERGAMY DONALD
BERGAMY ANGELA
LOT 18 SC 1
WILLOW RUN
L.10150 F.00654
RESIDENTIAL

LOT 17
HANKINS BILLY W
HANKINS SHARON L
LOT 17 SC 1
WILLOW RUN
L.09599 F.00333
RESIDENTIAL

OPEN SPACE 5
WILLOW RUN HOMEOWNERS ASSOCIATION
C/O DIANE HALE, PRESIDENT
10.24 ACRES SC 1
WILLOW RUN
L.08518 F. 00186
RESIDENTIAL

LOT33
OLIVER JR REGINALD E
OLIVER WANDA J
SLOOP COVE LANDING
L.17713 F.00407
RESIDENTIAL

LOT34
BAIRD PAMELA J
BAIRD RICHARD W
SLOOP COVE LANDING
L.17557 F.00087
RESIDENTIAL

LOT36
HASKINS JR CLEVELAND
HASKINS LAURA
SLOOP COVE LANDING
L.17651 F.00585
RESIDENTIAL

LOT37
JENKINS BARBARA A
TURNER TED R
SLOOP COVE LANDING
L.17940 F.00741
RESIDENTIAL

HIGH OAK ROAD

NORTH BRANCH SEVERN RIVER

SMF / RhB

RS-20 22 · RS-21 22 · LS-21 22 · RS-22 22 · LS-22 22 · RS-23 22 · RS-24 22 · RS-25 22 · LS-23 22

BURIED LOG

WOODY DEBRIS

CONSTRUCTION ACCESS

STAGING AREA 50'X30'

LIMITS OF DISTURBANCE

STOCKPILE AREA 60'X40'

STAGING AREA 75'X60'

PUMP AROUND

INLET PROTECTION

SCE

TEMPORARILY STABILIZE STOCKPILE AS PER THE STABILIZATION SPECIFICATIONS OR COVER THE STOCKPILE WITH PLASTIC TARP AND ANCHOR AT END OF WORK DAY. BORROW MATTERIAL TO BE TAKEN OFF SITE TO A LOCATION WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.

STOCKPILE AREA – 60'X40'

STOCKPILE DATA (200CY)
MAXIMUM HEIGHT = 5 FEET
MAXIMUM SLOPE = 2:1

0' 20' 40'
SCALE 1"=20'


OWNER/DEVELOPER/APPLICANT
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PA 3426224

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Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND · JOANNE MARIE CHEOK · 18095 · REGISTERED PROFESSIONAL ENGINEER
2/10/21

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED / DATE | APPROVED / DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | |
| APPROVED / DATE | APPROVED / DATE | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | |

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 26 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# EROSION & SEDIMENT CONTROL PLAN 3

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)

MATCHLINE SHEET 3 (SHEET 26 OF 39)

MATCHLINE SHEET 5 (SHEET 28 OF 39)

LOT 16
SOUTH BRANCH
SMF

CONSTRUCTION ACCESS

STAGING AREA
50'X60'

OPEN SPACE 5
STOCKPILE 70'X30'
WITH FILTER LOG-18

LOT37

LOT38
CROSBY MICHAEL A
CROSBY PENELOPE
SLOOP COVE LANDING
L.17821 F.00405
RESIDENTIAL

LOT39
MALCZEWSKI RAY
SLOOP COVE LANDING
L.21648 F.00201
RESIDENTIAL

LOT40
FLANIGAN LUCILLE A
BATES PHILISHA C
SLOOP COVE LANDING
L.17728 F.00630
RESIDENTIAL

LOT 76

LOT 39

ANNE ARUNDEL COUNTY
C/O OFFICE OF REAL EST MTG1
2.06 ACRES SC 1 FLOOD PLAIN
WILLOW RUN
L.07940 F.00037
EXEMPT

WINDSOR LEROY A
WINDSOR MARGARET E
LOT 38 SEC 1
WILLOW RUN
L.04623 F.00005
RESIDENTIAL

PROVIDE TEMPORARY PUMP AROUND PRACTICE LENGTH TO BE ADJUSTED DURING CONSTRUCTION AS NECESSARY (SEE DETAIL ON SHEET 31 OF 39)

TEMPORARY BYPASS CHANNEL #1
SEE DETAIL 1.6-3 ON PAGE 30

PUMP AROUND

NORTH BRANCH

MAIN BRANCH

RS-11 22 · RS-12 22 · RS-13 22 · RS-14 22 · RS-15 22 · RS-16 22 · RS-17 22 · RS-18 22 · RS-19 22 · RS-20 22 · RS-21 22 · RS-22 22 · RS-23 22 · RS-24 22 · RS-25 22 · RS-26 22 · RS-27 22 · RS-28 22 · RS-29 22 · RS-30 22 · RS-31 22

LS-15 22 · LS-16 22 · LS-17 22 · LS-18 22 · LS-24 22 · LS-25 22 · LS-26 22 LOG SILL

SA-1 22 SUBSURFACE ARMORING · SA-2 22 · SA-3 22 · SA-4 22

RS-27 22 ROCK SILL

SMF · RhB · FP · WL · WB · LOD · TB · FB · RIP RAP · EX. RIP RAP · 6" PINE · 21" OAK

0' 20' 40'
SCALE 1"=20'

TEMPORARILY STABILIZE STOCKPILE AS PER THE STABILIZATION SPECIFICATIONS OR COVER THE STOCKPILE WITH PLASTIC TARP AND ANCHOR AT END OF WORK DAY. BORROW MATTERIAL TO BE TAKEN OFF SITE TO A LOCATION WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.

STOCKPILE AREA – 70'X30'
STOCKPILE DATA (200CY)
MAXIMUM HEIGHT = 5 FEET
MAXIMUM SLOPE = 2:1

OWNER/DEVELOPER/APPLICANT

Land Studies
717-627-4440
fax: 717-627-4660
landstudies.com
land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
A.A. County ID #721

Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607

PA 022324

STATE OF MARYLAND · JOANNE MARIE CHEOK · No. 18095 · REGISTERED PROFESSIONAL ENGINEER
2/18/2022

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED DATE | APPROVED DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | |
| APPROVED DATE | APPROVED DATE | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | |

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 27 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# EROSION & SEDIMENT CONTROL PLAN 4
# SLOOP COVE RETROFIT SITE 1

3rd District · Tax Map 16 Grid 05 · Anne Arundel County

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)

MATCHLINE SHEET 4 (SHEET 27 OF 39)

LOT 58
MOSS JR MARION G
MOSS ROSANA D
LOT 58 SC 1
WILLOW RUN
L.09145 F. 00468
RESIDENTIAL

LOT 57
STEVENSON ROBERT L
STEVENSON NATASHA S
LOT 57 SC 1
WILLOW RUN
L. 26035/ F.00273
RESIDENTIAL

LOT 56
KRESSIG MARK
LOT 56 SC 1
KRESSIG LOIS
WILLOW RUN
L. 18450/ F.00215
RESIDENTIAL

LOT 55

LOT 15
SANDERS JR WILLIE. J
SANDERS JESSICA. B
LOT 15 SC 1
WILLOW RUN
L.123425 F. 00115
RESIDENTIAL

LOT 14
HOEHN JOHN W
HOEHN DONNA M
LOT 14 SC 1
WILLOW RUN
L.14755 F. 00270
RESIDENTIAL

LOT 13
NGUYEN XUAN
NGUYEN GIAO
LOT 13 SC 1
WILLOW RUN
L.16688/ F.00322
RESIDENTIAL

LOT 12
REMMERT DAVID L SC 1
REMMERT LOUISE M
WILLOW RUN
L. 09653/ F.00215
RESIDENTIAL

LOT 11
HALL MICHAEL A SC 1
WILLOW RUN
L. 15299/ F.00402
RESIDENTIAL

LOT 76
THIBODEAU CHRISTOPHER J
LOT 76 SC 1
WILLOW RUN
L.26916 F.00338
RESIDENTIAL

LOT 75
ZHENG XIU ZHEN
WANG KONG
LOT 75 SC 1
WILLOW RUN
L.18066 F. 00330
RESIDENTIAL

LOT 74
CARROLL DAVID E
CARROLL JACQUELINE A
LOT 74 SC 1
WILLOW RUN
L.21706 F.00432
RESIDENTIAL

HIGH OAK ROAD
SOUTH BRANCH
STONE HAVEN DR
RIP RAP
SCE
CONSTRUCTION ACCESS
EXISTING BUILDING
EXISTING WETLAND
EXISTING WETLAND BUFFER
PROVIDE TEMPORARY PUMP AROUND PRACTICE LENGTH TO BE ADJUSTED DURING CONSTRUCTION AS NECESSARY (SEE DETAIL ON SHT. 31 OF 39)
NORTH

LS-14 22 · LS-13 22 · LS-12 22 · LS-11 22 · LS-10 22 · LS-9 22 · LS-8 22 · LS-7 22 · LS-6 22 · LS-5 22 · RS-10 22 · RS-9 22 · RS-8 22 · RS-7 22 · RS-6 22 · RS-5 22 · RS-4 22

STOCKPILE AREA – 50'X50'
STOCKPILE DATA (315CY)
MAXIMUM HEIGHT = 5 FEET
MAXIMUM SLOPE = 2:1

TEMPORARILY STABILIZE STOCKPILE AS PER THE STABILIZATION SPECIFICATIONS OR COVER THE STOCKPILE WITH PLASTIC TARP AND ANCHOR AT END OF WORK DAY. BORROW MATTERIAL TO BE TAKEN OFF SITE TO A LOCATION WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.

MATCHLINE SHEET 6 (SHEET 29 OF 39)

0' 20' 40'
SCALE 1"=20'

OWNER/DEVELOPER/APPLICANT
Land Studies
717-627-4440
fax: 717-627-4660
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CIVIL ENGINEER
A.A. County ID #721
Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

| REVISONS | | | |
|---|---|---|---|
| NO | Description | BY | DATE |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED / DATE | APPROVED / DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | |
| APPROVED / DATE | APPROVED / DATE | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | |

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 28 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN
# EROSION & SEDIMENT CONTROL PLAN 5
# SLOOP COVE RETROFIT SITE 1
3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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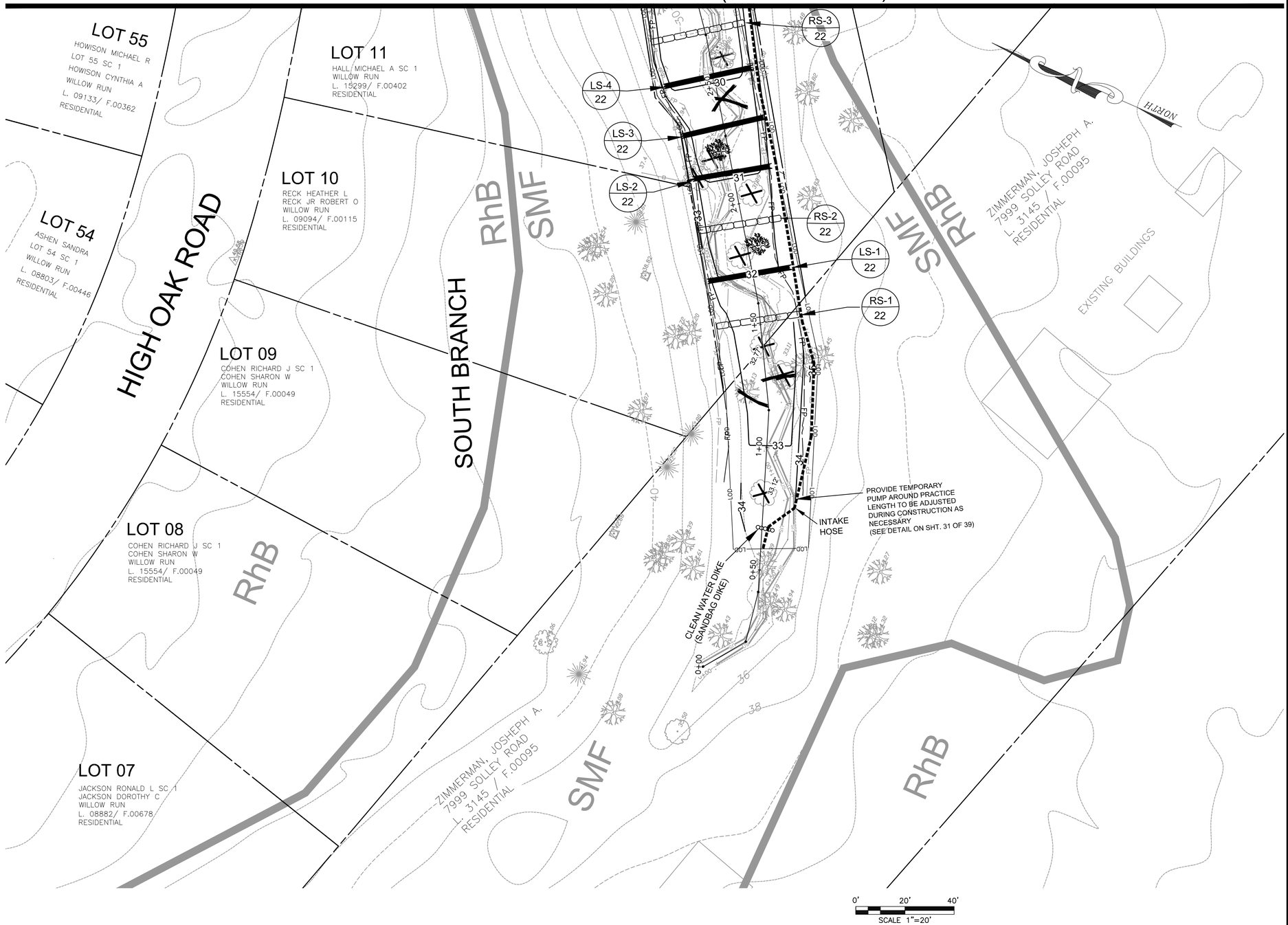
## MATCHLINE SHEET 5 (SHEET 28 OF 39)

### EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

### PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)





OWNER/DEVELOPER/APPLICANT

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CIVIL ENGINEER
A.A. County ID #721

Dewberry
2101 Gaither Road
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Rockville, MD 20850

Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

| REVISONS | | | |
|---|---|---|---|
| NO | Description | BY | DATE |
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE ____ CHIEF ENGINEER | APPROVED DATE ____ PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE ____ ASSISTANT CHIEF ENGINEER | APPROVED DATE ____ CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Cheok<br>SHEET NO: 29 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | EROSION & SEDIMENT CONTROL PLAN 6<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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## VEGETATIVE ESTABLISHMENT

Following initial soil disturbances or redisturbance, permanent or temporary stabilization shall be completed within three calendar days for the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1) and seven days for all other disturbed or graded areas on the project site.

1. Permanent Seeding:

   A. Soil Tests: Lime and fertilizer will be applied per soil tests results for sites greater than 5 acres. Soil tests will be done at completion of initial rough grading or as recommended by the sediment control inspector. Rates and analyses will be provided to the grading inspector as well as the contractor.

      Occurrence of acid sulfate soils (grayish black color) will require covering with a minimum of 12 inches of clean soil with 6 inches minimum capping of top soil. No stockpiling of material is allowed. If needed, soil tests should be done before and after a 6-week incubation period to allow oxidation of sulfates.

      The minimum soil conditions required for permanent vegetative establishment are:

      a. Soil pH shall be between 6.0 and 7.0.
      b. Soluble salts shall be less than 500 parts per million (ppm).
      c. The soil shall contain less than 40% clay but enough fine grained material (> 30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or sereicia lespedeza is to be planted, then a sandy soil (< 30% silt plus clay) would be acceptable.
      d. Soil shall contain 1.5% minimum organic matter by weight.
      e. Soil must contain sufficient pore space to permit adequate root penetration.
      f. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with the Standard and Specification for Soil Preparation, Topsoiling and Soil Amendments from the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control or amendments made as recommended by a certified agronomist.

   B. Seedbed Preparation: Area to be seeded shall be loose and friable to a depth of at least 3-5 inches. The top layer shall be loosened by raking, disking or other acceptable means before seeding occurs. For sites less than 5 acres, apply 100 pounds dolomitic limestone and 21 pounds of 10-10-10 fertilizer per 1,000 square feet. Harrow or disk lime and fertilizer into the soil to a depth of at least 3-5 inches on slopes flatter than 3:1.

   C. Seeding: Apply 5-6 pounds per 1,000 square feet of tall fescue between February 1 and April 30 or between August 15 and October 31. Apply seed uniformly on a moist firm seedbed with a cyclone seeder, cultipacker seeder or hydroseeder (slurry includes seeds and fertilizer, recommended on steep slopes only). Maximum seed depth should be ¼ inch in clayey soils and ½ inch in sandy soils when using other than the hydroseeder method. Irrigate where necessary to support adequate growth until vegetation is firmly established. If other seed mixes are to be used, select from Table B3 and B5 of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

   D. Mulching: Mulch shall be applied to all seeded areas immediately after seeding. During the time periods when seeding is not permitted, mulch shall be applied immediately after grading. Mulch shall be unrotted, unchopped, small grain straw applied at a rate of 2 tons per acre or 90 pounds per 1,000 square feet (2 bales). If a mulch-anchoring tool is used, apply 2.5 tons per acre. Mulch materials shall be relatively free of all kinds of weeds and shall be completely free of prohibited noxious weeds. Spread mulch uniformly, mechanically or by hand, to a depth of 1-2 inches.

   E. Securing Straw Mulch: Straw mulch shall be secured immediately following mulch application to minimize movement by wind or water. The following methods are permitted:

      i. Use a mulch-anchoring tool which is designed to punch and anchor mulch into the soil surface to a minimum depth of 2 inches. This is the most effective method for securing mulch, however, it is limited to relatively flat areas where equipment can operate safely.

      ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. If mixed with water, use 50 pounds of wood cellulose fiber per 100 gallons of water.

      iii. Liquid binders may be used. Apply at higher rates at the edges where wind catches mulch, such as in valleys and on crests of slopes. The remainder of the area should appear uniform after binder application. Binders listed in the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control or approved equal shall be applied at rates recommended by the manufacturers.

      iv. Lightweight plastic netting may be used to secure mulch. The netting will be stapled to the ground according to manufacturer's recommendations.

2. Temporary Seeding:

   Lime: 100 pounds of dolomitic limestone per 1,000 square feet.
   Fertilizer: 15 pounds of 10-10-10 per 1,000 square feet.
   Seed: Perennial rye – 0.92 pounds per 1,000 square feet (February 1 through April 30 or August 15 through October 31).
   Millet – 0.92 pounds per 1,000 square feet (May 1 through August 15).
   Mulch: Same as I D and E above.

3. No fills may be placed on frozen ground. All fill is to be placed in approximately horizontal layers, each layer having a loose thickness of not more than 8 inches. All compaction requirements are in accordance to Anne Arundel County Standard Specifications for Construction as well as the AA County Design Manual and Standard Details. Fills for pond embankments shall be compacted as per MD-378 Construction Specifications. All other fills shall be compacted sufficiently so as to be stable and prevent erosion and slippage.

4. Permanent Sod:

   Installation of sod should follow permanent seeding dates. Seedbed preparation for sod shall be as noted in section (B) above. Permanent sod is to be tall fescue, state approved sod; lime and fertilizer per permanent seeding specifications and lightly irrigate soil prior to laying sod. Sod is to be laid on the contour with all ends tightly abutting. Joints are to be staggered between rows. Water and roll or tamp sod to insure positive root contact with the soil. All slopes steeper than 3:1, as shown, are to be permanently sodded or protected with an approved erosion control netting. Additional watering for establishment may be required. Sod is not to be installed on frozen ground. Sod shall not be transplanted when moisture content (dry or wet) and/or extreme temperature may adversely affect its survival. In the absence of adequate rainfall, irrigation should be performed to ensure establishment of sod.

5. Mining Operations:

   Sediment control plans for mining operations must include the following seeding dates and mixtures:

   For seeding dates of February 1 through April 30 and August 15 through October 31, use seed mixture of tall fescue at the rate of 2 pounds per 1,000 square feet and sericea lespedeza at the minimum rate of 0.5 pounds per 1,000 square feet.

6. Topsoil shall be applied as per the Standard and Specifications for Soil Preparation, Topsoiling, and Soil Amendments from the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

## STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

### Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

### Purpose

To provide a suitable soil medium for vegetative growth.

### Conditions Where Practice Applies

Where vegetative stabilization is to be established.

### Criteria

A. Soil Preparation

1. Temporary Stabilization

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inchesby means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
b. Apply fertilizer and lime as prescribed on the plans.
c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

2. Permanent Stabilization

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
i. Soil pH between 6.0 and 7.0.
ii. Soluble salts less than 500 parts per million (ppm).
iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
iv. Soil contains 1.5 percent minimum organic matter by weight. v. Soil contains sufficient pore space to permit adequate root penetration.
b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
e. Mix soil amendmentsinto the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA–NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
c. The original soil to be vegetated contains material toxic to plant growth.
d. The soil is so acidic that treatment with limestone is not feasible.

4. Areas having slopes steeper than 2:1 require special consideration and design.

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 11/2inches in diameter.
b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass,Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

6. Topsoil Application

a. Erosion and sediment control practices must be maintained when applying topsoil.
b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compacted to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.

3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.

4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.

5. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone should be spread at the rate of 4 to 8 tons/acre (200–400 pounds per 1,000 square feet) prior to the placement of topsoil.

**MAINTENANCE NOTE**

CONTRACTOR WILL INSPECT EROSION AND SEDIMENT CONTROL DEVICES ON A DAILY BASIS AND MAINTAIN DEVICES IN ACCORDANCE WITH THEIR DESIGN SPECIFICATIONS.

## STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

### Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

### Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

### Conditions Where Practice Applies

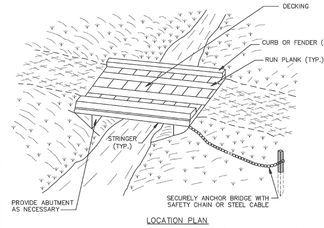
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

### Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Standard B–3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access to the stockpile area should be from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non–erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement.

## DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB




LOCATION PLAN

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
|---|---|---|

## DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
3. CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
4. USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
5. SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
6. SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHEELS. ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.
7. INSTALL CURBS THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.
8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND\OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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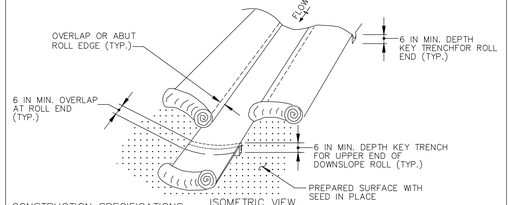
## DETAIL B-4-6-A (TYPE "D") TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: TSSMC – * lb/ft² (* INCLUDE SHEAR STRESS)




ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN–MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY–IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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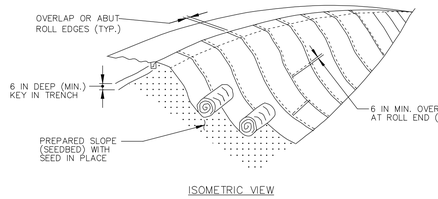
## DETAIL B-4-6-B (TYPE "A") TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: TSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)




ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN–MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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OWNER/DEVELOPER/APPLICANT

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PA042224

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Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337–2856
Fax: (301) 258–7607


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED DATE | APPROVED DATE | SCALE: As Shown |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheok |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 30 OF 39 |
| | | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

STREAM RESTORATION PLAN

# EROSION & SEDIMENT CONTROL NOTES/DETAILS

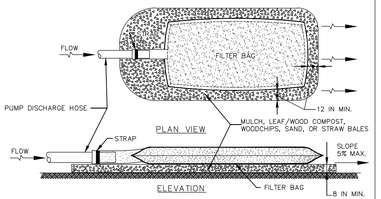
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

P:\PROJECTS\2008 Files\Sloop Cove_50017963\CAD\CIVIL\Sediment Control Plan\30-31 ESC DETL.dwg, 2/10/2021 4:54:25 PM, hemejulu

## DETAIL F-4 FILTER BAG

STANDARD SYMBOL: ⊠FB




CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

| | | |
|---|---|---|
| GRAB TENSILE | 250 LB | ASTM D-4632 |
| PUNCTURE | 150 LB | ASTM D-4833 |
| FLOW RATE | 70 GAL/MIN/FT² | ASTM D-4491 |
| PERMITTIVITY (SEC⁻¹) | 1.2 SEC⁻¹ | ASTM D-4491 |
| UV RESISTANCE | 70% STRENGTH @ 500 HOURS | ASTM D-4355 |
| APPARENT OPENING SIZE (AOS) | 0.15–0.18 MM | ASTM D-4751 |
| SEAM STRENGTH | 90% | ASTM D-4632 |

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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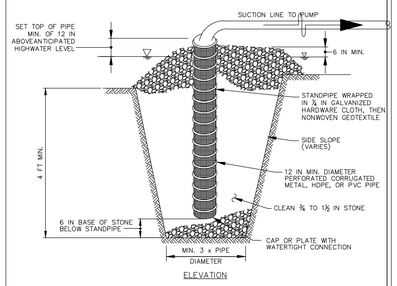
## DETAIL F-2 SUMP PIT

STANDARD SYMBOL: ⊠SP




CONSTRUCTION SPECIFICATIONS

1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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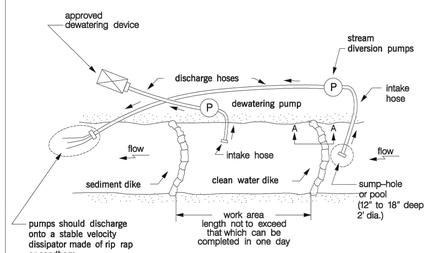
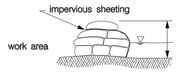
## Maryland's Guidelines To Waterway Construction
## DETAIL 1.2: PUMP–AROUND PRACTICE

### PLAN VIEW




### SECTION A–A

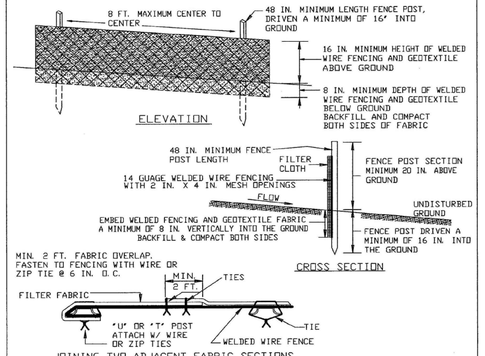



cross section of sandbag dike

TEMPORARY INSTREAM CONSTRUCTION MEASURES | *REVISED NOVEMBER 2000 PAGE 1.2 - 3* | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

## REINFORCED SILT FENCE

STANDARD SYMBOL: —RSF—




CONSTRUCTION SPECIFICATIONS

1. Metal fence post shall be a minimum of 48 inches long, driven 16 inches minimum into the ground and no more than 8 feet apart. Post shall be standard T or U section weighing not less than 1.00 pound per linear foot. Reinforcement shall be 14 guage welded wire fencing with 2 inch X 4 inch mesh openings.
2. Geotextile shall be fastened securely to each fence post with wire ties or zip ties at top and mid section. Where ends of geotextile fabric come together, they shall be overlapped, folded and wire tied or zip tied to post to prevent sediment bypass.
3. Use a woven geotextile, as specified in section H-1 materials, and fasten to the upslope side of the fence posts with wire or zip ties at top and midsection. The Manufacturer's certification that the fabric meets the requirements in section H-1 must be made available to the inspection/enforcement authority.
4. Extend both ends of reinforced silt fence a minimum of five (5) horizontal feet upslope at 45 degrees to the main fence alignment to prevent runoff fron going around the ends.
5. Remove accumulated sediment and debris when bulges develop in the reinforced silt fence Fabric or when sediment reaches 25% of the fence height. Replace geotextile if torn. If undermining occurs, reinstall fence.

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## REINFORCED SILT FENCE

### Design Criteria

**Reinforced Silt Fence Design Constraints**

| Average Slope Steepness | Maximum Slope Length | Maximum Silt Fence Length |
|---|---|---|
| Flatter than 50:1 (<2%) | 300 feet* | Unlimited |
| 50:1 to 10:1 (2–10%) | 125 feet | 1,000 feet |
| 10:1 to 5:1 (10–20%) | 100 feet | 750 feet |
| 5:1 (>20%) | 40 feet | 250 feet |

*Maximum slope length is unlimited on the Hydrolic Soil Group (HSG) "A" soils

1. The use of Reinforced Silt Fence must conform to the design constraints listed above.
2. The area downgrade of the Reinforced Silt Fence must be undisturbed ground.
3. Reinforced Silt Fence must be placed along the contour.
4. Reinforced Silt Fence should be used with caution in areas where rocky soils may prevent trenching.
5. Extend both ends of reinforced silt fence a minimum of five (5) horizontal feet upslope and 45 degrees to the main fence alignment to prevent runoff fron going around the edges

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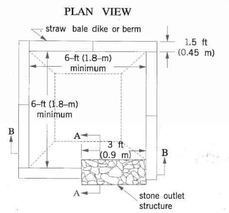
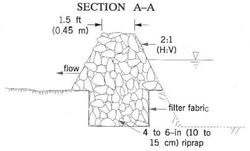
## Maryland's Guidelines To Waterway Construction
## DETAIL 1.1: DEWATERING BASINS

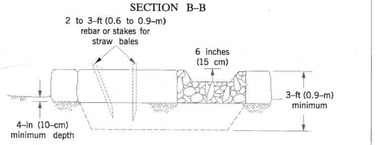
### PLAN VIEW




### SECTION A–A



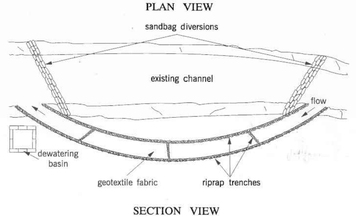

### SECTION B–B



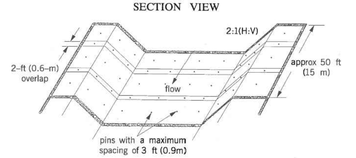

TEMPORARY INSTREAM CONSTRUCTION MEASURES | *REVISED NOVEMBER 2000 PAGE 1.1 - 3* | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

## Maryland's Guidelines To Waterway Construction
## DETAIL 1.6: FABRIC–BASED DIVERSION

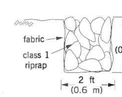
### PLAN VIEW




### SECTION VIEW



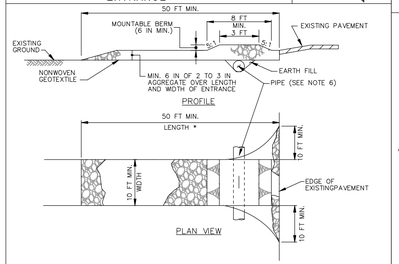

### TRENCHING DETAIL




TEMPORARY INSTREAM CONSTRUCTION MEASURES | *PAGE 1.6 - 3* | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

## DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE




CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*)50 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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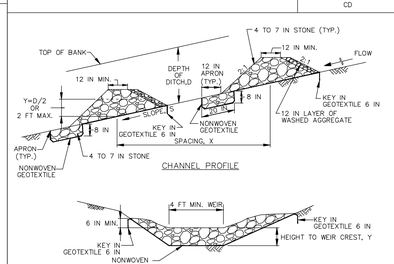
## DETAIL D-2 STONE CHECK DAM

STANDARD SYMBOL: CD




CONSTRUCTION SPECIFICATIONS

1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS. FORM THE WEIR SO THAT TOP OF THE OUTLET CREST IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (¾ TO 1½ INCH).
3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR THE MAXIMUM HEIGHT OF THE WEIR CREST MUST NOT EXCEED 2.0 FEET.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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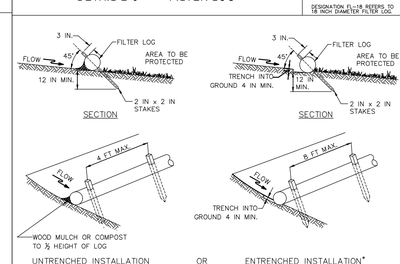
## DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL–18

DESIGNATION FL–18 REFERS TO 18 INCH DIAMETER FILTER LOG




1 OF 2

## DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL–18

DESIGNATION FL–18 REFERS TO 18 INCH DIAMETER FILTER LOG

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
|---|---|---|

### MAINTENANCE NOTE

CONTRACTOR WILL INSPECT EROSION AND SEDIMENT CONTROL DEVICES ON A DAILY BASIS AND MAINTAIN DEVICES IN ACCORDANCE WITH THEIR DESIGN SPECIFICATIONS.

OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660
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land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
A.A. County ID #721

PA 032324

**Dewberry**
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337–2856
Fax: (301) 258–7607

STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/18/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

| APPROVED DATE | APPROVED DATE | SCALE: As Shown |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors |
| | | CHECKED BY: J. Cheok |
| APPROVED DATE | APPROVED DATE | SHEET NO: 31 OF 39 |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

# EROSION & SEDIMENT CONTROL NOTES/DETAILS
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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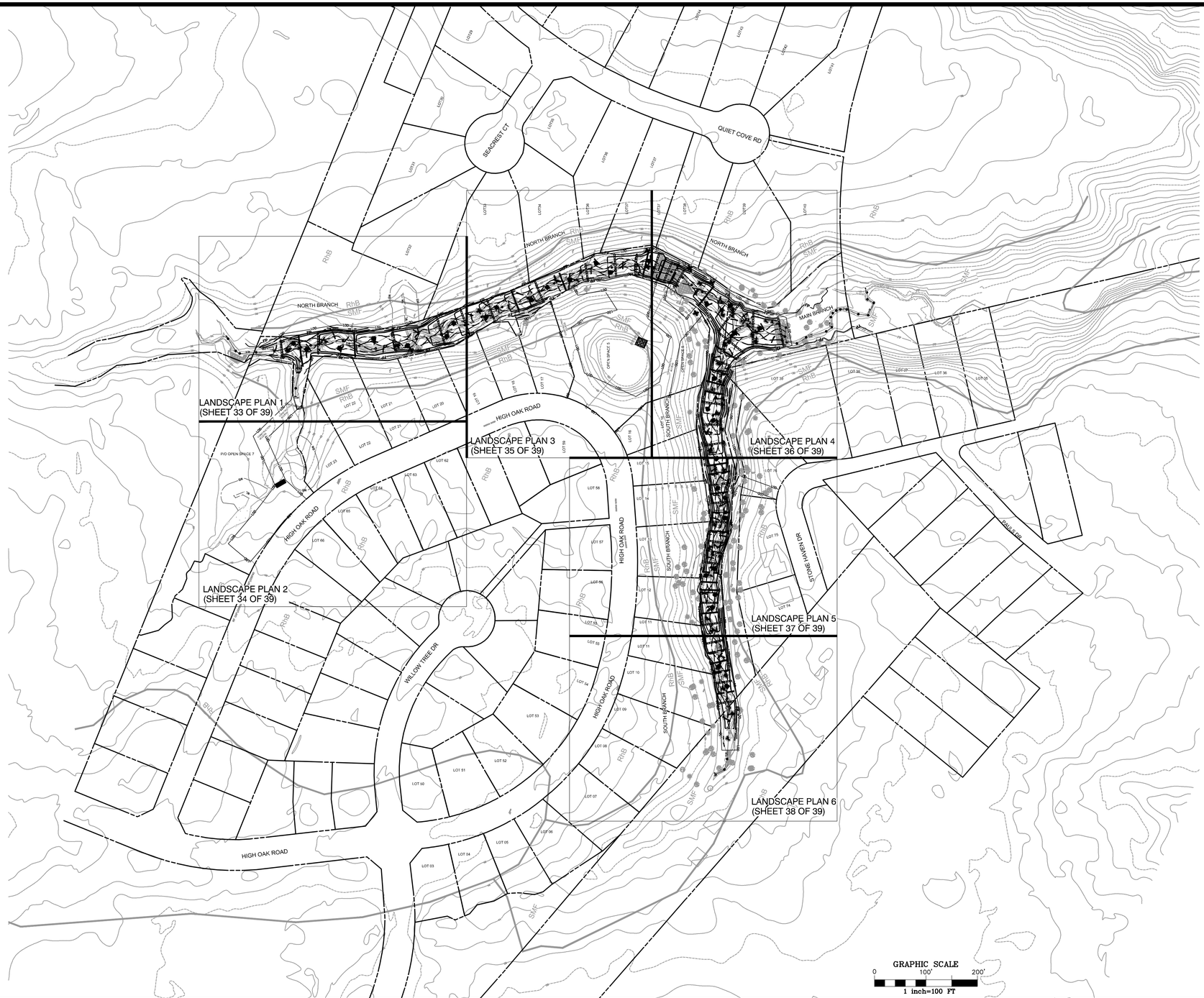
## LANDSCAPE PLAN SHEETS







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Fax: (301) 258-7607

PA 042324


STATE OF MARYLAND — JOANNE MARIE CHEOK — 21983 — REGISTERED PROFESSIONAL ENGINEER
2/8/2024

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18095, Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

| | | | |
|---|---|---|---|
| APPROVED DATE | APPROVED DATE | SCALE: As Shown | |
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors | |
| APPROVED DATE | APPROVED DATE | CHECKED BY: J. Cheok | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 32 OF 39 | |
| | | PROJECT NO: 50017963 | |
| | | PROPOSAL NO: | |

# LANDSCAPE PLAN OVERVIEW

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

- REINFORCED SILT FENCE (RSF)
- FILTER LOG (FL-18)
- FLOODPLAIN REFORESTATION
- MOUNTABLE BERM (MB)
- UPLAND REFORESTATION
- WETLAND IMPACT

## LANDSCAPE LEGEND

- FLOODPLAIN SEED M
- STABILIZATION SEED

NORTH

LOT32
STUDHAM ROBERT E
STUDHAM MARY K
SLOOP COVE LANDING
L.17713 F.00356
RESIDENTIAL

ANNE ARUNDEL COUNTY
C/O OFFICE OF REAL EST MTG1
2.06 ACRES SC 1 FLOOD PLAIN
WILLOW RUN
L.07940 F.00037
EXEMPT

NORTH BRANCH

UPLAND REFORESTATION AREA 8

EXISTING RIPRAP

CONSTRUCTION ACCESS

LOT 22
BENSON ERIC W
BENSON JENNIFER
LOT 22 SC 1
WILLOW RUN
L.17785 F.00402
RESIDENTIAL

LOT 21
MASON WEUN W
MASON ELIZABETH JOY
LOT 21 SC 1
WILLOW RUN
L.22516 F.00244
RESIDENTIAL

LOT 20
WILKERSON RAYMOND D
LOT 20 SC 1
WILLOW RUN
L.09358 F.00687
RESIDENTIAL

MATCHLINE LANDSCAPE PLAN 3 (SHEET 35 OF 39)

MATCHLINE LANDSCAPE PLAN 2 (SHEET 34 OF 39)

GRAPHIC SCALE
0 20' 40'
1 inch = 20 FT


OWNER/DEVELOPER/APPLICANT
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Dewberry
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Phone: (301) 337-2856
Fax: (301) 258-7607


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

| REVISONS | | | |
|---|---|---|---|
| NO | Description | BY | DATE |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Check
SHEET NO: 33 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

# LANDSCAPE PLAN 1 & PLANT SCHEDULE
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

- FILTER LOG (FL-18)
- FLOODPLAIN REFORESTATION
- MOUNTABLE BERM (MB)
- UPLAND REFORESTATION
- WETLAND IMPACT

## LANDSCAPE LEGEND

- FLOODPLAIN SEED M
- STABILIZATION SEED

MATCHLINE LANDSCAPE PLAN 1 (SHEET 33 OF 39)

MATCHLINE LANDSCAPE PLAN 3 (SHEET 35 OF 39)

P/O OPEN SPACE 7

LOT 21
MASON WELIN W
MASON ELIZABETH JOY
LOT 21 SC 1
WILLOW RUN
L.22516 F.00244
RESIDENTIAL

LOT 22
BENSON ERIC W
BENSON JENNIFER
LOT 22 SC 1
WILLOW RUN
L.17785 F.00402
RESIDENTIAL

LOT 23
ZENTZ, VICKIE LYNN
LOT 23 SC 1
WILLOW RUN
L.21276 F.00327
RESIDENTIAL

LOT 62
JONES LEROY M
JONES JEANNE J
LOT 22 SC 1
WILLOW RUN
L.10037 F.00209
RESIDENTIAL

LOT 63

LOT 64
HARDESTY HOMER S
HARDESTY NANCY V
LOT 64 SC 1
WILLOW RUN
L.10300 F. 00391
RESIDENTIAL

LOT 65

LOT 66
VANKIRK JR FREDERICK R
VANKIRK DEBRA G
LOT 22 SC 1
WILLOW RUN
L.09052 F.00465
RESIDENTIAL

HIGH OAK ROAD

HIXSON

IRF CAP\ CORP90

GRAPHIC SCALE
0 20' 40'
1 inch = 20 FT


OWNER/DEVELOPER/APPLICANT
Land Studies
717-627-4440
fax: 717-627-4660
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CIVIL ENGINEER
A.A. County ID #721
PA 022234
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Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE M. CHECK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/18/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | STREAM RESTORATION PLAN |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors<br>CHECKED BY: J. Check<br>SHEET NO: 34 OF 39<br>PROJECT NO: 50017963<br>PROPOSAL NO: | LANDSCAPE PLAN 2<br>SLOOP COVE RETROFIT SITE 1<br>3rd District — Tax Map 16 Grid 05 — Anne Arundel County |

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

- FILTER LOG (FL-18 — FL-18)
- FLOODPLAIN REFORESTATION / MOUNTABLE BERM (MB)
- UPLAND REFORESTATION
- WETLAND IMPACT

## LANDSCAPE LEGEND

- FLOODPLAIN SEED MI
- STABILIZATION SEED

MATCHLINE LANDSCAPE PLAN 1 (SHEET 33 OF 39)

MATCHLINE LANDSCAPE PLAN 5 (SHEET 37 OF 39)

MATCHLINE LANDSCAPE PLAN 4 (SHEET 36 OF 39)

LOT 61
BARNES GREGORY
BARNES REBECCA R
LOT 22 SC 1
WILLOW RUN
L.25286 F. 00132
RESIDENTIAL

LOT 19
KERSHAW STEVEN J
KERSHAW LORRAINE P
LOT 19 SC 1
WILLOW RUN
L.15213 F.00756
RESIDENTIAL

LOT 60
COOPER BARBARA A
COOPER ROGER W
LOT 22 SC 1
WILLOW RUN
L.10022 F. 00258
RESIDENTIAL

LOT 18
BERGAMY DONALD
BERGAMY ANGELA
LOT 18 SC 1
WILLOW RUN
L.10150 F.00654
RESIDENTIAL

LOT 17
HANKINS BILLY W
HANKINS SHARON L
LOT 17 SC 1
WILLOW RUN
L.09599 F.00333
RESIDENTIAL

LOT 59
BROWN HOWARD V
BROWN SONJA L
LOT 22 SC 1
WILLOW RUN
L.10427 F. 00688
RESIDENTIAL

LOT 16
SMELLEY JAMES
SMELLEY ANNA
LOT 16 SC 1
WILLOW RUN
L.19771 F. 00136
RESIDENTIAL

OPEN SPACE 5
WILLOW RUN HOMEOWNERS ASSOCIATION
C/O DIANE HALE, PRESIDENT
10.24 ACRES SC 1
WILLOW RUN
L.08518 F. 00186
RESIDENTIAL

LOT33
OLIVER JR REGINALD E
OLIVER WANDA J
SLOOP COVE LANDING
L.17713 F.00407
RESIDENTIAL

LOT34
BAIRD PAMELA J
BAIRD RICHARD W
SLOOP COVE LANDING
L.17557 F.00087
RESIDENTIAL

LOT36
HASKINS JR CLEVELAND
HASKINS LAURA
SLOOP COVE LANDING
L.17651 F.00585
RESIDENTIAL

LOT37
JENKINS BARBARA A
TURNER TED R
SLOOP COVE LANDING
L.17940 F.00741
RESIDENTIAL

HIGH OAK ROAD

NORTH BRANCH

UPLAND REFORESTATION AREA 7

CONSTRUCTION ACCESS

GRAPHIC SCALE
0 20' 40'
1 inch = 20 FT

OWNER/DEVELOPER/APPLICANT
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Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 35 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN
LANDSCAPE PLAN 3
SLOOP COVE RETROFIT SITE 1
3rd District
Tax Map 16 Grid 05
Anne Arundel County

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19, 22)
- ROCK SILL (RS-16, 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

- REINFORCED SILT FENCE (RSF)
- FILTER LOG (FL-18)
- FLOODPLAIN REFORESTATION
- MOUNTABLE BERM (MB)
- UPLAND REFORESTATION
- WETLAND IMPACT

## LANDSCAPE LEGEND

- FLOODPLAIN SEED MI
- STABILIZATION SEED I

MATCHLINE LANDSCAPE PLAN 5 (SHEET 37 OF 39)

# MATCHLINE LANDSCAPE PLAN 3 (SHEET 35 OF 39)

LOT 16
SOUTH BRANCH

CONSTRUCTION ACCESS

STAGING AREA
50'X60'

OPEN SPACE 5

UPLAND REFORESTATION AREA 5

UPLAND REFORESTATION AREA 4

UPLAND REFORESTATION AREA 6

LOT 76

EXISTING BUILDING

ANNE ARUNDEL COUNTY
C/O OFFICE OF REAL EST MTG1
2.06 ACRES SC 1 FLOOD PLAIN
WILLOW RUN
L.07940 F.00037
EXEMPT

LOT 39
WINDSOR LEROY A
WINDSOR MARGARET E
LOT 39 SC 1
WILLOW RUN
L.04623 F.00005
RESIDENTIAL

LOT37

LOT38
CROSBY MICHAEL A
CROSBY PENELOPE
SLOOP COVE LANDING
L.17821 F.00405
RESIDENTIAL

LOT39
MALCZEWSKI RAY
SLOOP COVE LANDING
L.21648 F.00201
RESIDENTIAL

LOT40
FLANIGAN LUCILLE A
BATES PHILISHA C
SLOOP COVE LANDING
L.17728 F.00630
RESIDENTIAL

NORTH BRANCH

MAIN BRANCH

100 - CHAMAECYPARIS THYOIDES

EX. RIP RAP

GRAPHIC SCALE
0 20' 40'
1 inch = 20 FT

OWNER/DEVELOPER/APPLICANT

Land Studies
717-627-4440
fax: 717-627-4660
landstudies.com
land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
A.A. County ID #721
Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607

STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — PROFESSIONAL ENGINEER
2/18/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18095, Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

| | | | |
|---|---|---|---|
| APPROVED DATE — CHIEF ENGINEER | APPROVED DATE — PROJECT MANAGER | SCALE: As Shown | |
| APPROVED DATE — ASSISTANT CHIEF ENGINEER | APPROVED DATE — CHIEF, RIGHT OF WAY | DRAWN BY: BJF/R. Anchors | CHECKED BY: J. Cheok |
| | | SHEET NO: 36 OF 39 | PROJECT NO: 50017963 |
| | | PROPOSAL NO: | |

# LANDSCAPE PLAN 4
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#) (NBT-XS#) (NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- 100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)
- THEORETICAL CHANNEL SYSTEM*

*The theoretical channel system is conceptual. The multiple threads will not be constructed as shown, but represent the individual flow paths that may develop and evolve over time.

- FILTER LOG (FL-18 — FL-18)
- FLOODPLAIN REFORESTATION (MONTABLE BERM)
- UPLAND REFORESTATION (MB)
- WETLAND IMPACT

## LANDSCAPE LEGEND

- FLOODPLAIN SEED MI
- STABILIZATION SEED

# MATCHLINE LANDSCAPE PLAN 4 (SHEET 36 OF 39)

LOT 58
MOSS JR MARION G
MOSS ROSANA D
LOT 58 SC 1
WILLOW RUN
L.09145 F. 00468
RESIDENTIAL

LOT 57
STEVENSON ROBERT L
STEVENSON NATASHA S
LOT 57 SC 1
WILLOW RUN
L. 26035/ F.00273
RESIDENTIAL

LOT 56
KRESSIG MARK
LOT 56 SC 1
KRESSIG LOIS
WILLOW RUN
L. 18450/ F.00215
RESIDENTIAL

LOT 55

LOT 15
SANDERS JR WILLIE. J
SANDERS JESSICA. B
LOT 15 SC 1
WILLOW RUN
L.123425 F. 00115
RESIDENTIAL

LOT 14
HOEHN JOHN W
HOEHN DONNA M
LOT 14 SC 1
WILLOW RUN
L.14755 F. 00270
RESIDENTIAL

LOT 13
NGUYEN XUAN
NGUYEN GIAO
LOT 13 SC 1
WILLOW RUN
L.16688/ F.00322
RESIDENTIAL

LOT 12
REMMERT DAVID L SC 1
REMMERT LOUISE M
WILLOW RUN
L. 09653/ F.00211
RESIDENTIAL

LOT 11
HALL MICHAEL A SC 1
WILLOW RUN
L. 15299/ F.00402
RESIDENTIAL

LOT 76
THIBODEAU CHRISTOPHER J
LOT 76 SC 1
WILLOW RUN
L.26916 F.00338
RESIDENTIAL

LOT 75
ZHENG XIU ZHEN
WANG KONG
LOT 75 SC 1
WILLOW RUN
L.18066 F.00330
RESIDENTIAL

LOT 74
CARROLL DAVID E
CARROLL JACQUELINE A
LOT 74 SC 1
WILLOW RUN
L.21706 F.00432
RESIDENTIAL

HIGH OAK ROAD
SOUTH BRANCH
STONE HAVEN DR
EXISTING BUILDING
EXISTING BUILDING
UPLAND REFORESTATION AREA 1
UPLAND REFORESTATION AREA 2
UPLAND REFORESTATION AREA 3
RIP RAP
NORTH

# MATCHLINE LANDSCAPE PLAN 6 (SHEET 38 OF 39)

GRAPHIC SCALE
0 20' 40'
1 inch = 20 FT

OWNER/DEVELOPER/APPLICANT
Land Studies
717-627-4440
fax: 717-627-4660
landstudies.com
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CIVIL ENGINEER
A.A. County ID #721
Dewberry
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Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607

STATE OF MARYLAND — JOANNE MARIE CHEOK — No. 18095 — PROFESSIONAL ENGINEER
2/10/21

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. 18095,
Expiration Date: 12/21/2022.

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED / DATE | APPROVED / DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | SCALE: As Shown |
| | | DRAWN BY: BJF/R. Anchors |
| | | CHECKED BY: J. Cheok |
| APPROVED / DATE | APPROVED / DATE | SHEET NO: 37 OF 39 |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

STREAM RESTORATION PLAN
LANDSCAPE PLAN 5
SLOOP COVE RETROFIT SITE 1
3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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# MATCHLINE LANDSCAPE PLAN 4 (SHEET 36 OF 39)

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
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- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
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- THEORETICAL CHANNEL SYSTEM*

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- FLOODPLAIN REFORESTATION (MOUNTABLE BERM)
- UPLAND REFORESTATION (MB)
- WETLAND IMPACT

## LANDSCAPE LEGEND

- FLOODPLAIN SEED M
- STABILIZATION SEED

LOT 55
HOWISON MICHAEL R
LOT 55 SC 1
HOWISON CYNTHIA A
WILLOW RUN
L. 09133/ F.00362
RESIDENTIAL

LOT 11
HALL MICHAEL A SC 1
WILLOW RUN
L. 15299/ F.00402
RESIDENTIAL

LOT 10
RECK HEATHER L
RECK JR ROBERT O
WILLOW RUN
L. 09094/ F.00115
RESIDENTIAL

LOT 54
ASHEN SANDRA
LOT 54 SC 1
WILLOW RUN
L. 08803/ F.00446
RESIDENTIAL

HIGH OAK ROAD

SOUTH BRANCH

LOT 09
COHEN RICHARD J SC 1
COHEN SHARON W
WILLOW RUN
L. 15554/ F.00049
RESIDENTIAL

LOT 08
COHEN RICHARD J SC 1
COHEN SHARON W
WILLOW RUN
L. 15554/ F.00049
RESIDENTIAL

LOT 07
JACKSON RONALD L SC 1
JACKSON DOROTHY C
WILLOW RUN
L. 08882/ F.00678
RESIDENTIAL

ZIMMERMAN, JOSHEPH A.
7999 SOLLEY ROAD
L. 3145 / F.00095
RESIDENTIAL

EXISTING BUILDINGS

GRAPHIC SCALE
0 20' 40'
1 inch = 20 FT


OWNER/DEVELOPER/APPLICANT
Land Studies
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fax: 717-627-4660
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CIVIL ENGINEER
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Contact: Joanne M. Check, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


STATE OF MARYLAND — JOANNE MARIE CHECK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/18/2021

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
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REVISONS

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|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED DATE | APPROVED DATE | |
|---|---|---|
| CHIEF ENGINEER | PROJECT MANAGER | SCALE: As Shown |
| APPROVED DATE | APPROVED DATE | DRAWN BY: BJF/R. Anchors |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | CHECKED BY: J. Check |
| | | SHEET NO: 38 OF 39 |
| | | PROJECT NO: 50017963 |
| | | PROPOSAL NO: |

STREAM RESTORATION PLAN

LANDSCAPE PLAN 6

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

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**NORTH BRANCH PLANT SCHEDULES**

**FLOODPLAIN TREES**

| BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QTY | SPACING |
|---|---|---|---|---|---|
| ACER RUBRUM | RED MAPLE | #2 | CONTAINER | 19 | 10' |
| CHAMAECYPARIS THYOIDES | ATLANTIC WHITE CEDAR | #5 | CONTAINER | 109 | 10' |
| JUNIPERUS VIRGINIANA | EASTERN RED CEDAR | #2 | CONTAINER | 41 | 10' |
| LIQUIDAMBAR STYRACIFLUA | SWEET GUM | #2 | CONTAINER | 28 | 10' |
| LIRIODENDRON TULIPIFERA | TULIP POPLAR | #2 | CONTAINER | 19 | 10' |
| MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | #2 | CONTAINER | 67 | 10' |
| NYSSA SYLVATICA | BLACK GUM | #2 | CONTAINER | 41 | 10' |
| | | | TOTAL = 324 | | |

**FLOODPLAIN SHRUBS**

| BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QTY | SPACING |
|---|---|---|---|---|---|
| ALNUS MARITIMA | SEASIDE ALDER | #2 | CONTAINER | 7 | 15' |
| CEPHALANTHUS OCCIDENTALIS | BUTTONBUSH | #2 | CONTAINER | 9 | 15' |
| CLETHRA ALNIFOLIA | SWEET PEPPERBUSH | #2 | CONTAINER | 11 | 15' |
| RHODODENDRON VISCOSUM | SWAMP AZALEA | #2 | CONTAINER | 15 | 15' |
| ROSA PALUSTRIS | SWAMP ROSE | #2 | CONTAINER | 13 | 15' |
| VACCINIUM CORYMBOSUM | HIGHBUSH BLUEBERRY | #2 | CONTAINER | 17 | 15' |
| | | | TOTAL = 72 | | |

**UPLAND REFORESTATION**

| BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QTY (BY AREA) | | | SPACING |
|---|---|---|---|---|---|---|---|
| | | | | 7 | 8 | | |
| CHAMAECYPARIS THYOIDES | ATLANTIC WHITE CEDAR | #5 | CONTAINER | 6 | 6 | 10' | |
| ILEX OPACA | AMERICAN HOLLY | #5 | CONTAINER | 3 | 5 | 10' | |
| QUERCUS PALUSTRIS | PIN OAK | #2 | CONTAINER | | 7 | 10' | |
| | | | | TOTAL = 27 | | | |

**SOUTH BRANCH PLANT SCHEDULES**

**FLOODPLAIN TREES**

| BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QTY | SPACING |
|---|---|---|---|---|---|
| ACER RUBRUM | RED MAPLE | #2 | CONTAINER | 41 | 10' |
| CHAMAECYPARIS THYOIDES* | ATLANTIC WHITE CEDAR | #5 | CONTAINER | 148 | 10' |
| JUNIPERUS VIRGINIANA | EASTERN RED CEDAR | #2 | CONTAINER | 55 | 10' |
| LIQUIDAMBAR STYRACIFLUA | SWEET GUM | #2 | CONTAINER | 29 | 10' |
| LIRIODENDRON TULIPIFERA | TULIP POPLAR | #2 | CONTAINER | 19 | 10' |
| MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | #2 | CONTAINER | 75 | 10' |
| NYSSA SYLVATICA | BLACK GUM | #2 | CONTAINER | 29 | 10' |
| | | | TOTAL = 396 | | |

**FLOODPLAIN SHRUBS**

| BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QTY | SPACING |
|---|---|---|---|---|---|
| ALNUS MARITIMA | SEASIDE ALDER | #2 | CONTAINER | 13 | 15' |
| CEPHALANTHUS OCCIDENTALIS | BUTTONBUSH | #2 | CONTAINER | 5 | 15' |
| CLETHRA ALNIFOLIA | SWEET PEPPERBUSH | #2 | CONTAINER | 15 | 15' |
| RHODODENDRON VISCOSUM | SWAMP AZALEA | #2 | CONTAINER | 15 | 15' |
| ROSA PALUSTRIS | SWAMP ROSE | #2 | CONTAINER | 9 | 15' |
| VACCINIUM CORYMBOSUM | HIGHBUSH BLUEBERRY | #2 | CONTAINER | 9 | 15' |
| VIBURNUM DENTATUM | SOUTHERN ARROWWOOD | #2 | CONTAINER | 17 | 15' |
| | | | TOTAL = 83 | | |

**UPLAND REFORESTATION**

| BOTANICAL NAME | COMMON NAME | SIZE | CONDITION | QTY (BY AREA) | | | | | | SPACING |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | |
| CHAMAECYPARIS THYOIDES | ATLANTIC WHITE CEDAR | #5 | CONTAINER | | 3 | | 3 | 9 | | 10' |
| ILEX OPACA | AMERICAN HOLLY | #5 | CONTAINER | 5 | | 6 | 5 | 5 | | 10' |
| MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | #2 | CONTAINER | | | 3 | | 6 | 3 | 10' |
| NYSSA SYLVATICA | BLACK GUM | #2 | CONTAINER | | | | 3 | 6 | 3 | 10' |
| QUERCUS PALUSTRIS | PIN OAK | #2 | CONTAINER | | | 3 | 5 | | | 10' |
| | | | | TOTAL = 63 | | | | | | |

**FLOODPLAIN SEED MIX**

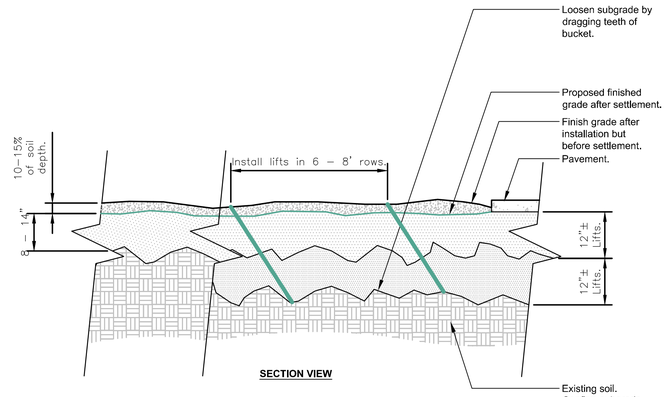
| % | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| 19.80 | AGROSTIS PERENNANS | AUTUMN BENTGRASS |
| 17.00 | PANICUM RIDIGULUM | REDTOP PANICGRASS |
| 11.90 | SPARGANIUM EURYCARPUM | GIANT BUR REED |
| 9.90 | CAREX LURIDA | LURID SEDGE |
| 5.95 | CAREX SCOPARIA | BLUNT BROOM SEDGE |
| 5.95 | SCIRPUS ATROVIRENS | GREEN BULRUSH |
| 5.67 | PANICUM VIRGATUM | SWITCHGRASS |
| 4.25 | CAREX SQUARROSA | SQUARROSE SEDGE |
| 4.75 | CAREX COMOSA | COSMOS SEDGE |
| 2.83 | VERBENA HASTATA | BLUE VERVAIN |
| 2.55 | JUNCUS EFFUSUS | SOFT RUSH |
| 1.70 | EUPATORIUM PERFOLIATUM | BONESET |
| 1.70 | HELENIUM AUTUMNALE | COMMON SNEEZEWEED |
| 1.13 | BIDENS FRONDOSA | BEGGARS-TICK |
| 0.85 | SCIRPUS CYPERINUS | WOOLGRASS |
| 0.85 | SCIRPUS PUNGENS | THREESQUARE BULRUSH |
| 0.85 | CAREX CRINITA | FRINGED SEDGE |
| 0.85 | ASCLEPIAS INCARNATA | SWAMP MILKWEED |
| 0.85 | MIMULUS RINGENS | SQUARE STEM MONKEY FLOWER |
| 0.57 | IRIS VERSICOLOR | BLUEFLAG |
| 0.42 | PELTANDRA VIRGINICA | ARROW ARUM |
| 0.42 | ASTER PRENANTHOIDES | ZIGZAG ASTER |

APPLICATION RATE: 15.00 LBS/ACRE

**STABILIZATION SEED MIX**

| % | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| 20.00 | AGROSTIS PERENNANS | AUTUMN BENTGRASS |
| 16.70 | SCHIZACHYRIUM SCOPARIUM | LITTLE BLUESTEM |
| 16.70 | ELYMUS VIRGINICUS | VIRGINIA WILDRYE |
| 16.70 | ANDROPOGON GERARDII | BIG BLUESTEM |
| 10.00 | PANICUM RIDIGULUM | REDTOP PANICGRASS |
| 6.70 | PANICUM VIRGATUM | SWTICHGRASS |
| 4.00 | EUPATORIUM PERFOLIATUM | BONESET |
| 3.20 | EUPATORIUM COELESTINUM | MISTFLOWER |
| 2.00 | HELENIUM AUTUMNALE | COMMON SNEEZEWEED |
| 2.00 | SOLIDAGO RIGIDA | STIFF GOLDENROD |
| 1.00 | ASTER OBLONGIFOLIUS | AROMATIC ASTER |
| 1.00 | ASCLEPIAS INCARNATA | SWAMP MILKWEED |

APPLICATION RATE: 15.00 LBS/ACRE




Notes:
1- Means and methods of soil compaction shall be determined at time of soil mock up.

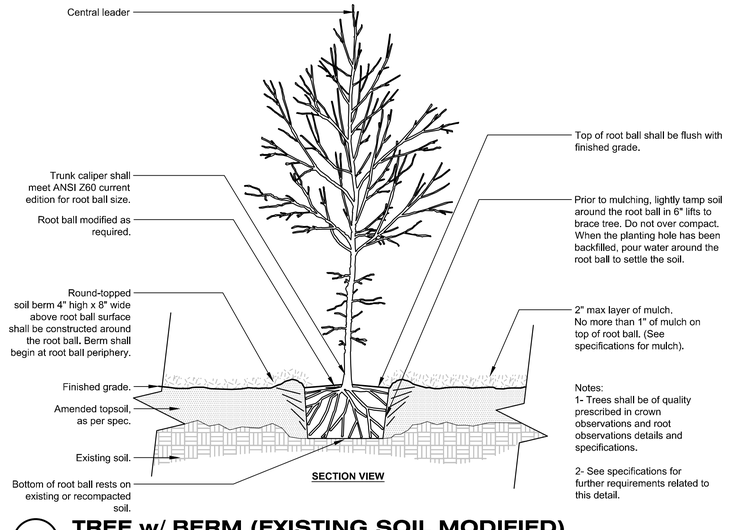
2- Soil compaction after installation shall be 75 - 250 PSI at soil moisture between field capacity and wilting point.

3- For soil depths see planting soil specifications.

4- See planting soil specification for additional requirements.

## 1 MODIFIED EXISTING SOIL - INSTALLED PLANTING MIX

NTS

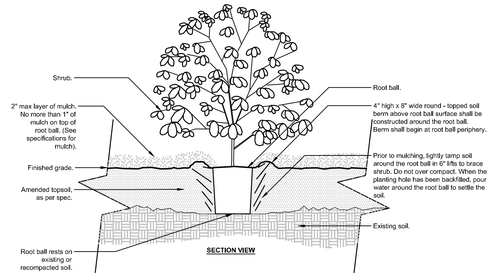



Notes:
1- Trees shall be of quality prescribed in crown observations and root observations details and specifications.

2- See specifications for further requirements related to this detail.

## 2 TREE w/ BERM (EXISTING SOIL MODIFIED)

NTS




Notes:
1- Shrubs shall be of quality prescribed in the root observations detail and specifications.

2- See specifications for further requirements related to this detail.

## 4 SHRUB - MODIFIED SOIL

NTS


OWNER/DEVELOPER/APPLICANT

Land Studies

717-627-4440
fax: 717-627-4660

landstudies.com
land@landstudies.com

315 North Street | Lititz, PA 17543

PA 642224

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STATE OF MARYLAND — JOANNE M. CHEOK — No. 18095 — REGISTERED PROFESSIONAL ENGINEER
2/8/2024

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REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| | | | |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

| APPROVED | DATE | APPROVED | DATE |
|---|---|---|---|
| CHIEF ENGINEER | | PROJECT MANAGER | |
| APPROVED | DATE | APPROVED | DATE |
| ASSISTANT CHIEF ENGINEER | | CHIEF, RIGHT OF WAY | |

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 39 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# LANDSCAPE PLAN 2 & DETAILS

# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

P:\PROJECT\2008 Fish\Sloop Cove_50017963\CADD\CIVIL\Site Plan - Construction\33-39 - SP-STRM-REST-LSCAPEPLAN.dwg, 2/10/2021 3:53:49 PM, nemejulu

# STATE OF MARYLAND
## DEPARTMENT OF THE ENVIRONMENT
## WATER AND SCIENCE ADMINISTRATION
## **LETTER OF AUTHORIZATION**

AUTHORIZATION NUMBER: 16-NT-0193/201660858

EFFECTIVE DATE: October 25, 2021

EXPIRATION DATE: October 25, 2026

AUTHORIZED PERSON: Anne Arundel County Department of Public Works
2662 Riva Road
Annapolis, MD 21401

IN ACCORDANCE WITH ENVIRONMENT ARTICLE §5-503(a) AND §5-906(b), ANNOTATED CODE OF MARYLAND, COMAR 26.17.04 AND 26.23.01, AND 26.08.02 AND THE ATTACHED CONDITIONS OFAUTHORIZATIONS, **Anne Arundel County Department of Public Works** (AUTHORIZED PERSON"), IS HEREBY AUTHORIZED BY THE WATER AND SCIENCE ADMINISTRATION ("ADMINISTRATION") TO CONDUCT A REGULATED ACTIVITY IN A NONTIDAL WETLAND, BUFFER, OR EXPANDED BUFFER, AND/OR TO CHANGE THE COURSE, CURRENT OR CROSS-SECTION OF WATERS OF THE STATE, IN ACCORDANCE WITH THE ATTACHED PLANS APPROVED BY THE ADMINISTRATION ON **October 25, 2021** ("APPROVED PLAN") AND PREPARED BY **Landstudies/Dewberry** AND INCORPORATED HEREIN, AS DESCRIBED BELOW:

The project will restore approximately 2,400 linear feet of Unnamed Tributary to Sloop Cove. The proposed project involves a valley bottom restoration design, which includes filling existing channel and installing rock sills, log sills, and subsurface armoring across the valley bottom to provide grade control and prevent vertical degradation. Also, woody material will be partially buried in various locations across the valley bottom to provide additional roughness. The proposed restoration will temporarily impact approximately 2,400 linear feet (10,434 square feet) of stream, and 60,995 square feet of floodplain. The project will permanently impact 2,310 square feet of nontidal forested wetlands and 8,213 square feet of nontidal wetlands buffer. The proposed project has a potential wetland creation area that is approximately 2,700 square feet at the downstream end of the project. The project is located at 8042 High Oak Road, Glen Burnie, Anne Arundel County.

MD Grid Coordinates 164624 X 437829

Heather L. Nelson
Program Manager
Wetlands and Waterways Program

Attachments: Conditions of Authorization

cc: MDE Compliance Program/ Anne Arundel County

1. **Validity:** Authorization is valid only for use by Authorized Person. Authorization may be transferred only with prior written approval of the Administration. In the event of transfer, transferee agrees to comply with all terms and conditions of Authorization.
2. **Initiation of Work, Modifications and Extension of Term**: Authorized Person shall initiate authorized activities in waterways, including streams and the 100-year floodplain, within two (2) years of the Effective Date of this Authorization or the Authorization shall expire. [Annotated Code of Maryland, Environment Article 5-510(a)-(b) and Code of Maryland Regulations 26.17.04.12]. Authorized Person may submit written requests to the Administration for (a) extension of the period for initiation of work, (b) modification of Authorization, including the Approved Plan, or, (c) not later than 45 days prior to Expiration Date, an extension of term. Requests for modification shall be in accordance with applicable regulations and shall state reasons for changes, and shall indicate the impacts on nontidal wetlands, streams, and the floodplain, as applicable. The Administration may grant a request at its sole discretion. (Annotated Code of Maryland, Environment Article 5-510(c), and Code of Maryland Regulations 26.17.04.12, and Annotated Code of Maryland, Environment Article 5-907 and Code of Maryland Regulations 26.23.02.07).
3. **Responsibility and Compliance**: Authorized Person is fully responsible for all work performed and activities authorized by this Authorization shall be performed in compliance with this Authorization and Approved Plan. Authorized Person agrees that a copy of the Authorization and Approved Plan shall be kept at the construction site and provided to its employees, agents and contractors. A person (including Authorized Person, its employees, agents or contractors) who violates or fails to comply with the terms and conditions of this Authorization, Approved Plan or an administrative order may be subject to penalties in accordance with §5-514 and §5-911, Department of the Environment Article, Annotated Code of Maryland (2007 Replacement Volume).
4. **Failure to Comply**: If Authorized Person, its employees, agents or contractors fail to comply with this Authorization or Approved Plan, the Administration may, in its discretion, issue an administrative order requiring Authorized Person, its employees, agents and contractors to cease and desist any activities which violate this Authorization, or the Administration may take any other enforcement action available to it by law, including filing civil or criminal charges.
5. **Suspension or Revocation**: Authorization may be suspended or revoked by the Administration, after notice of opportunity for a hearing, if Authorized Person: (a) submits false or inaccurate information in Permit application or subsequently required submittals; (b) deviates from the Approved Plan, specifications, terms and conditions; (c) violates, or is about to violate terms and conditions of this Authorization; (d) violates, or is about to violate, any regulation promulgated pursuant to Title 5, Department of the Environment Article, Annotated Code of Maryland as amended; (e) fails to allow authorized representatives of the Administration to enter the site of authorized activities at any reasonable time to conduct inspections and evaluations; (f) fails to comply with the requirements of an administrative action or order issued by the Administration; or (g) does not have vested rights under this Authorization and new information, changes in site conditions, or amended regulatory requirements necessitate revocation or suspension.
6. **Other Approvals**: Authorization does not authorize any injury to private property, any invasion of rights, or any infringement of federal, State or local laws or regulations, nor does it obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.
7. **Site Access:** Authorized Person shall allow authorized representatives of the Administration access to the site of authorized activities during normal business hours to conduct inspections and evaluations necessary to assure compliance with this Authorization. Authorized Person shall provide necessary assistance to effectively and safely conduct such inspections and evaluations.
8. **Inspection Notification:** Authorized Person shall notify the Administration's Compliance Program at least five (5) days before starting authorized activities and five (5) days after completion. For Allegany, Garrett, and Washington Counties, Authorized Person shall call 301-689-1480. For Carroll, Frederick, Howard, Montgomery and Prince George's Counties, Authorized Person shall call 301-665-2850. For Baltimore City, Anne Arundel, Baltimore, Calvert, Charles, Harford and St. Mary's Counties, Authorized Person shall call 410-537-3510. For Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico and Worcester Counties, Authorized Person shall call 410-901-4020. If Authorization is for a project that is part of a mining site, please contact the Land and Materials Administration's Mining Program at 410-537-3557 at least five (5) days before starting authorized activities and five (5) days after completion.
9. **Sediment Control:** Authorized Person shall obtain approval from the **Anne Arundel County Soil Conservation** District for a grading and sediment control plan specifying soil erosion control measures. The approved grading and sediment control plan shall be included in the Approved Plan, and shall be available at the construction site.
10. **Best Management Practices During Construction:** Authorized Person, its employees, agents and contractors shall conduct authorized activities in a manner consistent with the Best Management Practices specified by the Administration.
11. **Disposal of Excess:** Unless otherwise shown on the Approved Plan, all excess fill, spoil material, debris, and construction material shall be disposed of outside of nontidal wetlands, nontidal wetlands buffers, and the 100-year floodplain, and in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands.
12. **Temporary Staging Areas:** Temporary construction trailers or structures, staging areas and stockpiles shall not be located within nontidal wetlands, nontidal wetlands buffers, or the 100-year floodplain unless specifically included on the Approved Plan.

13. **Temporary Stream Access Crossings:** Temporary stream access crossings shall not be constructed or utilized unless shown on the Approved Plan. If temporary stream access crossings are determined necessary prior to initiation of work or at any time during construction, Authorized Person, its employees, agents or contractors shall submit a written request to the Administration and secure the necessary permits or approvals for such crossings before installation of the crossings. Temporary stream access crossings shall be removed and the disturbance stabilized prior to completion of authorized activity or within one (1) year of installation.
14. **Discharge:** Runoff or accumulated water containing sediment or other suspended materials shall not be discharged into waters of the State unless treated by an approved sediment control device or structure.
15. **Instream Construction Prohibition:** To protect important aquatic species, motor driven construction equipment shall not be allowed within stream channels unless on authorized ford crossings. Activities within stream channels are prohibited as determined by the classification of the stream (COMAR 26.08.02.08): Unnamed Tributary to Sloop Cove is a Use I waterway; in-stream work may not be conducted from March 1 through June 15, inclusive, of any year.
16. **Instream Blasting:** Authorized Person shall obtain prior written approval from the Administration before blasting or using explosives in the stream channel.
17. **Minimum Disturbance:** Any disturbance of stream banks, channel bottom, wetlands, and wetlands buffer authorized by this Authorization or Approved Plan shall be the minimum necessary to conduct permitted activities. All disturbed areas shall be stabilized vegetatively no later than seven (7) days after construction is completed or in accordance with the approved grading or sediment and erosion control plan.
18. **Restoration of Construction Site:** Authorized Person shall restore the construction site upon completion of authorized activities. Undercutting, meandering or degradation of the stream banks or channel bottom, any deposition of sediment or other materials, and any alteration of wetland vegetation, soils, or hydrology, resulting directly or indirectly from construction or authorized activities, shall be corrected by Authorized Person as directed by the Administration.
19. **Stream Monitoring:** Authorized Person shall monitor the stream restoration project for three (3) out of five (5) years; on years one, three, and five following the completion of construction of the project. The monitoring shall identify and evaluate changes in 1) channel cross-section, pattern and profile; 2) bed materials; 3) channel stability; 4) structure stability and condition; and 5) vegetation viability. The monitoring effort may include topographic surveys of monumented cross-sections within the realigned channel segment, visual field observations, photographic documentation, vegetation viability measurements, and identify any necessary corrective measures. The Authorized Person shall submit annual reports on the results of the monitoring efforts for the stream restoration project to the Department by the end of each year. The Authorized Person shall coordinate with the regulatory agencies concerning applicable remedial measures for any identified project failures and shall correct any project failures within one year of their identification. If the project is determined to be stable at the end of year 3, the Authorized Person may request an exemption from the year 5 stream monitoring requirement.

## FEDERALLY MANDATED STATE AUTHORIZATIONS

The State of Maryland issued a Water Quality Certification to the U.S. Army Corps of Engineers for projects receiving federal authorization under the Maryland State Programmatic General Permit, Regional General Permit for Chesapeake Bay Total Maximum Daily Load (TMDL) Activities and non-suspended Nationwide Permits. In addition, as applicable, this Authorization constitutes the State's concurrence with the Applicant's certification that the activities authorized herein are consistent with the Maryland Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. Activities in the following counties are not subject to the Maryland Coastal Zone Management requirement: Allegany, Carroll, Frederick, Garrett, Howard, Montgomery, and Washington.

## U.S. ARMY CORPS OF ENGINEERS AUTHORIZATION

The U.S. Army Corps of Engineers is reviewing the project as a Category B activity. The federal authorization will be sent separately by the Corps and should be followed when performing the authorized.

**BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS AND 100-YEAR FLOODPLAINS**

1) No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
2) Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
3) Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
4) Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
5) Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.
6) Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
7) All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (Lolium multiflorum), Millet (Setaria italica), Barley (Hordeum sp.), Oats (Uniola sp.), and/or Rye (Secale cereale). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. **Kentucky 31 fescue shall not be utilized in wetland or buffer areas.** The area should be seeded and mulched to reduce erosion after construction activities have been completed.
8) After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
9) To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:

   Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year.
   Use III waters: In-stream work shall not be conducted during the period October 1 through April 30, inclusive, during any year.
   Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.

10) Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
11) Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.

**MODIFICATIONS TO STATE AUTHORIZATIONS**
**FOR ECOLOGICAL RESTORATION PROJECTS IN NONTIDAL WETLANDS AND WATERWAYS**

The Maryland Department of the Environment, Wetlands and Waterways Program (WWP), has instituted guidance for modifications to State-issued Authorizations for Ecological Restoration Projects.
Modifications to permitted Tidal Wetlands projects are not subject to these procedures. The guidance (below) reflects a three-tiered approach to the various activities for which modifications are typically sought:

Level one activities would be those for which no Wetlands and Waterways Program notification and review is necessary. These minor changes may be made with no prior notice to MDE.

Examples include:

1. Additional plantings / substitutions of plantings or soil mixture / re-planting provided that all locally native vegetation is used and appropriate bio diversity is addressed.
2. Modifications of work occurring outside of regulated resources (i.e. access changes, adjustments to LOD).
3. Changes to the Sequence of Construction that do not affect erosion/sediment control implementation or maintenance.
4. Bank stabilization measures that are limited to the placement of fiber matting and fiber bio logs excluding the use of stone riprap.
5. In-kind repair of permitted projects within the term of the Authorization.

Level two activities would be those for which the WWP would need to be contacted beforehand. The appropriate Division Chief and assigned reviewer should be contacted via Email with details including a work description, site sketch and photos (if appropriate). The Department commits to a 3-business-day turn around for these requests. The applicant should not proceed with the proposed changes until 3-business days have passed. If MDE does not respond to the notification of the proposed modification within 3-business days, the permittee may assume approval and proceed. In the event MDE requests further information, the work may not proceed until MDE is satisfied that a formal modification is not necessary. MDE will make every attempt to expedite the review of the supplemental information submitted to make a determination on next steps (i.e. proceed or submit a formal modification).

Examples include:

1. Installation of non-structural woody debris (toe wood, root wads).
2. Alteration of grade control structures, within original structure LOD and do not affect flood elevations.
3. Expansion of LOD in regulated areas for temporary construction access only (no additional permanent impacts or tree removal within jurisdictional resources).Timber matting should be used for access through wetlands or buffers to minimize impacts.
4. Relocation of created nontidal wetlands within LOD.
5. Changes in pump around / diversion type and location, excluding new channel diversion construction.
6. Changes to in-stream structures or configurations, including changes to stone sizes/materials.

Level three activities are more substantial changes that would require a formal modification approval to the permitted activity from the WWP through submission of a permit modification request before proceeding with these changes in the field.

Examples include:

1. Changes in the stream plan, profile or cross-section.
2. Additional grade control structures (different from as permitted plans) including the raising, lowering and relocation; including addition of coarse woody debris which functions like a dam.
3. Expansion of LOD with permanent impacts to regulated areas.
4. Change in location of temporary access crossing/s.
5. Additional floodplain grading / fill
6. Any additional permanent wetlands and wetland buffers impacts.
7. Projects in sensitive areas (e.g. Critical Area).
8. Any change or waiver to in-stream closure period.

This Process for Modifications to Authorizations for Ecological Restoration Projects is applicable only to Nontidal Wetlands and Waterways authorizations issued by the Wetlands and Waterways Program at MDE. Any other local, state or federal authorizations necessary to implement the field modifications contained in this document will be necessary before proceeding with the work. (2/2021)

# APPENDIX C

# As-Built Plans

## CONSTRUCTION SEQUENCE

CONTRACTOR WILL CONTACT A.A. COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS, 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITIES TO CONDUCT AN ON-SITE PRE-CONSTRUCTION MEETING (410-222-7780). WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS.

EXISTING TOPOGRAPHY MUST BE FIELD VERIFIED FOR THE SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCING WORK.

### PHASE I: ESTABLISHMENT OF ACCESS AND PROJECT LIMITS – 5 DAYS

1. INSTALL REINFORCED SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE(S) AND TEMPORARY STAGING AREAS. (1 DAY)
2. INSTALL TEMPORARY ORANGE CONSTRUCTION FENCE ALONG THE ENTIRE LENGTH OF THE PROPOSED LIMIT OF DISTURBANCE (LOD) PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. (3 DAYS)
3. INSTALL FILTER LOGS TO ACT AS PERIMETER CONTROLS AROUND THE PROPOSED TEMPORARY STOCKPILE AREA LOCATED AT THE CONFLUENCE OF THE NORTH BRANCH AND SOUTH BRANCH. (1 DAY)
4. INSTALL TEMPORARY ACCESS BRIDGE NEAR EXISTING SB 10+85. (0 DAYS)

### PHASE II: TIE-IN GRADING ZONE (NB 11+00 TO NB 12+00) – 6 DAYS

5. BEGIN TEMPORARY PUMP-AROUND BYPASS (TPB) WITH INTAKE AT THE NB/SB CONFLUENCE AND THE DISCHARGE NEAR NB 12+05, WHICH IS JUST DOWNSTREAM OF THE PROPOSED TIE-IN LOCATION. (0 DAYS)
6. PERFORM CLEARING AND GRUBBING AS NECESSARY. SALVAGE REMOVED TREES AND ALREADY FALLEN TREES AND STOCKPILE WHERE APPROPRIATE WITHIN LOD. (1 DAY)
7. GRADE VALLEY BOTTOM AND SIDE SLOPES TO PROPOSED SUBGRADE (4-6" BELOW FINAL GRADE) BETWEEN NB 11+00 AND NB 11+70. STOCKPILE EXCESS CUT FROM THE TIE-IN GRADING ZONE AT TEMPORARY STOCKPILE LOCATION #1 TO BE USED AS FILL IN NORTH BRANCH GRADING ZONE. (1 DAY)
8. INSTALL SUB-SURFACE ARMORING (SA-3 AND SA-4), ROCK SILLS (RS-30 AND RS-31), AND WOODY DEBRIS / BURIED LOG STRUCTURES AT PROPOSED ELEVATIONS AND LOCATIONS WHILE GRADING VALLEY BOTTOM. (2 DAYS)
9. INSTALL FURNISHED COMPOST PER DETAILS TO MATCH PROPOSED FINAL GRADE FROM NB 11+00 TO NB 11+45. (0.5 DAYS)
10. SEED VALLEY BOTTOM WITH PROPOSED FLOODPLAIN SEED MIX UPON FINAL GRADE FROM NB 11+00 TO NB 11+45. INSTALL TYPE D SOIL STABILIZATION MATTING ALONG VALLEY BOTTOM ACCORDING TO DETAILS FROM NB 11+00 TO NB 11+45. (0.5 DAYS)
11. SEED SIDE SLOPES WITH PROPOSED STABILIZATION SEED MIX. INSTALL TYPE A SOIL STABILIZATION MATTING ON SIDE SLOPES. (0.5 DAYS)
12. END (TPB) TEMPORARY PUMP-AROUND BYPASS (0 DAYS)
13. REMOVE TEMPORARY ACCESS BRIDGE NEAR EXISTING SB 10+85. (0.5 DAYS)

### PHASE III: SOUTH BRANCH GRADING ZONE (SB 0+70 TO SB 8+25) – 33 DAYS

14. ESTABLISH TEMPORARY ACCESS PATHS USING WOOD CHIP MULCH AS A BASE AND TEMPORARY ACCESS BRIDGES (TB) ACROSS THE EXISTING CHANNEL AS NECESSARY TO ACCESS THE SOUTH BRANCH WITHIN THE LOD. (2 DAYS)
15. INSTALL TEMPORARY BYPASS CHANNEL #1. IF NECESSARY, PUMP ACTIVE FLOW AROUND WORK AREA WHILE CONNECTING THE TEMPORARY BYPASS CHANNEL TO THE EXISTING CHANNEL. AS NECESSARY, PUMP SEDIMENT-LADEN WATER THAT COLLECTS IN THE UNFILLED EXISTING CHANNEL NEAR THE CONFLUENCE THROUGH A FILTER BAG AT AN UNDISTURBED AREA OR PREVIOUSLY COMPLETED (AND STABILIZED) AREA WITHIN THE LOD (1 DAY).
16. PERFORM CLEARING AND GRUBBING AS NECESSARY. SALVAGE REMOVED TREES AND ALREADY FALLEN TREES AND STOCKPILE WHERE APPROPRIATE WITHIN LOD. (5 DAYS)
17. BEGIN TPB WITH INTAKE AT THE SB 0+60 AND THE DISCHARGE JUST DOWNSTREAM OF PROJECT REACH NEAR NB 12+05. (0 DAYS)
18. IN AN UPSTREAM TO DOWNSTREAM DIRECTION, GRADE VALLEY BOTTOM AND SIDE SLOPES TO PROPOSED SUBGRADE (4-6" BELOW FINAL GRADE) BETWEEN SB 0+70 AND SB 8+25. STOCKPILE EXCESS CUT FROM THE SOUTH BRANCH GRADING ZONE AT TEMPORARY STOCKPILE LOCATION #1 TO BE USED AS FILL IN NORTH BRANCH GRADING ZONE. (7 DAYS)
19. INSTALL ROCK SILLS (RS-1 THROUGH RS-14), LOG SILLS (LS-1 THROUGH LS-17), AND WOODY DEBRIS / BURIED LOG STRUCTURES AT PROPOSED ELEVATIONS AND LOCATIONS WHILE GRADING VALLEY BOTTOM. (8 DAYS)
20. INSTALL FURNISHED COMPOST PER DETAILS TO MATCH PROPOSED FINAL GRADE FROM SB 0+70 TO SB 8+25. (4 DAYS)
21. SEED VALLEY BOTTOM WITH PROPOSED FLOODPLAIN SEED MIX UPON FINAL GRADE. INSTALL TYPE D SOIL STABILIZATION MATTING ALONG VALLEY BOTTOM ACCORDING TO DETAILS. (3 DAYS)
22. SEED SIDE SLOPES WITH PROPOSED STABILIZATION SEED MIX. INSTALL TYPE A SOIL STABILIZATION MATTING ON SIDE SLOPES. (2 DAYS)
23. REMOVE TEMPORARY ACCESS BRIDGES AS NECESSARY TO COMPLETE GRADING OPERATIONS. (1 DAY)
24. END TPB. (0 DAYS)
25. REPEAT STEPS 17 THROUGH 24 ON A DAILY BASIS UNTIL SOUTH BRANCH GRADING ZONE IS COMPLETED AND STABILIZED ACCORDINGLY. (0 DAYS)

### PHASE IV: NORTH BRANCH GRADING ZONE (NB 0+90 TO NB 11+00 AND SB 8+25 TO 9+20) – 39 DAYS

26. ESTABLISH TEMPORARY ACCESS PATHS USING WOOD CHIP MULCH AS A BASE AND TEMPORARY ACCESS BRIDGES (TB) ACROSS THE EXISTING CHANNEL AS NECESSARY TO ACCESS THE NORTH BRANCH WITHIN THE LOD. (2 DAYS)
27. PERFORM CLEARING AND GRUBBING AS NECESSARY. SALVAGE REMOVED TREES AND ALREADY FALLEN TREES AND STOCKPILE WHERE APPROPRIATE WITHIN LOD. (5 DAYS)
28. BEGIN TPB WITH INTAKE AT THE NB 0+70 AND SB 0+60 AND THE DISCHARGE JUST DOWNSTREAM OF PROJECT REACH NEAR NB 12+05. (0 DAYS)
29. IN DOWNSTREAM TO UPSTREAM DIRECTION, GRADE VALLEY BOTTOM AND SIDE SLOPES TO PROPOSED SUBGRADE (4-6" BELOW FINAL GRADE) FROM NB 0+90 TO NB 11+00 AND SB 8+25 TO SB 9+20 USING EXCESS CUT AND STOCKPILED SOIL NEAR THE NB/SB CONFLUENCE TO FILL THE NORTH BRANCH VALLEY BOTTOM. (9 DAYS)
30. INSTALL SUB-SURFACE ARMORING (SA-1 AND SA-2), ROCK SILLS (RS-15 THROUGH RS-29), LOG SILLS (LS-18 THROUGH LS-26), AND WOODY DEBRIS / BURIED LOG STRUCTURES AT PROPOSED ELEVATIONS AND LOCATIONS AND REMOVE TEMPORARY BY-PASS CHANNEL #1 WHILE GRADING VALLEY BOTTOM. (10 DAYS)
31. INSTALL FURNISHED COMPOST PER DETAILS TO MATCH PROPOSED FINAL GRADE FROM NB 0+90 TO NB 11+00 AND SB 8+25 TO SB 9+20 0+90 TO SB 8+25. (5 DAYS)
32. SEED VALLEY BOTTOM WITH PROPOSED FLOODPLAIN SEED MIX UPON FINAL GRADE. INSTALL TYPE D SOIL STABILIZATION MATTING ALONG VALLEY BOTTOM ACCORDING TO DETAILS. (4 DAYS)
33. SEED SIDE SLOPES WITH PROPOSED STABILIZATION SEED MIX. INSTALL TYPE A SOIL STABILIZATION MATTING ON SIDE SLOPES. (3 DAYS)
34. REMOVE TEMPORARY ACCESS BRIDGES AS NECESSARY TO COMPLETE GRADING OPERATIONS. (1 DAY)
35. END TPB. (0 DAYS)
36. REPEAT STEPS 28 THROUGH 35 ON A DAILY BASIS UNTIL NORTH BRANCH GRADING ZONE IS COMPLETED AND STABILIZED ACCORDINGLY. (0 DAYS)

### PHASE V: FINAL STABILIZATION & PLANTING – 6 DAYS

37. UPON PERMANENT STABILIZATION OF THE WORK AREA AND WITH WRITTEN APPROVAL FROM THE ANNE ARUNDEL COUNTY INSPECTOR, THE CONTRACTOR SHALL REMOVE EROSION AND SEDIMENT CONTROLS. ANY AREAS DISTURBED BY THE REMOVAL OF THE EROSION AND SEDIMENT CONTROLS SHALL BE STABILIZED IMMEDIATELY. (1 DAY)
38. INSTALL PROPOSED TREES AND SHRUBS ACCORDING TO PROPOSED LANDSCAPE PLAN. (5 DAYS)

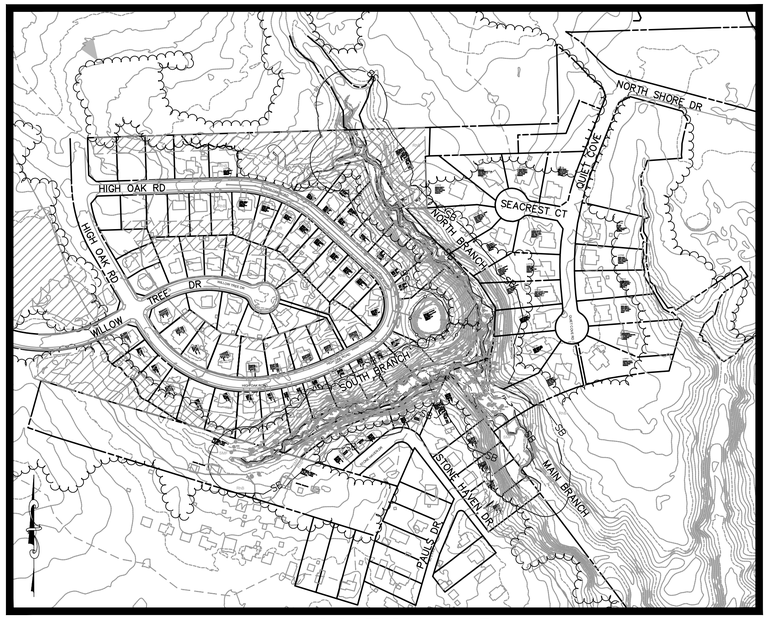
## STANDARD RESPONSIBILITY NOTES

1. I (We) certify that:
   a. All development and construction will be done in accordance with this sediment and erosion control plan, and further, authorize the right of entry for periodic on-site evaluation by the Anne Arundel Soil Conservation District (AASCD) Board of Supervisors or their authorized agents.
   b. Any responsible personnel involved in the construction project will have a certificate of attendance from the Maryland Department of the Environment's approved training program for the control of sediment and erosion before beginning the project.
   Responsible personnel on site : _____
   c If applicable, the appropriate enclosure will be constructed and maintained on sediment basin(s) included in this plan. Such structure(s) will be in compliance with the Anne Arundel County Code.
2. The developer is responsible for the acquisition of all easements, right, and/or rights-of-way that may be required for the sediment and erosion control practices, storm water management practices and the discharge of storm water onto or across adjacent or downstream properties included in the plan.
3. For initial soil disturbance or re-disturbance, permanent and/or temporary stabilization per the AASCD Vegetative Establishment shall be completed within three calendar days for the surface of all controls, dikes, swales, ditches, perimeter slopes and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven days for all other disturbed or graded areas on the project site.
4. The grading and sediment control approval on this plan extends only to those areas within the limits of disturbance.
5. The approval of this plan for sediment and erosion control does not relieve the developer/consultant from complying with Federal, State or County requirements pertaining to environmental issues.
6. The developer must request that the sediment and erosion control inspector approve work completed in accordance with the approved erosion and sediment control plan, the grading or building permit, and the ordinance.
7. All material shall be taken to a site with an approved sediment and erosion control plan.
8. First phase inspection and approval of the sediment and erosion control inspector shall be required upon completion of the installation of erosion and sediment controls prior to proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until the initial approval by the sediment and erosion control inspector is given. Inspection and Permits may also require that an inspection and certification of the installation of sediment control also be performed by a design professional prior to construction commencing.
9. Approval from the inspector must be requested on final stabilization of all sites prior to removal of sediment and erosion controls.
10. Existing topography must be field verified by responsible personnel to the satisfaction of the sediment control inspector prior to commencing work.

Signature: _____

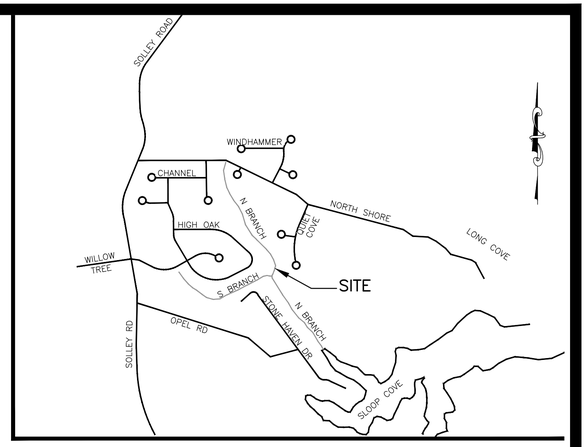
Name: Beth O'Connell
Title: Chief Engineer
Affiliation: Anne Arundel County Department of Public Works
Address: 2662 Riva Road, Annapolis, MD 21401
Telephone Number: 410-222-7540
Email Address: BWRIGHT@AACOUNTY.ORG

# ANNE ARUNDEL COUNTY MARYLAND
## DEPARTMENT OF PUBLIC WORKS
## SLOOP COVE RETROFIT SITE 1- RESTORATION OF THE NORTH BRANCH AND SOUTH BRANCH TRIBUTARIES
## AA CO. CONTRACT #Q514103/AA CO. PROJECT #Q514100




PATAPSCO TIDAL WATERSHED
02-13-09-03

## LOCATION MAP
SCALE: 1"=250'
GRAPHIC SCALE
0 250' 500'
1 inch=250 FT




## VICINITY MAP
SCALE: 1"=1000'
ADC MAP 505 GRID K6/K7

### CONSULTANT'S CERTIFICATION

"The Developer's plan to control silt and erosion is adequate to contain the silt and erosion on the property covered by the plan. I certify that this plan of erosion and sediment control represents a practical and workable plan based on my personal knowledge of this site, and was prepared in accordance with the requirements of the Anne Arundel Soil Conservation District Plan Submittal Guidelines and the current Maryland Standards and Specifications for Sediment and erosion Control. I have reviewed this erosion and sediment control plan with the owner/developer.

Printed Name Joanne M. Cheok, P.E., Senior Associate
MD P.E. License #18095 Expiration: 12/21/2024
Firm Name Dewberry Consultants, LLC
Street Address 2101 Gaither Road
Suite 340
Rockville MD 20850
Phone: 301.337.2856
Email: jcheok@Dewberry.com

### UTILITY NOTE

INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION BY DIGGING TEST PITS BY HAND AT ALL UTILITY CROSSINGS WELL IN ADVANCE OF THE START OF EXCAVATION.
IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER AND THE APPROPRIATE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION.

### "MISS UTILITY" NOTE

CALL "MISS UTILITY" AT 8-1-1 OR 1-800-257-7777, 48 HOURS PRIOR TO THE START OF GROUND DISTURBING ACTIVITIES OR LOG ON TO: WWW.CALL811.COM OR WWW.MISSUTILITY.NET. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.

## AS-BUILT SHEET INDEX



STATE OF MARYLAND ALAN BARNEY No. 29891 PROFESSIONAL ENGINEER 6/18/2024

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No.: 29891 Expiration Date: 01/14/2026

JUNE 2024 AS-BUILT AB-1

OWNER/DEVELOPER/APPLICANT
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717-627-4440
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landstudies.com
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315 North Street | Lititz, PA 17543

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 1 OF 13
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN
COVER SHEET
SLOOP COVE RETROFIT SITE 1
3rd District Tax Map 16 Grid 05 Anne Arundel County

**CONSTRUCTION NOTES**

1. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) WATER MANAGEMENT ADMINISTRATION (WMA) AT (410) 537-3510 SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF WMA.

2. MAINTAIN ALL SEDIMENT CONTROL PRACTICES ACCORDING TO MARYLAND 2011 STANDARDS UNTIL THE ENTIRE SITE IS STABILIZED.

3. STAGING AND STOCKPILING SHALL BE LOCATED WITHIN THE LOD AS DETERMINED BY THE PROJECT DESIGNER AND CONTRACTOR AND WITH THE MDE INSPECTOR'S APPROVAL OR ON AN AS NEEDED BASIS DURING CONSTRUCTION. THIS MOSTLY APPLIES TO FURNISHED ROCK AND/OR SALVAGED WOODY MATERIALS BEING TEMPORARILY STORED IN CLOSE PROXIMITY TO LOCATIONS WHERE THEY WILL BE USED FOR PROPOSED STRUCTURES. EXCESS CUT WILL BE HAULED TO THE TEMPORARY STOCKPILE LOCATED NEAR THE NORTH BRANCH (NB) / SOUTH BRANCH (SB) CONFLUENCE UNTIL IT IS USED FOR FILL ALONG THE NORTH BRANCH.

4. ACTIVE FLOW SHALL BE DIVERTED AROUND THE WORK AREA USING A SERIES OF TEMPORARY PUMP-AROUND BYPASS (TPB). ALTHOUGH THE EXISTING CHANNEL IS TYPICALLY DRY DURING THE SUMMER MONTHS, THE TPB SHOULD HAVE PUMP CAPACITY TO EFFECTIVELY MANAGE A DISCHARGE OF AT LEAST 2 CFS. IF NECESSARY, SUMPS SHALL BE CREATED TO PROVIDE ADEQUATE DEPTH FOR PUMP WITHDRAWAL. UNDER LOW FLOW CONDITIONS, FLOW MAY BE DISCHARGED THROUGH A FILTER BAG AT AN UNDISTURBED AREA OR PREVIOUSLY COMPLETED (AND STABILIZED) AREA WITHIN THE LOD. IF FLOW EXCEEDS CAPACITY OF A FILTER BAG, FLOW MAY BE DISCHARGED INTO THE EXISTING CHANNEL DOWNSTREAM OF THE PROJECT REACH UTILIZING A FOUNTAIN OR OTHER ENERGY DISSIPATION DEVICE AS AGREED TO BY THE PROJECT DESIGNER AND CONTRACTOR AND WITH THE MDE INSPECTOR'S APPROVAL.

5. TEMPORARY ACCESS BRIDGE (TB) CROSSINGS SHALL BE INSTALLED ACROSS THE EXISTING CHANNEL AS NECESSARY TO PROVIDE ACCESS TO BOTH SIDES OF THE CHANNEL. THE LOCATIONS OF TB's MAY VARY FROM PLANS IF NECESSARY.

6. TEMPORARY BYPASS CHANNELS SHALL BE CONSTRUCTED AS NECESSARY TO MINIMIZE TEMPORARY ACCESS BRIDGE CROSSINGS AND IMPROVE THE EFFICIENCY OF CONSTRUCTION WHILE MAINTAINING CONVEYANCE OF ACTIVE FLOW.

7. CLEARING AND GRUBBING OF THE UNDERSTORY SHALL BE LIMITED ONLY TO THOSE AREAS WITHIN THE PROPOSED LIMIT OF DISTURBANCE.

8. EVERY ATTEMPT SHALL BE MADE TO PROTECT EXISTING TREES WITHIN THE PROPOSED LIMIT OF DISTURBANCE ESPECIALLY THOSE WITH DBH'S GREATER THAN 12 INCHES. TREES THAT MUST BE REMOVED AS WELL AS OTHER PREVIOUSLY FALLEN TREES SHALL BE SALVAGED, PROCESSED, AND STOCKPILED ON-SITE TO BE USED FOR PROPOSED LOG SILLS AND WOODY DEBRIS / BURIED LOG STRUCTURES. NO WOODY MATERIAL WILL BE EXPORTED FROM THE SITE.

9. THE PROPOSED VALLEY BOTTOM AND SIDE SLOPES SHALL BE FILLED OR EXCAVATED TO SUBGRADE ELEVATIONS 4-6" BELOW PROPOSED FINAL GRADE.

10. 4.5" OF FURNISHED COMPOST COMPOSED OF A MIXTURE OF UNPROCESSED WOOD CHIPS AND SOIL (SEE SPECIFICATIONS IN PROJECT MANUAL) SHALL BE INSTALLED OVER THE PROPOSED VALLEY BOTTOM AND SIDE SLOPES TO MEET PROPOSED FINAL GRADE.

11. 31 ROCK SILL GRADE CONTROL STRUCTURES SHALL BE INSTALLED ACCORDING TO DETAILS AT LOCATIONS INDICATED ON PLANS.

12. 26 LOG SILL GRADE CONTROL STRUCTURES SHALL BE INSTALLED ACCORDING TO DETAILS AT LOCATIONS INDICATED ON PLANS

13. A MINIMUM OF 80 WOODY DEBRIS / BURIED LOG STRUCTURES SHALL BE INSTALLED ACCORDING TO DETAILS AT LOCATIONS INDICATED ON PLANS OR AS IDENTIFIED BY PROJECT DESIGNER OR CONSTRUCTION MANAGER.

14. PROPOSED STRUCTURES (ROCK SILLS, LOG SILLS, AND WOODY DEBRIS / BURIED LOG STRUCTURES) SHALL BE INSTALLED UNDER THE DIRECT SUPERVISION OF AND/OR SUBJECT TO THE APPROVAL OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER. IF STRUCTURE INSTALLATION AND PERFORMANCE ARE NOT IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS, THE STRUCTURE SHALL BE RE-SET OR REINSTALLED IN ACCORDANCE WITH THE DESIGN DETAILS AND SPECIFICATIONS.

15. THE LOCATION, ORIENTATION, COMPOSITION, AND AMOUNT OF ALL PROPOSED STRUCTURES MAY BE MODIFIED FROM THE PLANS UNDER DIRECTION OF THE PROJECT DESIGNER OR CONSTRUCTION MANAGER AS NECESSARY DURING CONSTRUCTION.

16. IT HAS BEEN CALCULATED THAT THE TOTAL CUT AND FILL WILL BE BALANCED WHEN TAKING INTO ACCOUNT THE VOLUME ASSOCIATED WITH FURNISHED COMPOST AND PROPOSED STRUCTURES. CONSTRUCTION HAS BEEN SEQUENCED IN A MANNER IN WHICH EXCESS CUT MATERIAL WILL BE GENERATED AND TRANSPORTED TO AREAS REQUIRING FILL AS EFFICIENTLY AS POSSIBLE. FOR EXAMPLE, THE MAJORITY OF CUT WILL OCCUR NEAR THE NB/SB CONFLUENCE, WHILE A SIGNIFICANT AMOUNT OF FILL IS REQUIRED ALONG THE MAJORITY OF NORTH BRANCH. AS SUCH, MATERIAL GENERATED NEAR THE CONFLUENCE MUST BE HAULED OR PUSHED IN AN UPSTREAM DIRECTION TO BRING THE VALLEY BOTTOM OF NORTH BRANCH UP TO PROPOSED SUBGRADE ELEVATIONS. IT IS ANTICIPATED THAT A RELATIVE EQUAL BALANCE OF CUT AND FILL WILL OCCUR ALONG THE MAJORITY OF THE SOUTH BRANCH. AS A RESULT, THE SOUTH BRANCH SHALL BE CONSTRUCTED IN AN UPSTREAM TO DOWNSTREAM DIRECTION AND THE NORTH BRANCH SHALL BE CONSTRUCTED IN A DOWNSTREAM TO UPSTREAM DIRECTION.

17. IF NECESSARY, SEDIMENT-LADEN WATER WITHIN UNFILLED PORTIONS OF THE EXISTING CHANNEL SHALL BE PUMPED THROUGH A FILTER BAG, AS SPECIFIED IN DETAILS, AND DISCHARGED WITHIN AN STABLE, UNDISTURBED AREA OR A PREVIOUSLY COMPLETED / STABILIZED AREA WITHIN THE LOD.

18. AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL ESTABLISH STABLE TEMPORARY CONNECTIONS FROM THE WORK AREA TO THE EXISTING CHANNEL (ALONG THE SOUTH BRANCH GRADING ZONE) OR THE COMPLETED PROPOSED VALLEY BOTTOM (ALONG THE NORTH BRANCH GRADING ZONE).

19. TYPE D SOIL STABILIZATION MATTING SHALL BE INSTALLED OVER THE PROPOSED VALLEY BOTTOM SURFACE UPON FINAL GRADE. THE ENDS OF THE MATTING SHALL BE KEYED INTO THE EXISTING GROUND BY 6" (MINIMUM). THE PROPOSED VALLEY BOTTOM SHALL BE SEEDED WITH THE PROPOSED FLOODPLAIN SEED MIX PRIOR TO INSTALLING MATTING.

20. TYPE A SOIL STABILIZATION MATTING SHALL BE INSTALLED ON GRADED SIDE SLOPES. THE PROPOSED SIDE SLOPES SHALL BE SEEDED WITH THE PROPOSED STABILIZATION SEED MIX PRIOR TO INSTALLING MATTING.

21. ALL REMAINING DISTURBED AREAS SHALL BE STABILIZED WITH THE PROPOSED STABILIZATION SEED MIX AND MULCH.

**2019 STREAM RESTORATION NOTES**

1. TEMPORARY STABILIZATION NOTES:

1.1. TEMPORARY STABILIZATION FOR ANY DISTURBED AREAS ON THE FLOODPLAIN AND TERRACES ADJACENT TO THE RESTORED STREAM CHANNEL SHALL BE CONSIDERED ACHIEVED USING ONE OF THE FOLLOWING MEASURES.

1.1.1. THE DISTURBED AREA IS UNIFORMLY COVERED WITH 2 TO 4 INCHES OF WOOD CHIPS.

1.1.2. THE DISTURBED AREA HAS BEEN SEEDED WITH ANNUAL RYE GRASS FOLLOWING THE TEMPORARY SEEDING APPLICATION PERIODS FOUND UNDER THE ANNE ARUNDEL SOIL CONSERVATION DISTRICT'S (AASCD) VEGETATIVE ESTABLISHMENT SPECIFICATION OR 2011 STANDARDS AND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. NO SOIL TEST, LIME OR FERTILIZER WILL BE REQUIRED.

1. PERMANENT STABILIZATION NOTES:

1.1. PERMANENT STABILIZATION FOR CONSTRUCTED STREAM BANKS GREATER THAN 6 INCHES SHALL BE CONSIDERED ACHIEVED WHEN ALL STREAM BANKS ARE SEEDED (NATIVE SEED MIX) AND LINED WITH A FULLY BIODEGRADABLE STABILIZATION MATTING WITH APPROPRIATE STRENGTH PROPERTIES DEPENDENT ON LOCAL SHEAR STRESS CONDITIONS.

1.2. PERMANENT STABILIZATION FOR DISTURBED FLOODPLAIN AND TERRACES ADJACENT TO THE RESTORED STREAM CHANNEL SHALL BE CONSIDERED ACHIEVED USING ONE OF THE FOLLOWING MEASURES:

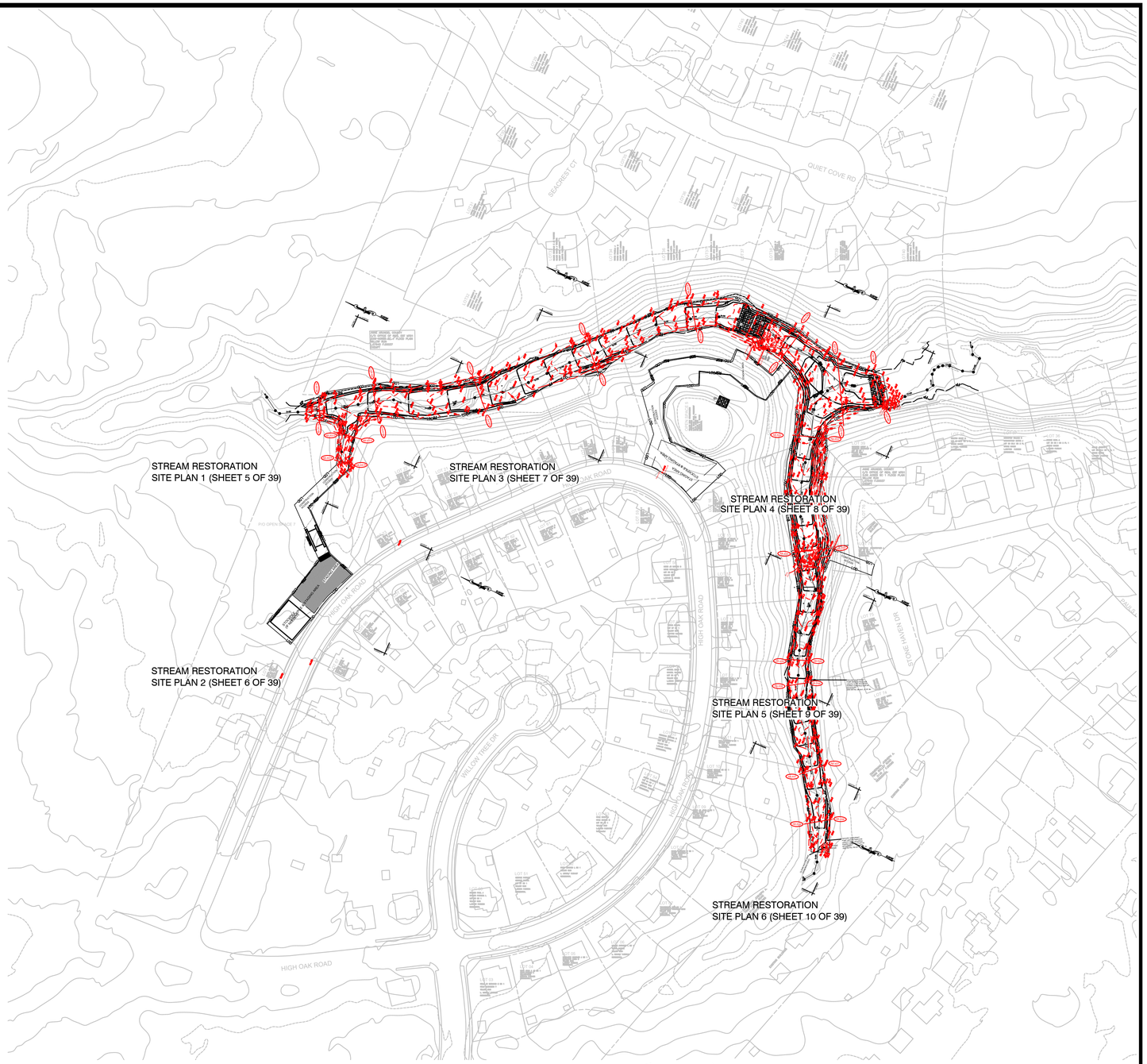
1.2.1. THE DISTURBED AREA IS COVERED WITH 2 TO 4 INCHES OF COMPOST (APPLIED OVER ANY WOOD CHIPS USED FOR TEMPORARY STABILIZATION) AND THE NATIVE PLANTING PLAN (INCLUDING PERMANENT SEEDING) HAS BEEN IMPLEMENTED.

1.2.2. THE DISTURBED AREA IS COVERED WITH 2 TO 4 INCHES OF WOOD CHIPS TRACKED INTO SOIL AND THE NATIVE PLANTING PLAN (INCLUDING PERMANENT SEEDING) HAS BEEN IMPLEMENTED.

1.2.3. THE DISTURBED AREA IS COVERED WITH 2 TO 4 INCHES OF TOPSOIL (FURNISHED OR SALVAGED) AND FULLY BIODEGRADABLE STABILIZATION MATTING INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND A NATIVE PLANTING PLAN (INCLUDING PERMANENT SEEDING) HAS BEEN IMPLEMENTED, REGARDLESS OF SOIL TREATMENT

1.2.4. THE DISTURBED AREAS SHALL RECEIVE HYDROSEEDING OR FLEXIBLE GROTWTH MEDIUM (FGM) AFTER THE ESTABLISHMENT OF FINAL GRADES AND MICROTOPOGRAPHY (IF APPLICABLE) IN ACCORDANCE WITH THE PROJECT CONSTRUCTION DETAILS OR LANDSCAPING PLANS.

1.2.5. THE DISTURBED AREA HAS ADEQUATE VEGETATIVE ESTABLISHMENT WITH 95% GROUNDCOVER




AS-BUILT AB-2


OWNER/DEVELOPER/APPLICANT

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE
CHIEF ENGINEER

APPROVED DATE
PROJECT MANAGER

APPROVED DATE
ASSISTANT CHIEF ENGINEER

APPROVED DATE
CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheak
SHEET NO: 2 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

OVERVIEW

# SLOOP COVE RETROFIT SITE 1

3rd District Tax Map 16 Grid 05 Anne Arundel County

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
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- EXISTING TREES TO BE REMOVED ≥ 12" DIA
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- EXISTING 100-YR FP
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP
- SLOPES GREATER THAN 25%
- FOREST CONSERVATION EASEMENT

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS# / NBT-XS# / NB-XS#)
- LOG SILL (LS-19 / 22)
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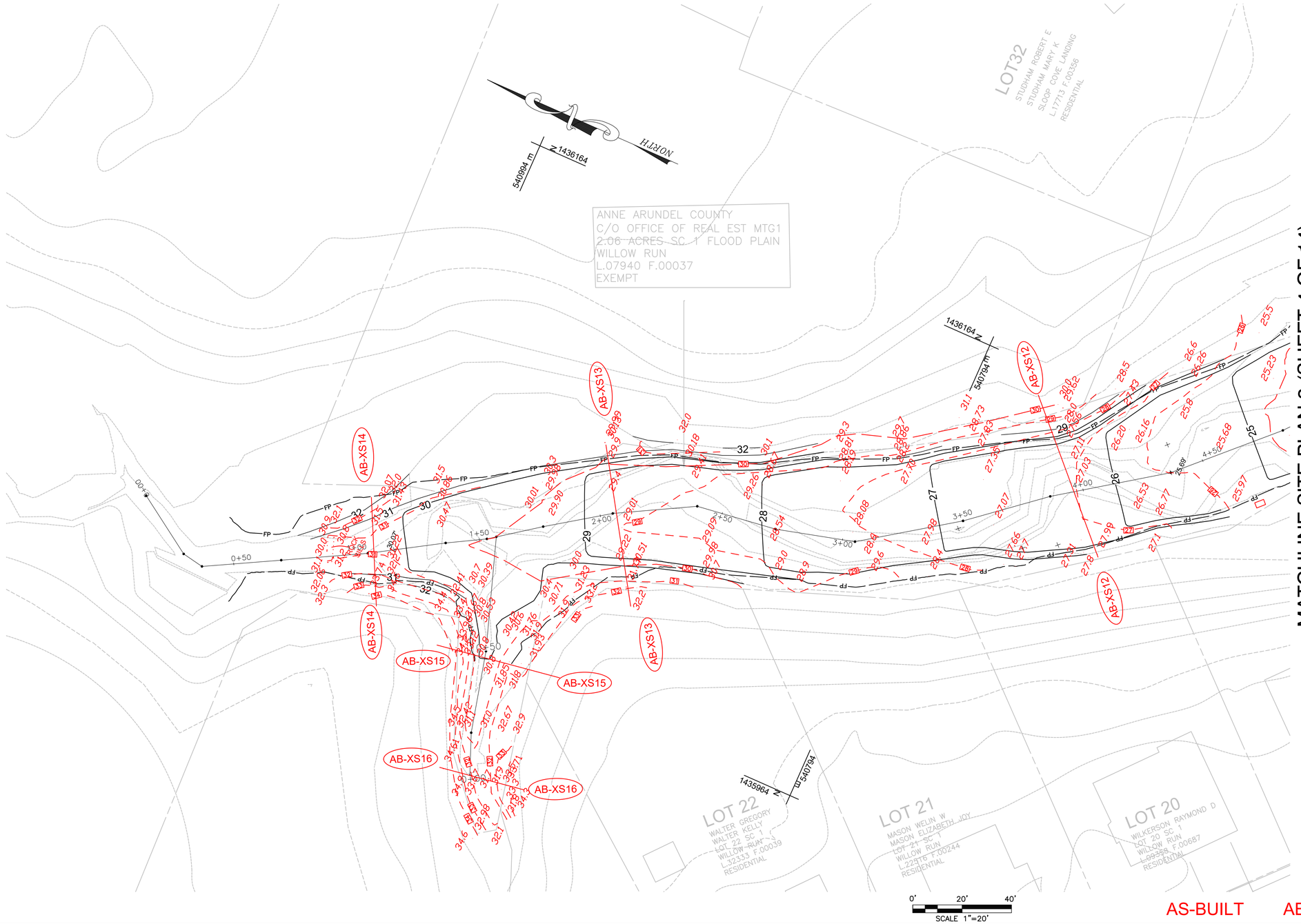
- PROPOSED100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)




MATCHLINE SITE PLAN 3 (SHEET 4 OF 14)

AS-BUILT AB-3


OWNER/DEVELOPER/APPLICANT

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 3 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# RESTORATION SITE PLAN 1
# SLOOP COVE RETROFIT SITE 1

14

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
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# MATCHLINE SITE PLAN 1 (SHEET 3 OF 14)

# MATCHLINE SITE PLAN 5 (SHEET 6 OF 14)

# MATCHLINE SITE PLAN 4 (SHEET 5 OF 14)

HIGH OAK ROAD

LOT 61 — MATTHEW S

LOT 60 — FUENTES CONCEPCION B; SOTO JOVANNY A MENDOZA; LOT 60 SC 1; WILLOW RUN; L.36918 F.00142; RESIDENTIAL

LOT 19 — KERSHAW STEVEN J; KERSHAW LORRAINE P; LOT 19 SC 1; WILLOW RUN; L.15213 F.00756; RESIDENTIAL

LOT 18 — BERGAMY DONALD; BERGAMY ANGELA; LOT 18 SC 1; WILLOW RUN; L.18150 F.00654; RESIDENTIAL

LOT 17 — HANKINS BILLY W; HANKINS SHARON L; LOT 17 SC 1; WILLOW RUN; L.09599 F.00333; RESIDENTIAL

LOT 59 — BROWN HOWARD V; BROWN SONJA L; LOT 22 SC 1; WILLOW RUN; L.10427 F.00688; RESIDENTIAL

LOT 16 — FARMER CHRISTOPHER B; RILEY KATHRYN E; LOT 16-SC 1; WILLOW RUN; L.35837 F.00490; RESIDENTIAL

OPEN SPACE 5 — WILLOW RUN HOMEOWNERS ASSOCIATION; C/O DIANE HALE, PRESIDENT; 10.24 ACRES SC 1; WILLOW RUN; L.08518 F. 00186; RESIDENTIAL

LOT33 — OLIVER REGINALD E JR TRUSTE; OLIVER WANDA J TRUSTEE; SLOOP COVE LANDING; L.30775 F.00391; RESIDENTIAL

LOT34 — BAIRD PAMELA J; BAIRD RICHARD W; SLOOP COVE LANDING; L.17557 F.00087; RESIDENTIAL

LOT36 — HASKINS JR CLEVELAND; HASKINS LAURA; SLOOP COVE LANDING; L.17651 F.00585; RESIDENTIAL

LOT37 — JENKINS BARBARA A TRUSTEE; SLOOP COVE LANDING; L.35442 F.00001; RESIDENTIAL

AB-XS11 · AB-XS10 · TRV#10002 · STAGING AREA · 540502 m · 1436906 m · NORTH

SCALE 1"=20'

AS-BUILT AB-4


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SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 47 OF 59
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# RESTORATION SITE PLAN 3
# SLOOP COVE RETROFIT SITE 1

14
3rd District
Tax Map 16 Grid 05
Anne Arundel County

# MATCHLINE SITE PLAN 3 (SHEET 4 OF 14)

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- PROPOSED100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)

MATCHLINE SITE PLAN 5 (SHEET 6 OF 14)

LOT 16
OPEN SPACE 5
STAGING AREA
LOT 39
LOT 76
LOT37
LOT38
SHENTON DOUGLAS W
SHENTON THERESA L
SLOOP COVE LANDING
L.29166 F.00413
RESIDENTIAL
LOT39
MOODY VINCENT KARL
MOODY SHEILA DENISE
SLOOP COVE LANDING
L.35678 F.00087
RESIDENTIAL
LOT40
FLANIGAN LUCILLE A
BATES PHILISHA C
SLOOP COVE LANDING
L.17728 F.00630
RESIDENTIAL
WINDSOR LEROY A
WINDSOR MARGARET E
LOT 39 SC 1
WILLOW RUN
L.04623 F.00005
RESIDENTIAL
ANNE ARUNDEL COUNTY
C/O OFFICE OF REAL EST MTG
2.06 ACRES SC 1 FLOOD PLAIN
WILLOW RUN
L.07940 F.00037
EXEMPT
EXISTING BUILDING
AB-XS1
AB-XS2
AB-XS3
AB-XS9
TOP MH=21.27
INV 48" RCP=12.62
TW=19.39
CONCRETE WALL
TW=15.60
BW=14.98
CONCRETE WALL
TW=15.33
BW=14.73
ROOM 18
SWLS
ROCK SILLS
FILTER LOG
540242 m
1436517
1436378
NORTH
0' 20' 40'
SCALE 1"=20'

AS-BUILT AB-5


OWNER/DEVELOPER/APPLICANT
Land Studies
717-627-4440
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landstudies.com
land@landstudies.com
315 North Street | Lititz, PA 17543

CIVIL ENGINEER
A.A. County ID #721
Dewberry
2101 Gaither Road
Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


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License No.
Expiration Date:

REVISONS

| NO | Description | BY | DATE |
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| 1 | Revise 100-yr floodplain | LSI/ DEW | 1/2021 |
| 2 | ADDRESSED AA COUNTY COMMENTS | CG/ DEW | 9/07/22 |
| 3 | ADDRESSED AA COUNTY COMMENTS | LSI/ DEW | 11/01/22 |
| 4 | ADDRESSED AA COUNTY COMMENTS | LSI/ DEW | 01/10/23 |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 5 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN
RESTORATION SITE PLAN 4
SLOOP COVE RETROFIT SITE 1
14
3rd District
Tax Map 16 Grid 05
Anne Arundel County

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- EXISTING 100-YR FP
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP
- SLOPES GREATER THAN 25%
- FOREST CONSERVATION EASEMENT

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19, 22)
- ROCK SILL (RS-16, 22)
- PROPOSED100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)

# MATCHLINE SITE PLAN 4 (SHEET 5 OF 14)

REMOVE EX.PIPE WITHIN LIMITS OF GRADING TO EDGE OF PROPOSED SIDE SLOPE. CUT REMAINING PIPE AT EDGE OF SLOPE AND STABILIZE WITH CLASS I RIP-RAP APRON.

AB-XS4 AB-XS5 AB-XS6

1436077 N 540160 m

1435871 N 539960 m

NORTH

LOT 15 — SANDERS JR WILLIE. J, SANDERS JESSICA. B, LOT 15 SC 1, WILLOW RUN, L.12345 F. 00115, RESIDENTIAL

LOT 58 — MOSS JR MARION G, MOSS ROSANA D, LOT 58 SC 1, WILLOW RUN, L.09145 F. 00468, RESIDENTIAL

LOT 14 — HOEHN JOHN W, HOEHN DONNA M, LOT 14 SC 1, WILLOW RUN, L.14755 F. 00270, RESIDENTIAL

LOT 57 — VERMA SHILPA, LOT 57 SC 1, WILLOW RUN, L.31733 F.00482, RESIDENTIAL

LOT 13 — NGUYEN XUAN, NGUYEN GIAO, LOT 13 SC 1, WILLOW RUN, L.16688 / F.00322, RESIDENTIAL

LOT 56 — HANSEL DAVID F, HANSEL VALERIE, LOT 56 SC 1, WILLOW RUN, L.33961 F.00176, RESIDENTIAL

LOT 12 — REMMERT DAVID L SC 1, REMMERT LOUISE M, WILLOW RUN, L. 09653 / F.00211, RESIDENTIAL

LOT 55

LOT 11 — HALL MICHAEL A SC 1, WILLOW RUN, L. 15293 / F.00462, RESIDENTIAL

LOT 76 — THIBODEAU CHRISTOPHER J, LOT 76 SC 1, WILLOW RUN, L.26916 F.00338, RESIDENTIAL

LOT 75 — WAGLE HARISH, WAGLE SHEETAL, LOT 75 SC 1, WILLOW RUN, L.32823 F.00285, RESIDENTIAL

LOT 74 — HIGH JESSE VIRGIL, HIGH KATIE, LOT 74 SC 1, WILLOW RUN, L.34044 F.00051, RESIDENTIAL

EXISTING BUILDING

HIGH OAK ROAD

STONE HAVEN DR

# MATCHLINE SITE PLAN 6 (SHEET 7 OF 14)

0' 20' 40'
SCALE 1"=20'

AS-BUILT AB-6


OWNER/DEVELOPER/APPLICANT
Land Studies
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fax: 717-627-4660
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315 North Street | Lititz, PA 17543
PA #22324

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Dewberry
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REVISONS

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| 4 | ADDRESSED AA COUNTY COMMENTS | LSI/ DEW | 01/10/23 |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 6 OF 14
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# RESTORATION SITE PLAN 5
# SLOOP COVE RETROFIT SITE 1

3rd District — Tax Map 16 Grid 05 — Anne Arundel County

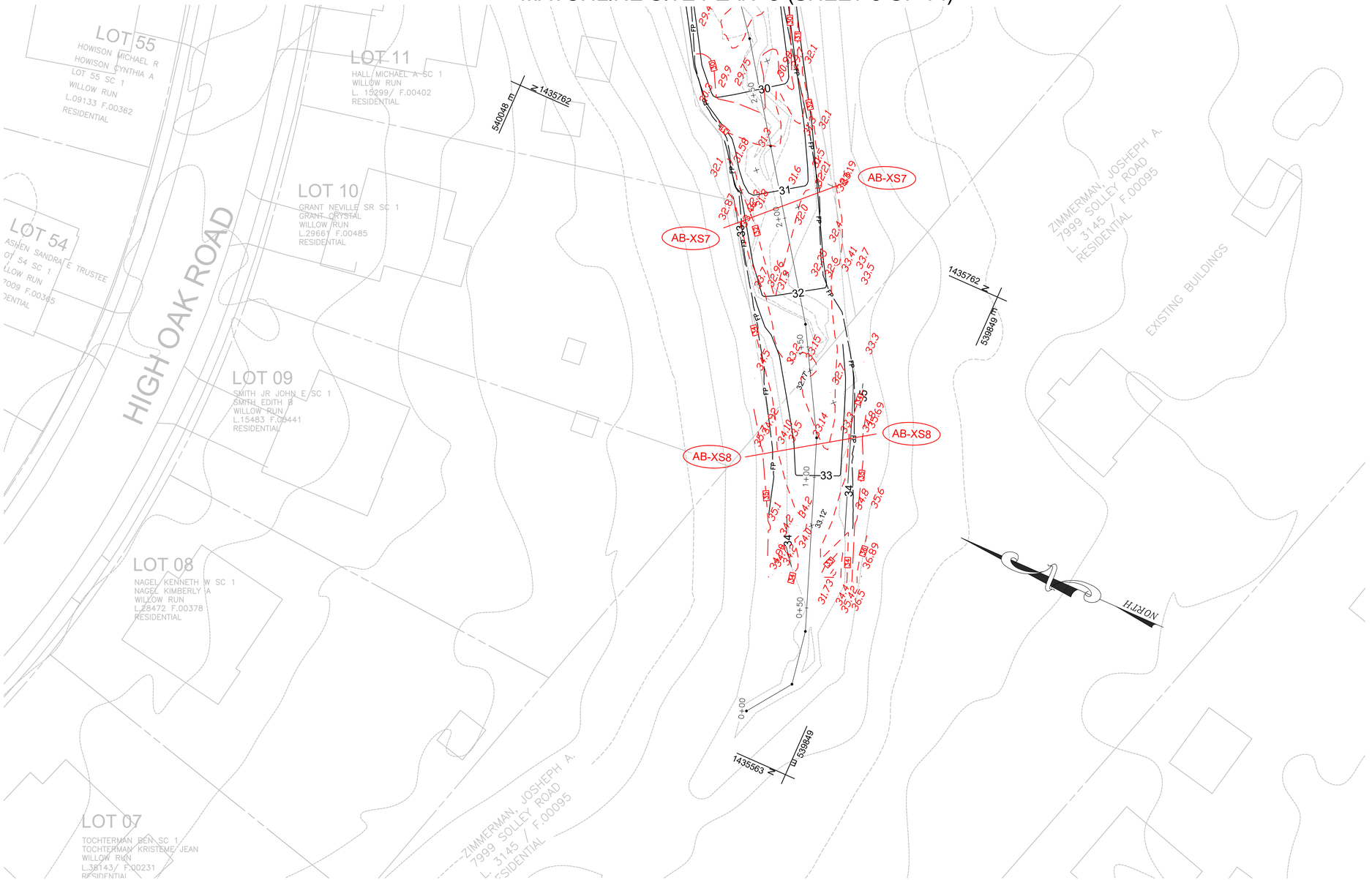
# MATCHLINE SITE PLAN 5 (SHEET 6 OF 14)

## EXISTING LEGEND

- STORM DRAIN (INLET, STORM, SD, MH)
- PROPERTY LINE
- WOOD FENCE
- CHAIN LINK FENCE
- UTILITY POLE
- INDEX CONTOUR (30)
- INTERMEDIATE CONTOUR (32)
- DECIDUOUS TREE ≥ 12"DBH
- EVERGREEN ≥ 12"DBH
- EXISTING TREES TO BE REMOVED ≥ 12" DIA
- SOIL CLASSIFICATION DIVISION LINE (RhB / SMF)
- EXISTING 100-YR FP (FP)
- WATER OF THE US (US)
- WETLAND (WL)
- WETLAND BUFFER (WB)
- STREAM ALIGNMENT (1+50)
- HEAD WALL & RIPRAP
- SLOPES GREATER THAN 25%
- FOREST CONSERVATION EASEMENT

## PROPOSED LEGEND

- CONTOUR (23)
- ROCK SILL (RS)
- LOG SILL (LS)
- SUBSURFACE ARMORING (SA)
- WOODY DEBRIS/BURIED LOG STRUCURE
- LIMITS OF DISTURBANCE (LOD)
- CROSS SECTION (SB-XS#, NBT-XS#, NB-XS#)
- LOG SILL (LS-19 / 22)
- ROCK SILL (RS-16 / 22)
- PROPOSED100-YR FP (FP)
- VALLEY ALIGNMENT (1+50)




0' 20' 40'
SCALE 1"=20'

AS-BUILT AB-7


OWNER/DEVELOPER/APPLICANT
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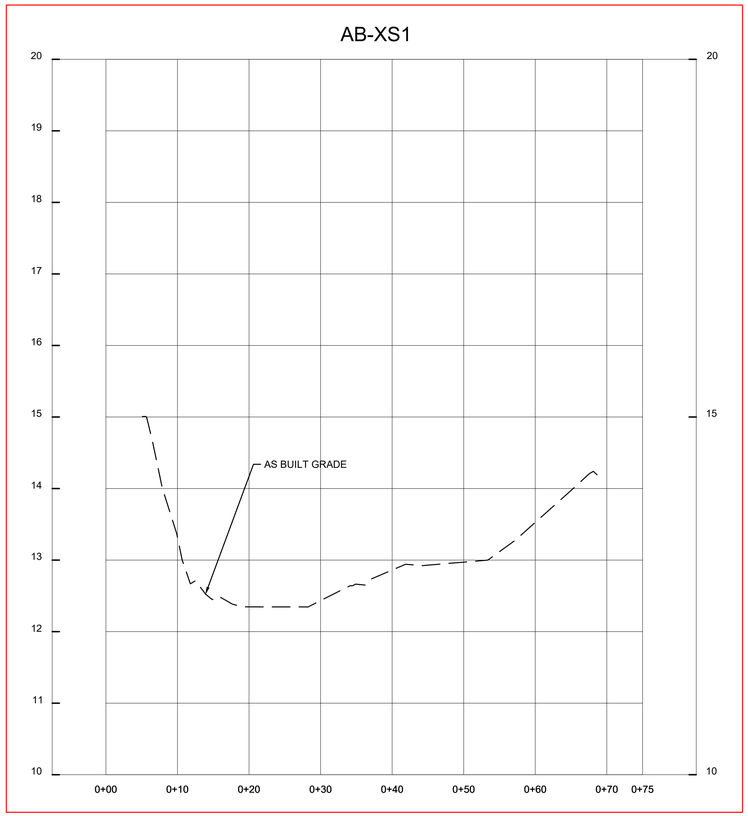
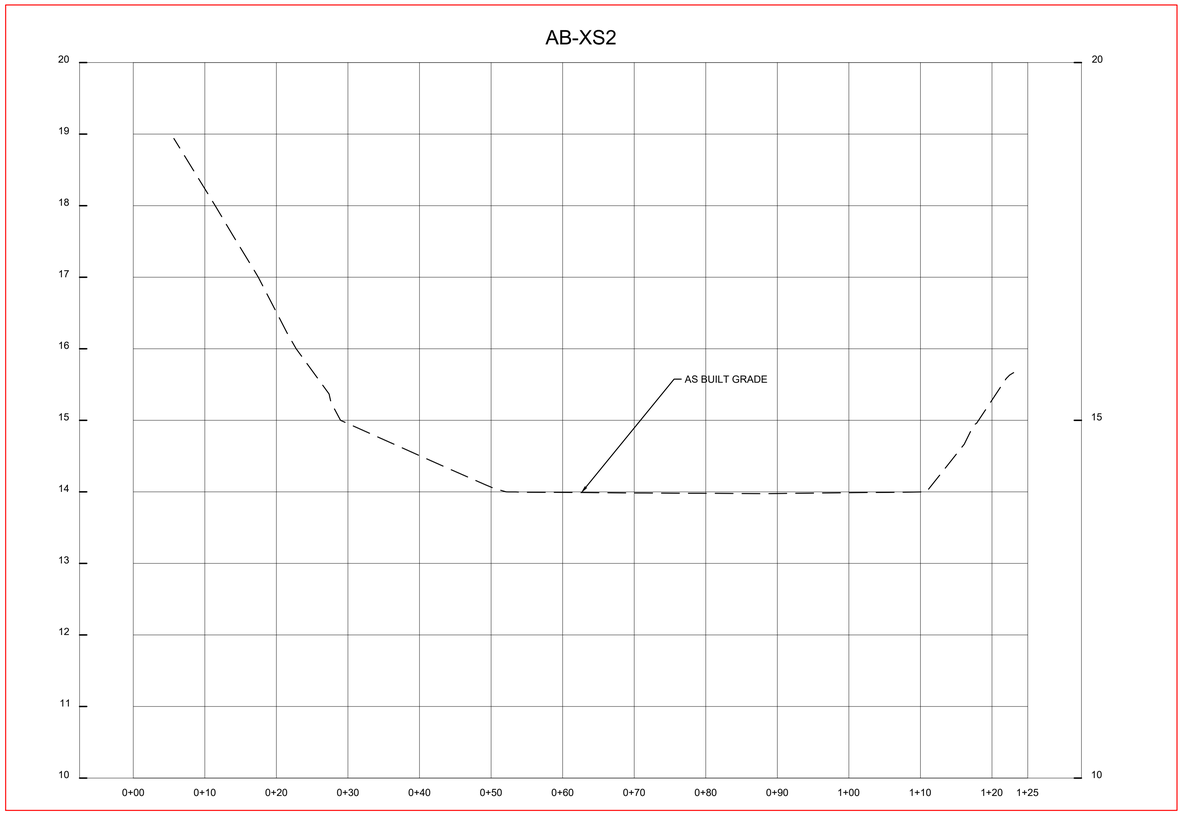
ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 10 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

RESTORATION SITE PLAN 6
SLOOP COVE RETROFIT SITE 1
3rd District — Tax Map 16 Grid 05 — Anne Arundel County




HORIZ: 1"= 10'
VERT: 1"= 1'

AS-BUILT AB-8


OWNER/DEVELOPER/APPLICANT

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: M. Cheok
SHEET NO: 8 OF 39 13
PROJECT NO: 50017963
PROPOSAL NO:

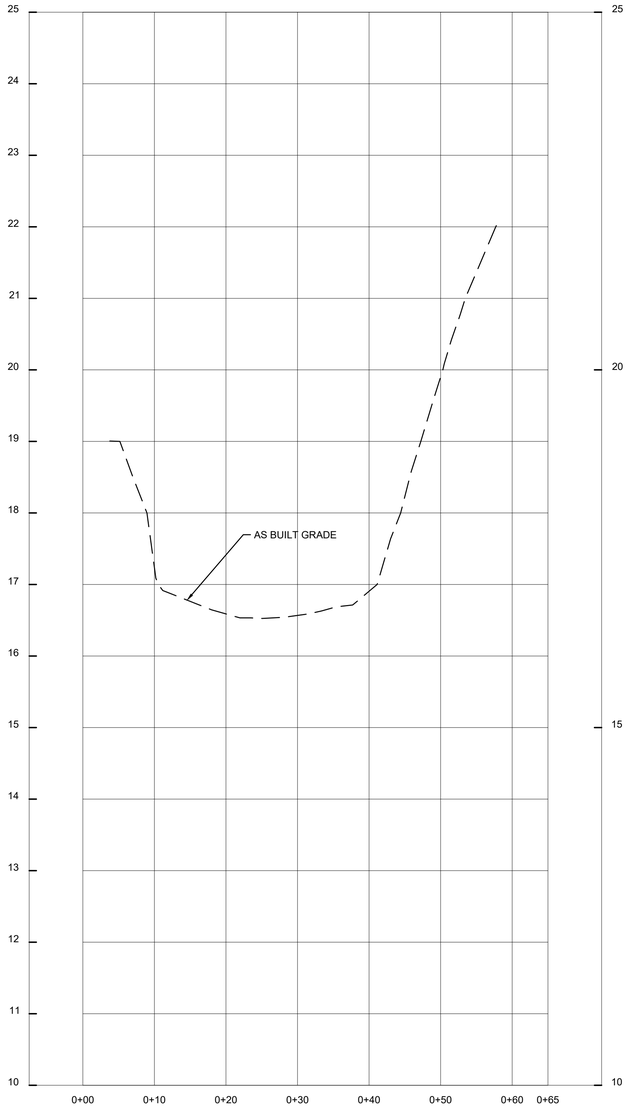
STREAM RESTORATION PLAN

# SLOOP COVE RETROFIT SITE 1

Tax Map 16 Grid 05
3rd District
Anne Arundel County

G02016740

## AB-XS3

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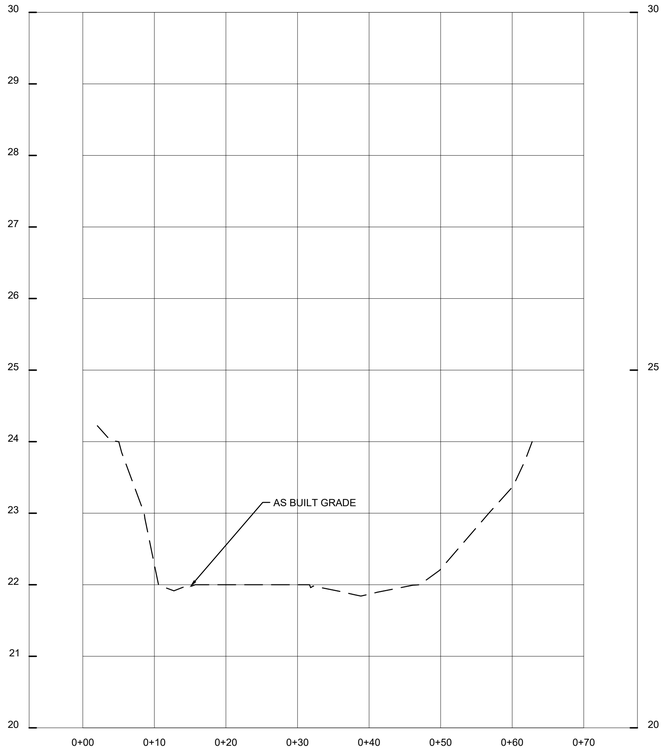


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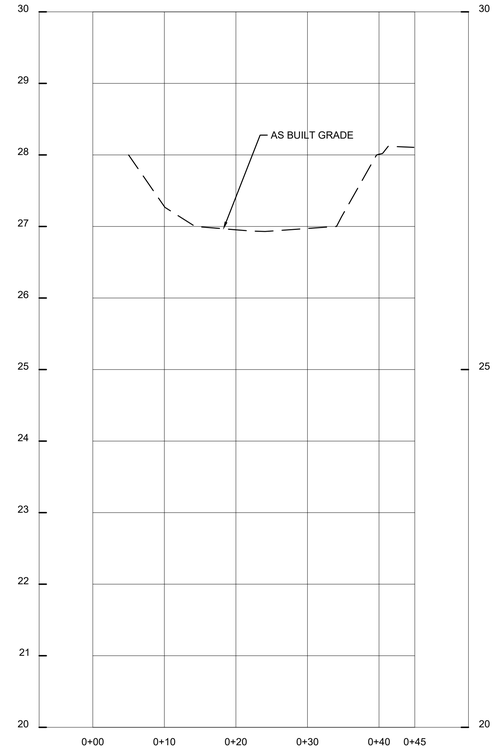


HORIZ: 1"= 10'
VERT: 1"= 1'

AS-BUILT AB-9


OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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land@landstudies.com

315 North Street | Lititz, PA 17543

PA 042224

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

| | | | |
|---|---|---|---|
| APPROVED DATE | APPROVED DATE | SCALE: As Shown | |
| CHIEF ENGINEER | PROJECT MANAGER | DRAWN BY: BJF/R. Anchors | |
| APPROVED DATE | APPROVED DATE | CHECKED BY: Cheok | |
| ASSISTANT CHIEF ENGINEER | CHIEF, RIGHT OF WAY | SHEET NO: 9 OF 39 13 | |
| | | PROJECT NO: 50017963 | |
| | | PROPOSAL NO: | |

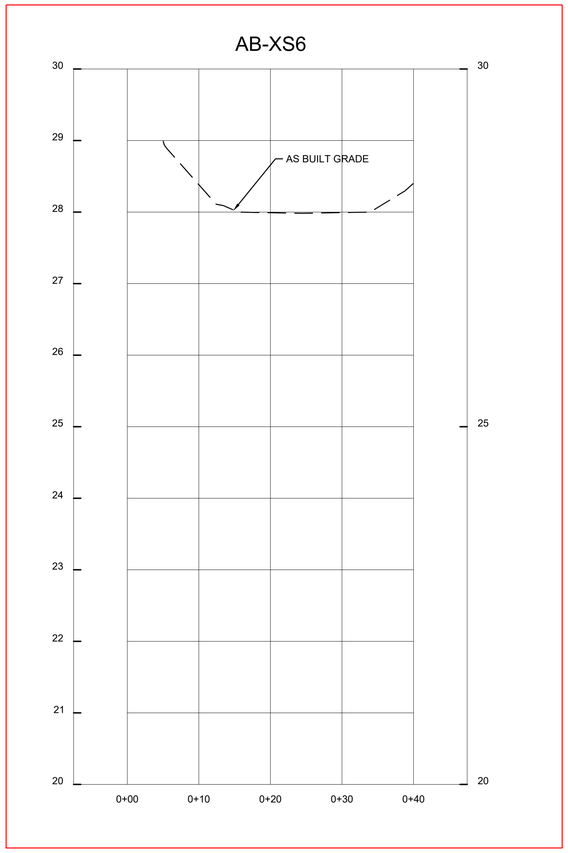
3rd District

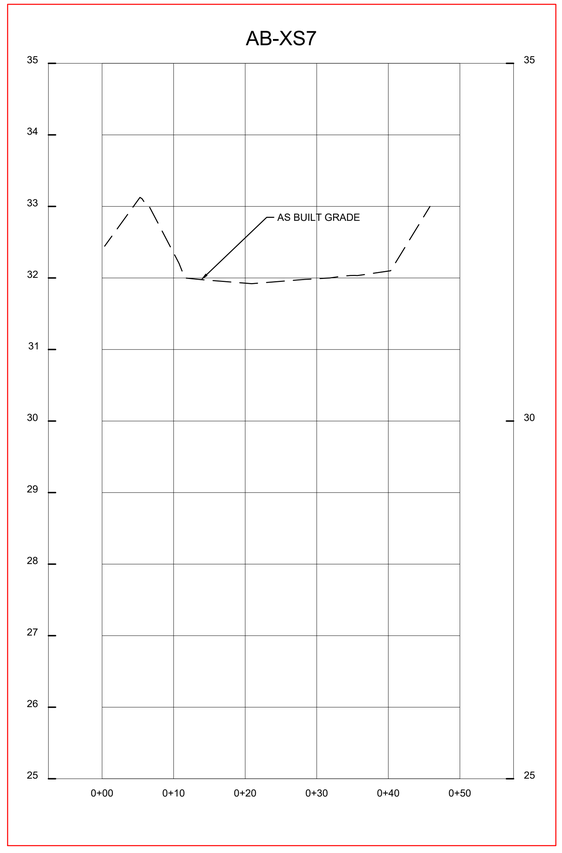
# SLOOP COVE RETROFIT SITE 1

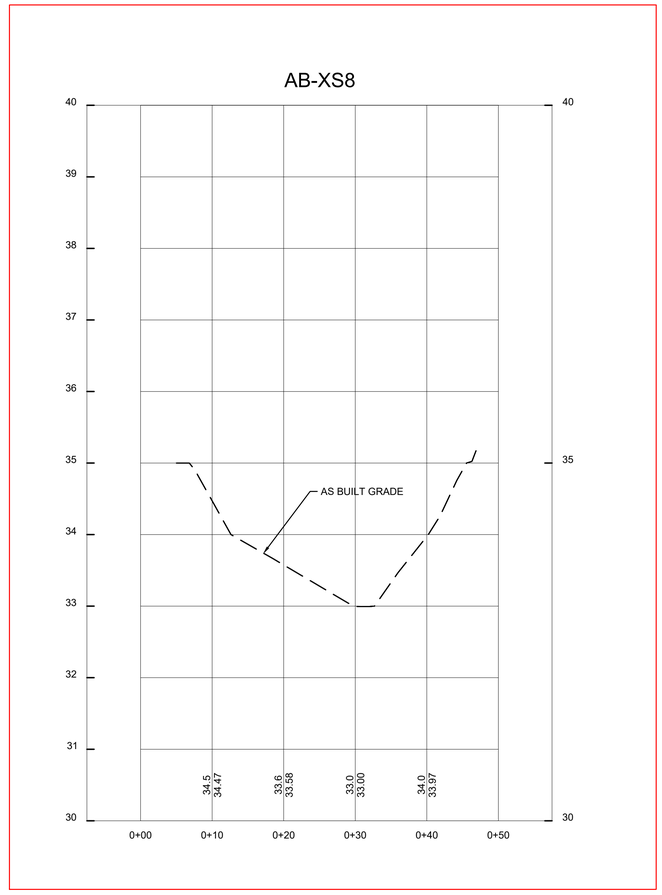
Tax Map 16 Grid 05

Anne Arundel County

G02016740




HORIZ: 1"= 10'
VERT: 1"= 1'

AS-BUILT AB-10

OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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land@landstudies.com

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PA 242224

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

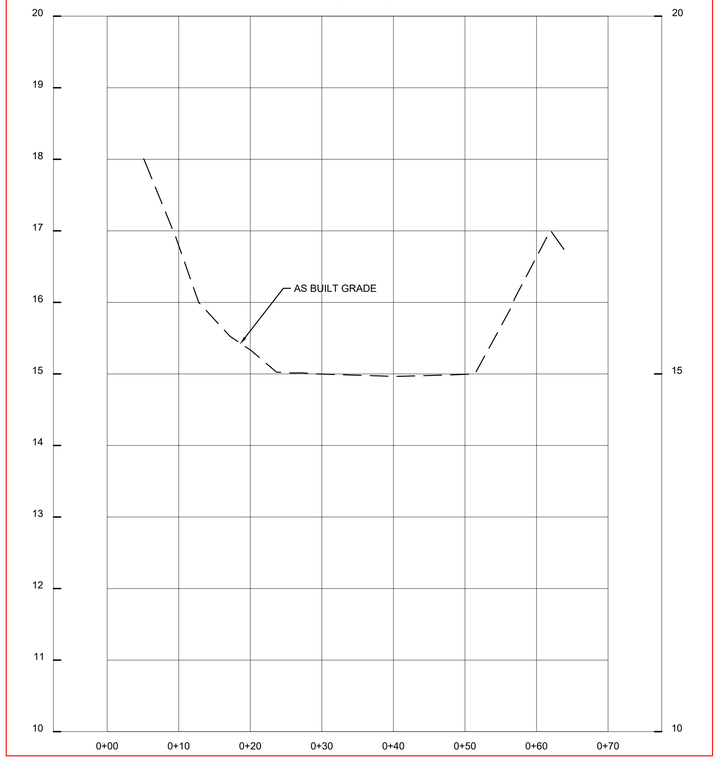
SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheok
SHEET NO: 10 OF 39 13
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

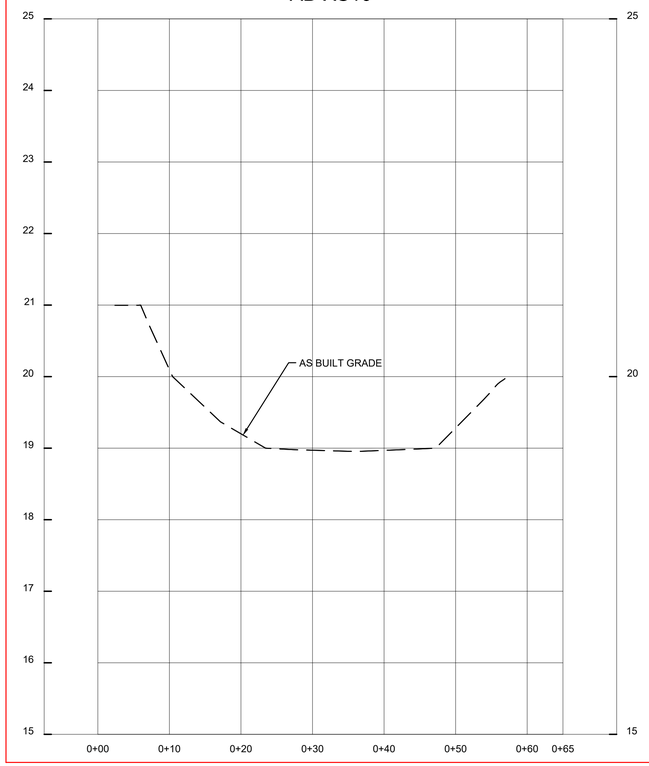
SLOOP COVE RETROFIT SITE 1
Tax Map 16 Grid 05
3rd District
Anne Arundel County

G02016740

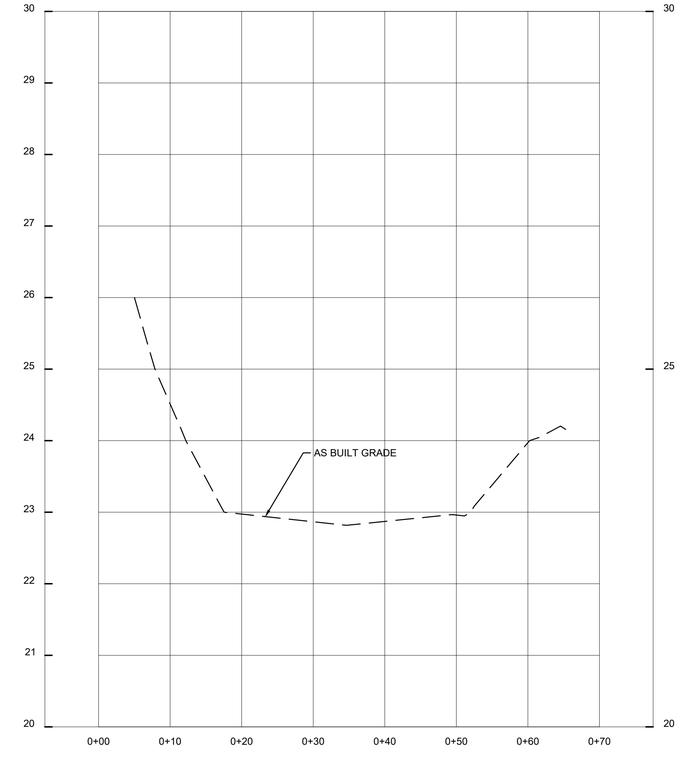
## AB-XS9




## AB-XS10




## AB-XS11




HORIZ: 1"= 10'
VERT: 1"= 1'

AS-BUILT AB-11


OWNER/DEVELOPER/APPLICANT

Land Studies

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PA 042424

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

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APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: J. Cheak
SHEET NO: 11 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

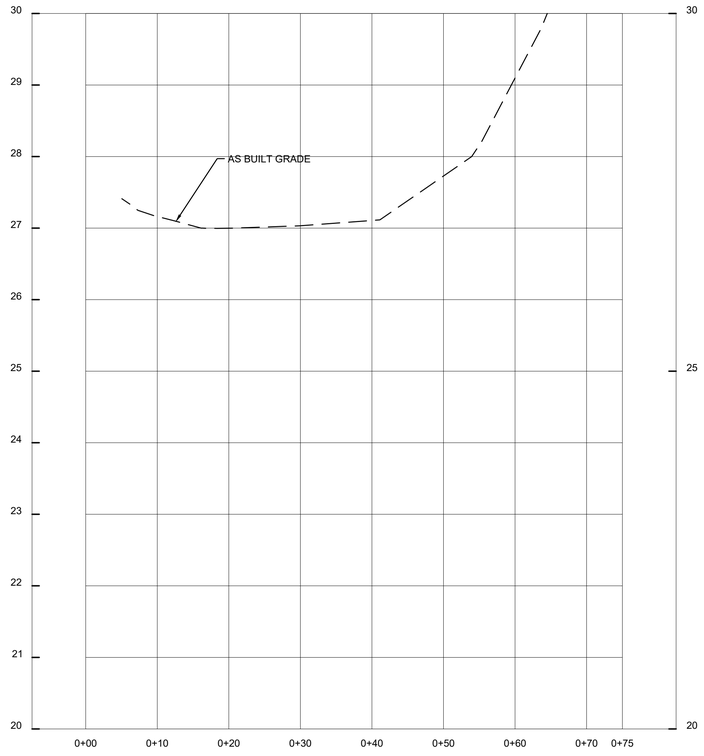
STREAM RESTORATION PLAN

# SLOOP COVE RETROFIT SITE 1

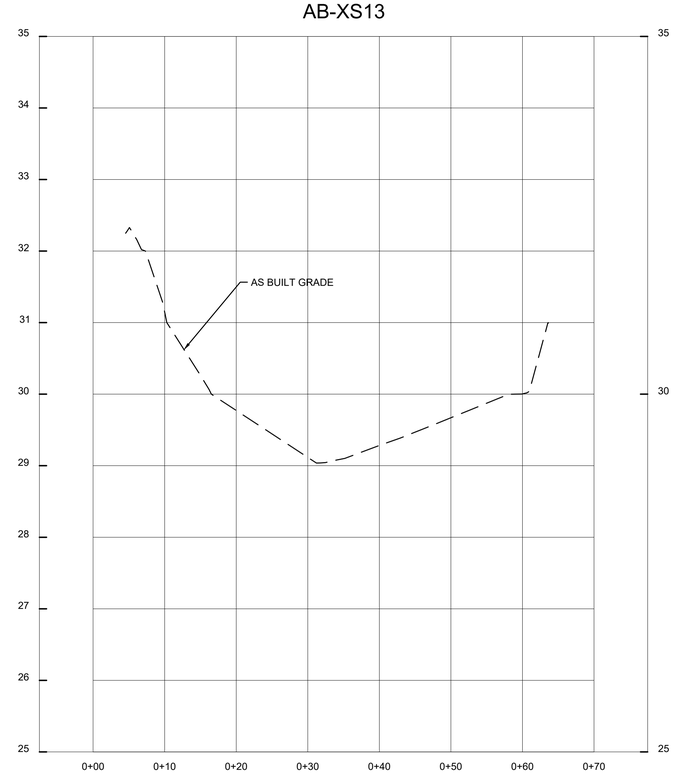
3rd District — Tax Map 16 Grid 05 — Anne Arundel County

G02016740

## AB-XS12




## AB-XS13




HORIZ: 1"= 10'
VERT: 1"= 1'

AS-BUILT AB-12


OWNER/DEVELOPER/APPLICANT

Land Studies

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fax: 717-627-4660

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land@landstudies.com

315 North Street | Lititz, PA 17543

PA022324

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ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS
STREAM RESTORATION PLAN

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

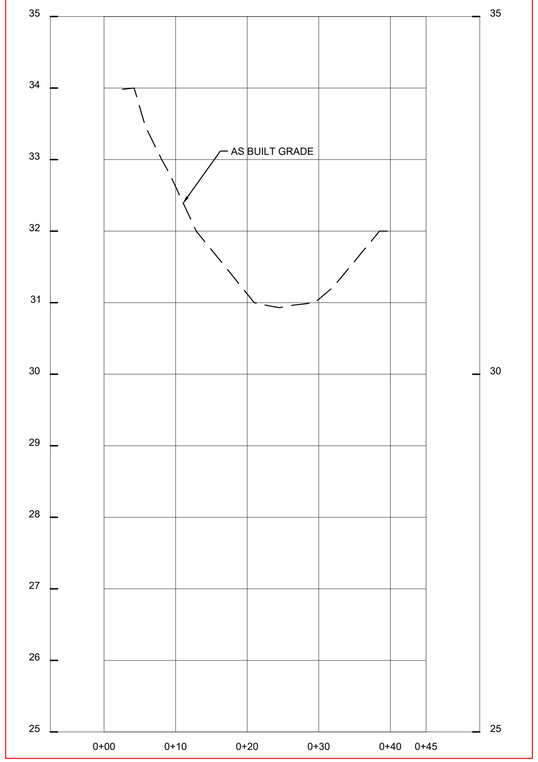
SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: M. Cheok
SHEET NO: 12 OF 39
PROJECT NO: 50017963
PROPOSAL NO:

# SLOOP COVE RETROFIT SITE 1

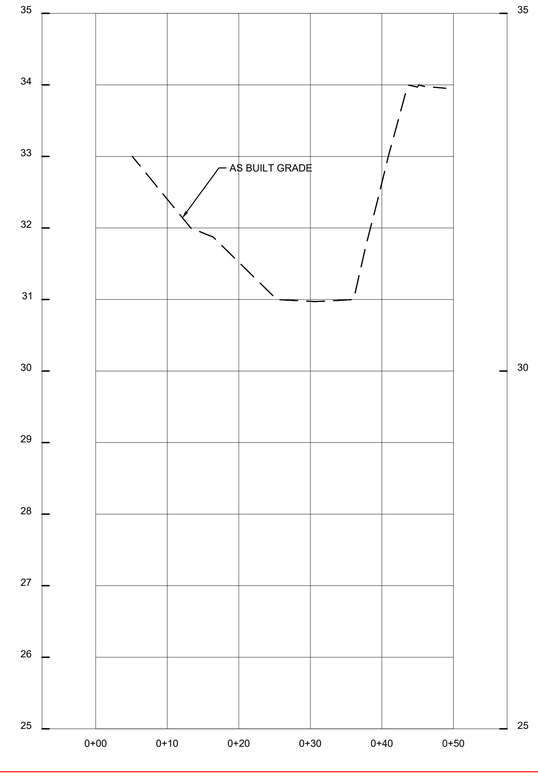
3rd District — Tax Map 16 Grid 05 — Anne Arundel County

G02016740

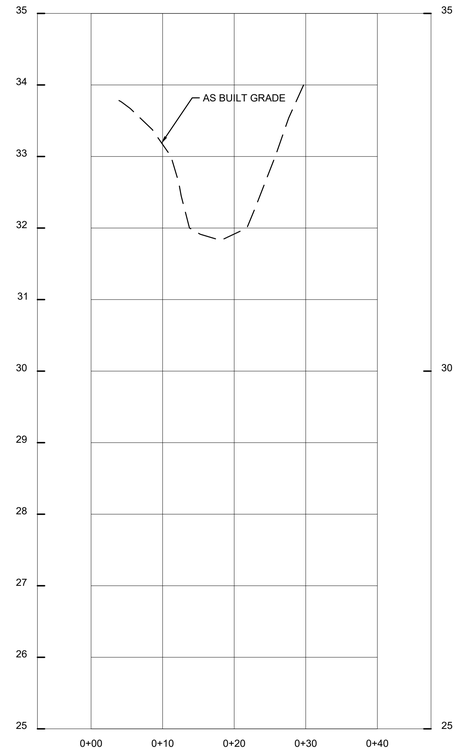
## AB-XS14




## AB-XS15




## AB-XS16




HORIZ: 1"= 10'
VERT: 1"= 1'

AS-BUILT AB-13


OWNER/DEVELOPER/APPLICANT

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PA 022241

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Suite #340
Rockville, MD 20850
Contact: Joanne M. Cheok, Senior Associate
Phone: (301) 337-2856
Fax: (301) 258-7607


Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

License No.
Expiration Date:

REVISONS

| NO | Description | BY | DATE |
|---|---|---|---|
| 1 | Revise 100-yr floodplain | LSI/ DEW | 1/2021 |
| 2 | ADDRESSED AA COUNTY COMMENTS | CG/ DEW | 9/07/22 |
| 3 | ADDRESSED AA COUNTY COMMENTS | LSI/ DEW | 11/01/22 |
| 4 | ADDRESSED AA COUNTY COMMENTS | LSI/ DEW | 01/10/23 |

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER
APPROVED DATE — PROJECT MANAGER
APPROVED DATE — ASSISTANT CHIEF ENGINEER
APPROVED DATE — CHIEF, RIGHT OF WAY

SCALE: As Shown
DRAWN BY: BJF/R. Anchors
CHECKED BY: D. Cheok
SHEET NO: 13 OF 39 13
PROJECT NO: 50017963
PROPOSAL NO:

STREAM RESTORATION PLAN

# SLOOP COVE RETROFIT SITE 1

Tax Map 16 Grid 05
3rd District
Anne Arundel County

G02016740