



NORTH CAROLINA
Environmental Quality

JOSH STEIN
Governor

D. REID WILSON
Secretary

RICHARD E. ROGERS, JR.
Director

June 08, 2026

CURRITUCK COUNTY
ATTN: REBECCA GAY, COUNTY MANAGER
153 COURTHOUSE ROAD, SUITE 204
CURRITUCK, NC 27929

Re: **Authorization to Construct (This is not a Final Approval)**

Issue Date: June 08, 2026
NEW BRIDGE CREEK

Serial No.: 26-00412 Water System No.: NC0427010
Currituck County

Dear Applicant:

This letter is to confirm that a complete Engineer's Report and a Water System Management Plan have been received, and that engineering plans and specifications have been approved by the Department for **NEW BRIDGE CREEK, Serial No.: 26-00412**.

The "Authorization to Construct" is valid for 36 months from the issue date. Authorization to construct may be extended if the Rules Governing Public Water Systems [15A NCAC 18C] and site conditions have not changed (see Rule .0305). The "Authorization to Construct" and the engineering plans and specifications approval letter shall be posted at the primary entrance of the job site before and during construction.

Upon completion of the construction or modification, **and prior to placing the new construction or modification into service**, the applicant must submit an Engineer's Certification and Applicant's Certification to the Public Water Supply Section.

- **Engineer's Certification:** in accordance with Rule .0303(a), the applicant shall submit a certification statement signed and sealed by a registered professional engineer stating that construction was completed in accordance with approved engineering plans and specifications, including any provisions stipulated in the Department's engineering plan and specification approval letter.
- **Applicant's Certification:** in accordance with Rule .0303(c), the applicant shall submit a signed certification statement indicating that the requirements for an Operation and Maintenance Plan and Emergency Management Plan have been satisfied in accordance with Rule .0307(d) and (e) and that the system has a certified operator in accordance with Rule .1300. The "Applicant's Certification" form is available at <http://www.ncwater.org/> (click on Public Water Supply Section, Plan Review, Plan Review Forms).

Certifications can be sent by mail or attachment to an e-mail message to **PWSSection.PlanReview@deq.nc.gov**.

If this "Authorization to Construct" is for a new public water system, the owner must submit a completed **application for an Operating Permit** and the appropriate fee. For a copy of the application for an Operating Permit please call (919) 707-9076.

Once the certifications and permit application and fee (if applicable) are received and determined adequate, the Department will issue a Final Approval letter to the applicant. In accordance with Rule .0309(a), **no portion of this project shall be placed into service until the Department has issued Final Approval**.

Please contact us at (919) 707-9100 if you have any questions or need additional information.

Sincerely,

Rebecca Sadosky, Ph.D., Chief
Public Water Supply Section
Division of Water Resources, NCDEQ

cc: JAMIE MIDGETTE, P.E., Regional Engineer
BISSELL PROFESSIONAL GROUP



North Carolina Department of Environmental Quality | Division of Water Resources
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North Carolina Department of Environmental Quality
Division of Water Resources

Authorization to Construct

| | |
|---------------------------|--------------------------------------|
| Project Applicant: | CURRITUCK COUNTY |
| Public Water System Name: | CURRITUCK COUNTY WATER SYSTEM |
| Water System No.: | NC0427010 |
| Project Name: | NEW BRIDGE CREEK |
| Serial No.: | 26-00412 |
| Issue Date: | June 08, 2026 |
| Expiration Date: | 36 Months after Issue Date |

In accordance with 15A NCAC 18C .0305, this Authorization to Construct must be posted at the primary entrance to the job site during construction.

MARK BISSELL
BISSELL PROFESSIONAL GROUP
P.O. BOX 1068
KITTY HAWK, NC 27949

**Stormwater Calculations
for
New Bridge Creek Subdivision
Moyock, North Carolina
MSA#24102**



03/03/26

Prepared by:



ENGINEERS | SCIENTISTS | SURVEYORS

5032 Rouse Drive, Suite 200

Virginia Beach, VA 23462

(757) 490-9264

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1.0 INTRODUCTION

The proposed project, New Bridge Creek Subdivision, is located off Caratoke Highway in Moyock, Currituck County, North Carolina. The project will create 35 single-family homes. Construction activities include associated infrastructure, including roadway improvements, water distribution utilities, storm sewer collection systems, and stormwater management facilities. The project area is bound to the north and east by wetlands, to the west and south by residential development. This project is planned to be designed and constructed as a low-density residential community in North Carolina, focusing on creating a sustainable and spacious environment that aligns with the region's development goals.

The proposed development is located on a 104.1-acre parcel and consists of largely undeveloped farmland and wetlands. Existing runoff patterns consist of sheet flow to various onsite swales. Proposed impervious cover includes new asphalt roadway pavement and concrete pedestrian pathways. Proposed runoff will be collected by property lines swales and routed to one of two stormwater management ponds. Proposed stormwater ponds have been designed to mitigate post development runoff to pre-development conditions. The development will maintain existing outfalls.

The pre- and post-development conditions were evaluated using stormwater models developed using PCSWMM hydraulic modelling software as described in this report.

2.0 EXISTING CONDITIONS

The project area is bound by wetlands to the north and east, residential lots to the west, and open land, residential, and a commercial building to the south. The current land cover consists largely of undeveloped farmland. The average site elevation is approximately 4.0 feet (NAVD 88) and ranges from approximately -0.92 to 6.63 feet (NAVD 88). The existing runoff pattern is farmland ditches that discharge into wetlands of New Bridge Creek. New Bridge Creek ultimately discharges to the Currituck Sound. Underlying site soils consist of loamy sand. An NRCS and BMP boring soils report is provided in Appendix A.

3.0 DEVELOPED CONDITIONS

The site has been designed to convey proposed runoff via sheet flow to various channels which are then conveyed to a stormwater pond. Per Currituck County's stormwater requirements the proposed stormwater ponds have been designed to mitigate the 10-year 24-hour storm peak flow to be less than or equal to the 2-year 24-hour predeveloped (wooded condition) peak flow.

4.0 METHODOLOGY AND CRITERIA

Model Development:

The project site has been analyzed for stormwater impacts using stormwater models developed using PCSWMM. PCSWMM models use the Curve Number infiltration methodology and Dynamic Wave routing to generate runoff hydrographs and route runoff.

Rainfall Depths:

All rainfall events used in stormwater analysis were developed using the previously approved model developed by Deal Engineering site rainfall distribution with a 6-minute time interval. Analyzed storm events and associated depth are listed in Table 1 below:

Table 1 – Rainfall Depths

| <u>Storm Event</u> | <u>Rainfall Depth (in)</u> |
|--------------------|----------------------------|
| 2-Year | 3.72 |
| 10-Year | 5.71 |
| 100-Year | 9.49 |

Subcatchment and Soil Parameters:

Subcatchment parameter assignments including subcatchment area, percent impervious area, flow length and width, slope are listed in Table 1 in Appendix C. Subcatchment areas and percent impervious areas were determined using proposed layout and grading shown on construction plans associated with the project. Flow lengths are the longest typical runoff flow path within a subcatchment. They generally begin at the highest elevation within a subcatchment and end at the subcatchment drainage structure. Subcatchment widths are total areas divided by the flow lengths. Subcatchment slopes are the same flow path slopes.

Curve Number Soil parameters for Roanoke Loam have been assigned to PCSWMM subcatchments based on the prevailing existing soil types listed in NRCS soils report for the project area intended as a conservative measure. Soil type specific parameters are listed below in Table 1 of Appendix C.

Tailwater Elevations:

Based on FEMA flood elevation information and observed conditions, assumed tailwater elevations downstream of the project site are listed below in Table 2. Tailwater elevations for the SWMM models developed by Deel Engineering are unchanged.

Table 2 – Tailwater Elevations

| <u>Storm Event</u> | <u>Tailwater Elevation (ft)</u> |
|--------------------|---------------------------------|
| 2-Year | N/A |
| 10-Year | 4.0 |
| 100-Year | 4.0 |

PCSWMM Model Structure:

PCSWMM models were developed using a “node-link” system where “nodes” are junctions and storages representing storm sewer structures and ponds and “links” are conduits and weirs representing pipes, ditches, and overflow. Storm sewer inlets and ponds have been modeled as storages with individual storage curves that account for above ground surface storage of runoff. Storm sewer manholes are modelled as junctions without storage nodes or above ground storage. A value of 10 feet has been added to all storages and junctions to provide “space” for hydraulic grade line (HGL) and flood elevation to accumulate above structure rim and pond top of bank elevations. Storage curves assigned to storage were developed from proposed storm sewer structure elevations and grading as shown on construction plans for the project. Runoff generating subcatchments were developed using proposed grading as shown on construction plans for the project and are routed to applicable downstream sewer structures or ponds.

PCSWMM input data and modelling results are included in Appendix C, D, and E of this report. Appendix C includes drainage area mapping. Appendix D includes physical subcatchment data and storage curves. Appendix E includes various summary tables and related calculations. Discussion of compliance with specific stormwater criteria is included in Section 5.0.

5.0 RESULTS

Currituck County Stormwater Attenuation Requirement:

The peak flows generated from the post-developed conditions during a 10-yr, 24-hr design storm will be attenuated to reduce the peak discharge from the project site to below or equal to the pre-development (wooded condition) peak flow generated during a 2-yr, 24-hr design storm. Appendix E for results.

Outfall Peak Flows & HGLs:

Hydraulic grade line results and peaks flows from the 2-, 10-, and 100-year storm area provided in Appendix E. The comparison table indicated HGL elevations and peak flows are less than or equal to pre-development indicating that compliance has been met.

10-Year HGL Comparison:

Hydraulic grade line (HGL) elevations for channels downstream of the project site were performed. HGL analysis is limited to the various storages and junctions that make up the channels downstream of the project site. Specific storages and junctions are noted in Appendix E. HGL elevations are less than or equal to pre-development flow rates indicating that compliance has been met.

10-Year Water Surface Elevation Summary and Pond Volume Recovery:

A water surface elevation summary is provided in Appendix E. The table summarizes hydraulic grade line (HGL) elevations for each proposed pond during design storm events. The table also calculates freeboard for the 10- and 100-year storm events, peak storage for the 2-year storm event, and draw-down for the 2-year storm. The table indicates that the ponds can adequately contain the 10-year storm event without flooding and will draw down to the initial level within 72 hours.

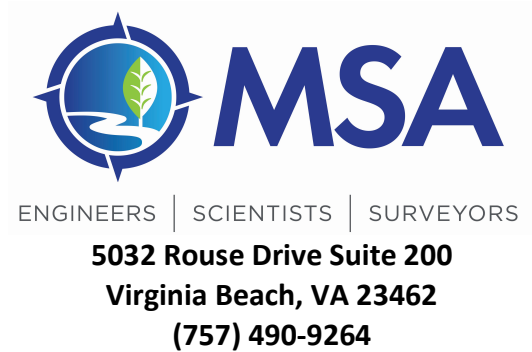
2-year and 10-Year Peak Velocity Analysis:

A table is provided in Appendix E. The table summaries peak flow velocities at each proposed conduit and downstream ditches during design storm events. The table indicates that the ditches flow at less than 2.0 ft/s during the 2-year storm event and less than 4.0 ft/s during a 10-year storm event.

APPENDIX A

MSA & USDA Soil Reports

Prepared by:



Preliminary Stormwater Management Review Site Conditions Report

4/17/25

Project Name: New Bridge Creek Subdivision

Location: Caratoke Highway near New Bridge Creek – Moyock, NC

MSA Project Number: 24102

Hydrogeologic conditions at three proposed BMP areas on the above referenced property were evaluated with respect to soil type, soil permeability, static water table, seasonal high, seasonal low water table, and perched groundwater conditions. The findings are presented below. The complete report includes soil boring logs and a boring location sketch.

1. Site Conditions. The development portion of the subject property is currently a cleared, ditched, agricultural field that abuts mature woods and wetlands. The ground surface topography is relatively flat and primarily only sloping toward the wooded wetland areas.
2. Soil Conditions. Two proposed BMP areas were investigated by hand-augured soil borings. To the depth explored, the site may be characterized by three generalized strata that includes a silty layer overlying a thick cohesive soil mix that eventually transitions into a sandier horizon.
 - a. Stratum 1 is a silt (ML) layer of topsoil that comprises a plowed horizon. This soil contains variable amounts of fine sand. At BMP 2, there can be a layer of silty-clay (CL-ML). This stratum was consistent across the subject property extending only to 0.5-ft below ground surface (bgs).
 - b. Stratum 2 is a thick soil horizon that is composed of variable layers of cohesive sediments grading between silt (ML), silty-clay (CL-ML), lean clay (CL), and fat clay (CH). These various grades contain variable amounts of fine sand. Toward the bottom of this stratum, thin seams or pockets of very moist to wet soil were present. The depth of this clayey layer varied considerably across the property. At Pond 1, this stratum extends to EL -1.5-ft to -1.75-ft. At Pond 2, this stratum extended to as shallow as EL -0.25-ft to deeper than EL -3.5-ft.
 - c. Stratum 3 is a sandy layer that occurs below Stratum 2 where present and is variable across the property. This sandy horizon is heavier at Pond 1 containing silty-clayey fine sand (SC-SM) that can have lenses or thin layers of sandy silt. At the west end of Pond 2, this sandy horizon grades out of sandy silt to a heavy silty sand (SM) that extends to at least EL -2.5-ft while is absent to the depth explored at the eastern end of Pond 2.
3. Hydrogeologic Conditions. At the time of this evaluation, the region was within the spring climatological period. Recent air temperatures varied considerably but averaged near normal for the time of year. Most of the surrounding area is open agricultural field with wooded wetland to the north and east, a small wooded area to the south and limited residential development to the southwest and northwest. New Bridge Creek lies in the woodland to the east. Considering the character of the land, time of year and leaf-out occurring, evapotranspiration should be increasing. The long-term precipitation across the region remains slightly lower than average. As such, the water table is expected to be lower than its' seasonal high and slightly lower than normal for the time of year.

4. Hydrogeologic Observations:

- a. Ground surface elevations across the subject property and proposed stormwater BMP ponds varied by 1ft to as much as 2.5-ft.
- b. The ground surface soil was moist with no very moist or ponded water observed. Field ditches were muddy and only became wet or had wet depressions by the woods edge.
- c. Wet pockets and seams were encountered between 3-ft and 4-ft bgs at Pond 1. Wet pockets occurred shallower within silty-clayey soil at Pond 2 and may be associated with a wetting down process. Other than that possible minor perching at Pond 2 (HA-1), no perched groundwater conditions were observed.
- d. Saturated soil conditions were encountered between 4.25-ft and 4.75-ft bgs at Pond 1, but more variable at Pond 2 between 2.75-ft and 5.5-ft bgs.
- e. Test wells were installed in all borings and extended 5-ft to 7.25-ft bgs. Next-day water levels ranged from EL 0.42-ft to EL 0.92-ft at Pond 1. The static water table at Pond 2 was EL 0.2-ft to 1.0-ft.
- f. The seasonal high water table was evaluated based on variations of soil texture, chroma, redoximorphic features, and moisture content and in consideration of ambient soil moisture conditions, recent rainfall history and proximity to natural and artificial drainage features. Based on these factors, the seasonal high water table is estimated to be as high as Elevation 1.5-ft for some duration of the wet season.

5. Notes.

- Ground surface elevations at the boring locations were interpolated from the available topographic map.
- Field drainage ditches and wetlands have strong local impact on the water table, which is likely responsible for the differences in water levels across the proposed BMP areas.
- Due to the low ground surface elevations, there is limited space for variance between seasonal high and low conditions.
- There is insufficient depth to seasonal high water table for use of infiltrating stormwater BMPs.
- At the time of boring, the field ditches had no standing water until reaching wetlands. The following day, the ditches were half full of water and this surface water extended half-way across the field. There was no precipitation the prior day; however, the winds were strong out of the south-southwest. It is presumed that the wind tide from Currituck Sound pushed water up New Bridge Creek and flooded the ditches. This tailwater effect needs to be considered during design of the BMP ponds.



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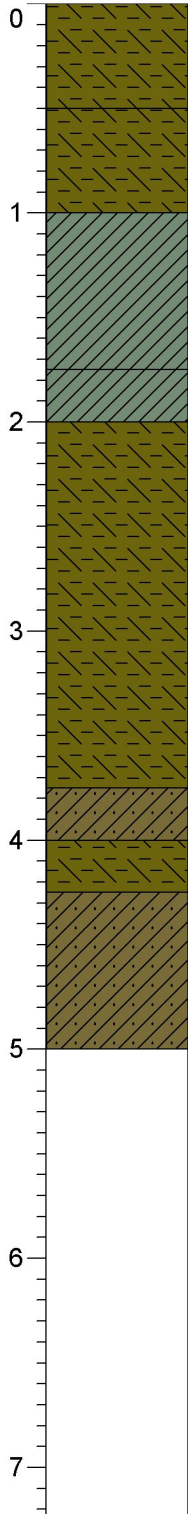
Project Information

| | | |
|-----------------------|------------------|----------------------------|
| Project Name | New Bridge Creek | Elevation (FT AMSL) |
| Project Number | 24102 | Ground Surface 2 |
| Location | Moyock, NC | Seasonal High 0.75 |
| Date Inspected | 4/4/2025 | Seasonal Low 0.25 |
| Method | Hand Auger | Static Water 0.42 |

Boring No. Pond 1-HA-1



| Depth (ft) | Lithology | Soil Description | Moisture | Matrix Color | Mottles | Notes |
|------------|-----------|------------------|----------|--------------|---------|-------|
|------------|-----------|------------------|----------|--------------|---------|-------|



| | | | | | | |
|---|--|-------------------------------------|------------|----------|----------|------------------------|
| 0 | | ML: Sandy SILT | Very Damp | 2.5Y 4/3 | | Some LEAN CLAY pockets |
| | | ML: Sandy SILT | Very Damp | 2.5Y 6/4 | | |
| 1 | | CL: Sandy LEAN CLAY | Moist | 2.5Y 6/4 | 2.5Y 6/3 | Wet spot ~ 36"-38" |
| | | CL: Sandy LEAN CLAY | | | 10YR 5/6 | |
| 2 | | ML: Sandy SILT | Moist | 2.5Y 6/1 | 10YR 5/8 | |
| | | ML: Sandy SILT | | | 10YR 6/8 | |
| 3 | | SC-SM: Fine SAND with CLAY and SILT | Very Moist | 2.5Y 6/4 | | |
| | | ML: Sandy SILT | Very Moist | 2.5Y 6/1 | 10YR 6/8 | |
| 4 | | SC-SM: Fine SAND with CLAY and SILT | Wet | 2.5Y 6/3 | 2.5Y 6/1 | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |





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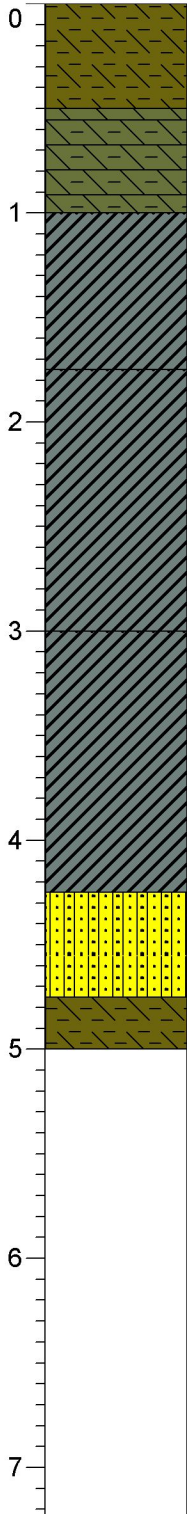
Project Information

| | | |
|-----------------------|------------------|----------------------------|
| Project Name | New Bridge Creek | Elevation (FT AMSL) |
| Project Number | 24102 | Ground Surface 2.75 |
| Location | Moyock, NC | Seasonal High 1.5 |
| Date Inspected | 4/4/2025 | Seasonal Low N/D |
| Method | Hand Auger | Static Water 0.92 |

Boring No. Pond 1-HA-2



| Depth (ft) | Lithology | Soil Description | Moisture | Matrix Color | Mottles | Notes |
|------------|-----------|------------------|----------|--------------|---------|-------|
|------------|-----------|------------------|----------|--------------|---------|-------|



| | | | | | | |
|---|--|----------------------------------|------------------|----------|----------|---|
| 0 | | ML: Sandy SILT | Moist | 2.5Y 5/3 | | |
| | | CL-ML: Sandy LEAN CLAY with SILT | Moist | 10YR 5/4 | 10YR 6/2 | |
| 1 | | CH: Sandy FAT CLAY | Moist | 10YR 6/2 | 10YR 5/6 | |
| | | CH: FAT CLAY | | 10YR 7/1 | 10YR 5/6 | |
| 2 | | CH: FAT CLAY | Moist | 10YR 7/1 | 10YR 5/8 | |
| | | CH: Sandy FAT CLAY | | 10YR 7/1 | 10YR 5/6 | |
| 3 | | CH: Sandy FAT CLAY | Moist-Very Moist | 10YR 7/1 | | |
| 4 | | CH: Sandy FAT CLAY | Very Moist | 10YR 5/4 | 10YR 7/1 | Pockets of FAT CLAY and SILT with wet seams |
| | | SM: Fine SILTY SAND | Very Moist-Wet | 10YR 5/4 | 10YR 5/8 | Pockets of Sandy FAT CLAY |
| 5 | | ML: Sandy SILT | Wet | 10YR 5/4 | 10YR 5/8 | |
| 6 | | | | | | |
| 7 | | | | | | |





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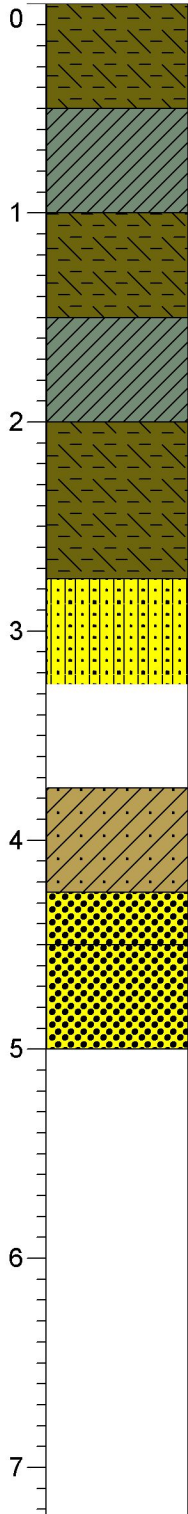
Project Information

| | | |
|-----------------------|------------------|----------------------------|
| Project Name | New Bridge Creek | Elevation (FT AMSL) |
| Project Number | 24102 | Ground Surface 2.5 |
| Location | Moyock, NC | Seasonal High 0.75 |
| Date Inspected | 4/4/2025 | Seasonal Low N/D |
| Method | Hand Auger | Static Water 0.2 |

Boring No. Pond 2-HA-1



| Depth (ft) | Lithology | Soil Description | Moisture | Matrix Color | Mottles | Notes |
|------------|-----------|------------------|----------|--------------|---------|-------|
|------------|-----------|------------------|----------|--------------|---------|-------|



| | | | | | | |
|---|--|----------------------------|--------------------|----------|-------------------|--|
| 0 | | ML: SILT | Damp | 2.5Y 5/3 | | Some fine SAND near surface; Roots in top 2" |
| | | CL: Sandy LEAN CLAY | Very Damp | 2.5Y 6/4 | 10YR 6/6 | |
| 1 | | ML: Sandy SILT | Moist - Very Moist | 2.5Y 6/3 | | Some wet pockets |
| | | CL: Sandy LEAN CLAY | Very Moist | 2.5Y 6/2 | 10YR 6/8 | |
| 2 | | ML: Sandy SILT | Very Moist | 2.5Y 6/2 | 2.5Y 6/6 | |
| 3 | | SM: Silty SAND | Wet | 2.5Y 6/2 | | |
| | | SP-SM: Fine SAND with SILT | Wet | 2.5Y 6/1 | 2.5Y6/6; 10YR 6/6 | |
| 4 | | SP-SC: Fine SAND with CLAY | Wet | 2.5Y 6/1 | 2.5Y6/6; 10YR 6/6 | |
| | | SP: Fine SAND | Wet | 10YR 5/6 | | |
| | | SP: Fine-medium SAND | Wet | 10YR 6/3 | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |





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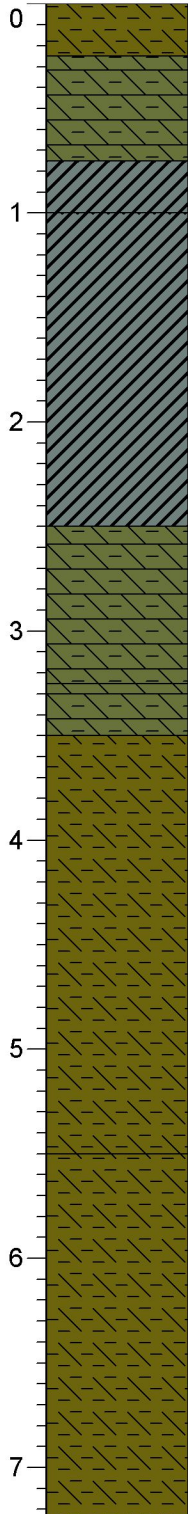
Project Information

| | | |
|-----------------------|------------------|----------------------------|
| Project Name | New Bridge Creek | Elevation (FT AMSL) |
| Project Number | 24102 | Ground Surface 3.75 |
| Location | Moyock, NC | Seasonal High 1.25 |
| Date Inspected | 4/4/2025 | Seasonal Low N/D |
| Method | Hand Auger | Static Water 1.0 |

Boring No. Pond 2-HA-2



| Depth (ft) | Lithology | Soil Description | Moisture | Matrix Color | Mottles | Notes |
|------------|-----------|------------------|----------|--------------|---------|-------|
|------------|-----------|------------------|----------|--------------|---------|-------|



| | | | | | | |
|---|--|----------------------------------|------------------|----------|-----------|-------------------------------|
| 0 | | ML: Sandy SILT | Damp | 2.5Y 5/3 | | |
| | | CL-ML: LEAN CLAY with SILT | Moist | 2.5Y 6/2 | | Some Fine SAND |
| 1 | | CH: Sandy FAT CLAY | Moist | 2.5Y 6/2 | 10YR 5/6 | |
| | | CH: Sandy FAT CLAY | | | 10YR 5/8 | Trace Fine SAND |
| | | | Moist | 10YR 5/1 | 7.5YR 5/8 | Strong mottles |
| | | | | | 7.5YR 5/8 | Mottles lighten |
| 3 | | CL-ML: LEAN CLAY with SILT | Moist | 10YR 6/1 | | Trace Fine SAND |
| | | CL-ML: Sandy LEAN CLAY with SILT | Moist | 10YR 6/1 | | |
| 4 | | ML: Sandy SILT | Moist-Very Moist | | 10YR 5/8 | Pockets of LEAN CLAY and SILT |
| | | | Very Moist | 2.5Y 5/2 | | |
| 5 | | | Very Moist-Wet | 2.5Y 6/2 | | |
| 6 | | ML: Heavy Sandy SILT | | | | |
| | | | Wet | 2.5Y 6/2 | 10YR 5/6 | |
| 7 | | | | | | |





United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Currituck County, North Carolina



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

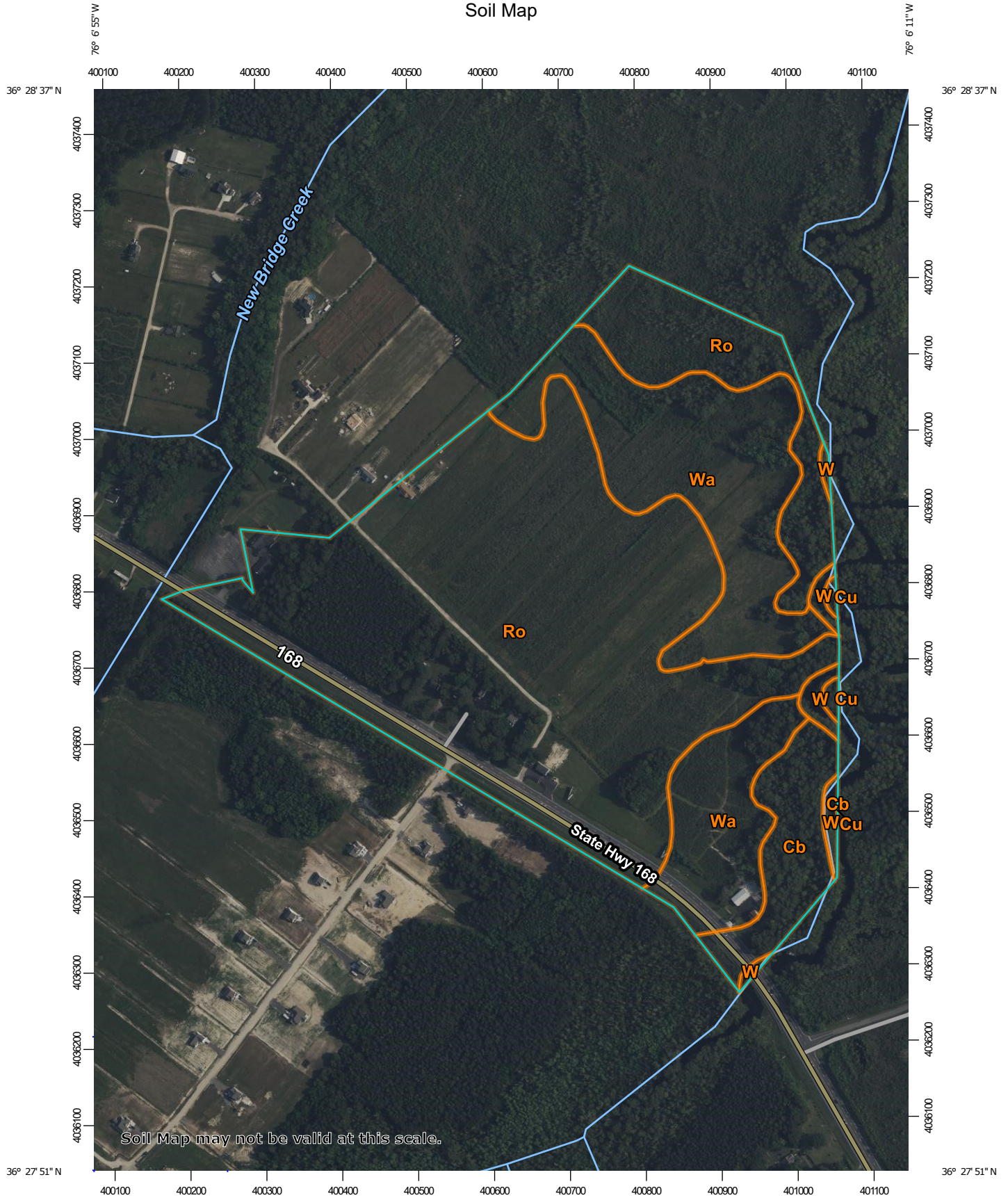
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:6,920 if printed on A portrait (8.5" x 11") sheet.





MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
 Survey Area Data: Version 24, Sep 9, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|-------------------------|--------------|----------------|
| Cb | Conaby muck | 6.4 | 5.9% |
| Cu | Currituck mucky peat | 0.4 | 0.3% |
| Ro | Roanoke fine sandy loam | 72.0 | 66.3% |
| W | Water | 1.8 | 1.7% |
| Wa | Wahee fine sandy loam | 27.9 | 25.7% |
| Totals for Area of Interest | | 108.6 | 100.0% |

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

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landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Currituck County, North Carolina

Cb—Conaby muck

Map Unit Setting

National map unit symbol: 3rnd
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Conaby, drained, and similar soils: 80 percent
Conaby, undrained, and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conaby, Drained

Setting

Landform: Pocosins, depressions
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck
A - 13 to 21 inches: sand
Bg - 21 to 33 inches: sandy loam
Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Description of Conaby, Undrained

Setting

Landform: Pocosins, depressions
Down-slope shape: Linear

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Across-slope shape: Linear

Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck

A - 13 to 21 inches: sand

Bg - 21 to 33 inches: sandy loam

Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: Rare

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: B/D

Ecological site: F153BY060NC - Wet Loamy Flats and Depressions

Hydric soil rating: Yes

Cu—Currituck mucky peat

Map Unit Setting

National map unit symbol: 3rnj

Elevation: 0 feet

Mean annual precipitation: 42 to 58 inches

Mean annual air temperature: 61 to 64 degrees F

Frost-free period: 190 to 270 days

Farmland classification: Not prime farmland

Map Unit Composition

Currituck, tidal, and similar soils: 90 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Currituck, Tidal

Setting

Landform: Tidal marshes

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Herbaceous organic material over sandy fluviomarine deposits

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Typical profile

Oe - 0 to 14 inches: mucky peat
Oa - 14 to 28 inches: muck
Cg - 28 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Ecological site: R153BY140NC - Tidal Marsh on Organic Soil
Hydric soil rating: Yes

Ro—Roanoke fine sandy loam

Map Unit Setting

National map unit symbol: 3rp1
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Roanoke, drained, and similar soils: 80 percent
Roanoke, undrained, and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Roanoke, Drained

Setting

Landform: Depressions on marine terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey marine deposits and/or fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: silt loam
Btg - 8 to 58 inches: clay

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Cg - 58 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: Rare

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D

*Ecological site: F153BY090NC - Flooded Mineral Soil Flood Plains and Terraces,
F153AY065NC - Wet Clay Flats and Depressions*

Hydric soil rating: Yes

Description of Roanoke, Undrained

Setting

Landform: Depressions on marine terraces, flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey marine deposits and/or fluviomarine deposits

Typical profile

A - 0 to 8 inches: silt loam

Btg - 8 to 58 inches: clay

Cg - 58 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: Rare

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

*Ecological site: F153BY090NC - Flooded Mineral Soil Flood Plains and Terraces,
F153AY065NC - Wet Clay Flats and Depressions*

Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

Wa—Wahee fine sandy loam

Map Unit Setting

National map unit symbol: 3rp7

Elevation: 0 to 20 feet

Mean annual precipitation: 42 to 58 inches

Mean annual air temperature: 61 to 64 degrees F

Frost-free period: 190 to 270 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Wahee, drained, and similar soils: 80 percent

Wahee, undrained, and similar soils: 10 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wahee, Drained

Setting

Landform: Flats on stream terraces, flats on marine terraces

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 6 inches: fine sandy loam

Bt - 6 to 44 inches: sandy clay

Cg - 44 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very high

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Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C/D

Ecological site: F153AY045NC - Moist Clay Rises and Flats, F153BY045NC - Moist Clay Rises and Flats

Hydric soil rating: No

Description of Wahee, Undrained

Setting

Landform: Flats on stream terraces, flats on marine terraces

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 6 inches: fine sandy loam

Bt - 6 to 44 inches: sandy clay

Cg - 44 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D

Ecological site: F153AY045NC - Moist Clay Rises and Flats, F153BY045NC - Moist Clay Rises and Flats

Hydric soil rating: No

Minor Components

Roanoke, undrained

Percent of map unit: 5 percent

Landform: Depressions on marine terraces, flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F153BY090NC - Flooded Mineral Soil Flood Plains and Terraces, F153AY065NC - Wet Clay Flats and Depressions

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Hydric soil rating: Yes

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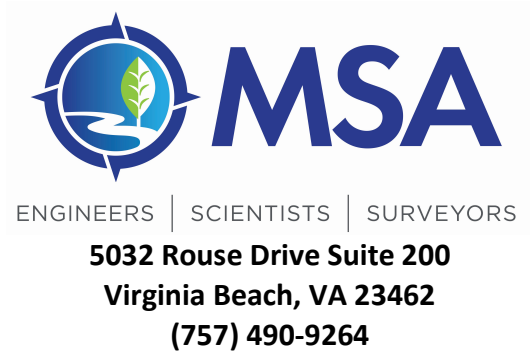
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APPENDIX B

FEMA Flood Mapping

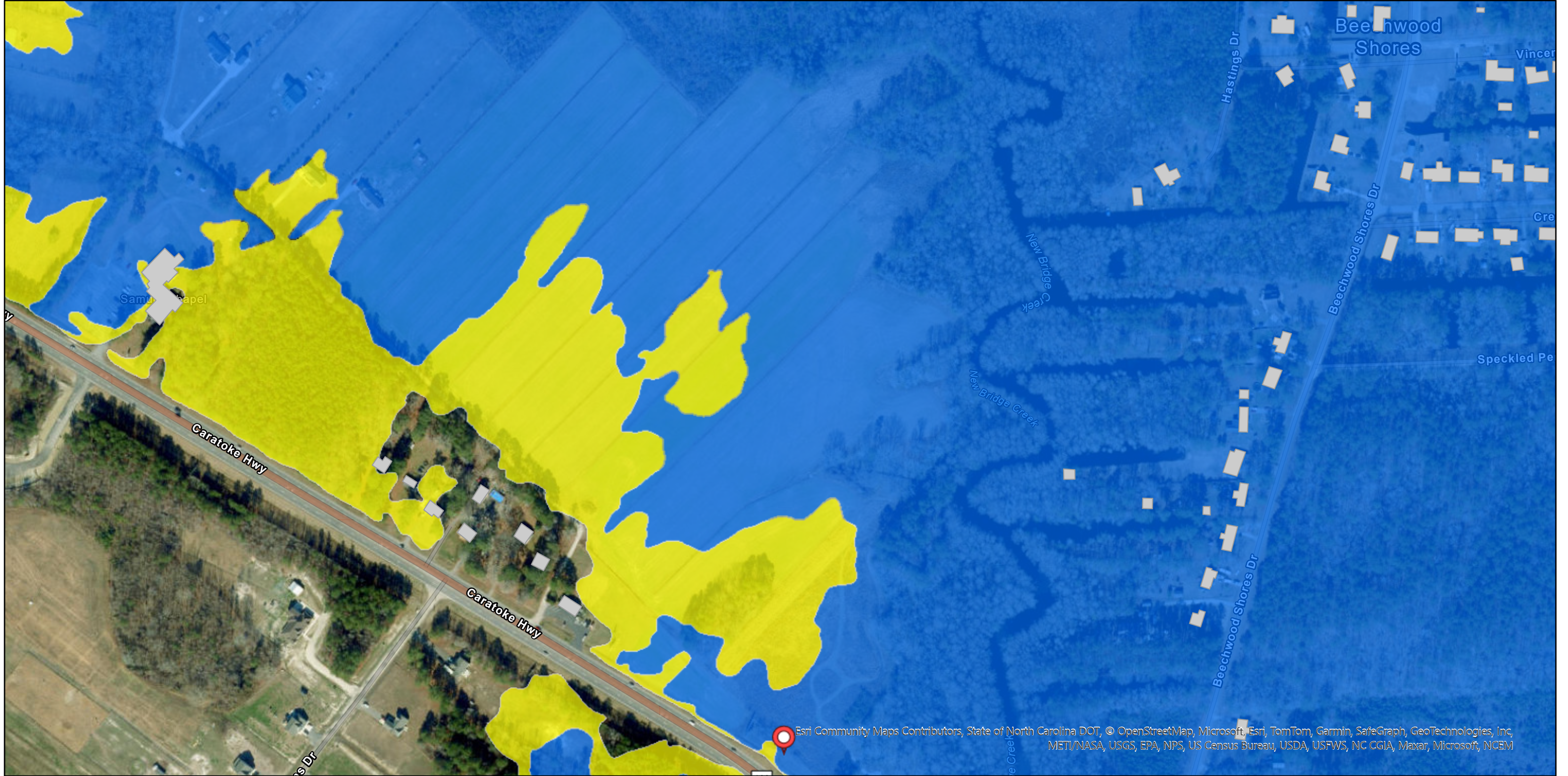
Prepared by:





New Bridge Subdivision

Jun 12, 2025



Esri Community Maps Contributors, State of North Carolina DOT, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NC CGIA, Maxar, Microsoft, NCEM

Legend

- | | |
|--|---|
|  Panels |  Flood Hazard Areas |
|  Political Areas |  Floodway (AE) |
|  Stream Centerline |  0.2 % Chance Annual Flood Hazard |
|  Cross Sections |  Future Conditions 1% Annual Chance Flood Hazard |
|  Levee | |

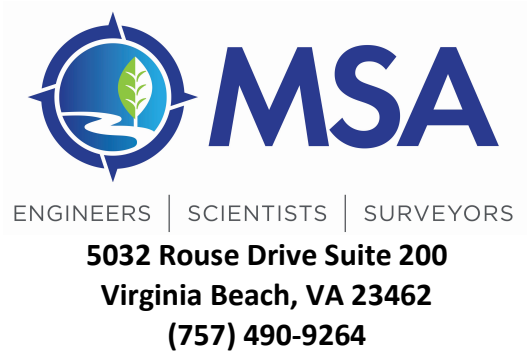
North Carolina Floodplain Mapping Program



APPENDIX C

Drainage Area Data

Prepared by:





DRAINAGE AREA CALCULATIONS

CALCULATIONS BY: JTP/ENL
 DATE: 4/3/2026
 PROJECT: New Bridge Creek Subdivision
 PROJECT #: 24102

| Symbol | Name | Curve Number (IMP) | Curve Number (PER) | Soil Huc |
|--------|-------------------------|--------------------|--------------------|----------|
| Ro | Roanoke Fine Sandy Loam | 98 | 80.00 | (C/D) |

<< Ro is the primary soil class used for modeling and design

- Hydrolic Soil Group D has been used for this analysis as a conservative measure based on the observation of ponded water on-site on-site and the uniform clay layer encountered as part of typical Roanoke Silt Loam strata.
- Curve Number values taken from SCS TR-55 Table 2-2c from the USACE.

Existing Drainage Area Calculation Data

| | Total Area (SF) | Total Area (AC) | Flow Length (FT) | Width (FT) | Slope (%) | Impervious Area (SF) | Impervious Area (AC) | % IMP | Pervious Area (SF) | Pervious Area (AC) | Curve Number (CN) |
|--------------|------------------|-----------------|------------------|------------|-----------|----------------------|----------------------|------------|--------------------|--------------------|-------------------|
| EX-01 | 103,421 | 2.37 | 100 | 1034.2 | 0.5 | 0 | 0.00 | 0.0 | 103,421 | 2.37 | 80 |
| EX-02 | 163,173 | 3.75 | 76 | 2147.0 | 0.5 | 0 | 0.00 | 0.0 | 163,173 | 3.75 | 80 |
| EX-03 | 198,126 | 4.55 | 131 | 1512.4 | 0.5 | 0 | 0.00 | 0.0 | 198,126 | 4.55 | 80 |
| EX-04 | 221,410 | 5.08 | 80 | 2767.6 | 0.5 | 0 | 0.00 | 0.0 | 221,410 | 5.08 | 80 |
| EX-05 | 149,262 | 3.43 | 68 | 2195.0 | 0.5 | 0 | 0.00 | 0.0 | 149,262 | 3.43 | 80 |
| EX-06 | 251,655 | 5.78 | 134 | 1878.0 | 0.5 | 0 | 0.00 | 0.0 | 251,655 | 5.78 | 80 |
| EX-07 | 213,865 | 4.91 | 110 | 1944.2 | 0.5 | 0 | 0.00 | 0.0 | 213,865 | 4.91 | 80 |
| EX-08 | 296,415 | 6.80 | 139 | 2132.5 | 0.5 | 0 | 0.00 | 0.0 | 296,415 | 6.80 | 80 |
| EX-09 | 102,505 | 2.35 | 203 | 505.0 | 0.5 | 0 | 0.00 | 0.0 | 102,505 | 2.35 | 80 |
| EX-10 | 44,827 | 1.03 | 209 | 214.5 | 0.5 | 0 | 0.00 | 0.0 | 44,827 | 1.03 | 80 |
| EX-11 | 208,746 | 4.79 | 210 | 994.0 | 0.5 | 0 | 0.00 | 0.0 | 208,746 | 4.79 | 80 |
| EX-12 | 96,784 | 2.22 | 164 | 590.1 | 0.5 | 0 | 0.00 | 0.0 | 96,784 | 2.22 | 80 |
| EX-13 | 119,497 | 2.74 | 344 | 347.4 | 0.5 | 0 | 0.00 | 0.0 | 119,497 | 2.74 | 80 |
| EX-14 | 73,415 | 1.69 | 150 | 489.4 | 0.5 | 0 | 0.00 | 0.0 | 73,415 | 1.69 | 80 |
| TOTAL | 2,243,101 | 51.49 | | | | 0 | 0.00 | 0.0 | 2,243,101 | 51.49 | 80 |

Existing - Offsite Drainage Area Calculation Data

| | Total Area (SF) | Total Area (AC) | Flow Length (FT) | Width (FT) | Slope (%) | Impervious Area (SF) | Impervious Area (AC) | % IMP | Pervious Area (SF) | Pervious Area (AC) | Curve Number (CN) |
|--------------|-----------------|-----------------|------------------|------------|-----------|----------------------|----------------------|------------|--------------------|--------------------|-------------------|
| EX-OS-1 | 23,928 | 0.55 | 86 | 278.2 | 0.5 | 0 | 0.00 | 0.0 | 23,928 | 0.55 | 80 |
| EX-OS-2 | 29,156 | 0.67 | 73 | 399.4 | 1.0 | 0 | 0.00 | 0.0 | 29,156 | 0.67 | 80 |
| EX-OS-3 | 8,781 | 0.20 | 30 | 292.7 | 0.5 | 0 | 0.00 | 0.0 | 8,781 | 0.20 | 80 |
| EX-OS-4 | 8,917 | 0.20 | 34 | 262.3 | 0.5 | 0 | 0.00 | 0.0 | 8,917 | 0.20 | 80 |
| EX-OS-5 | 9,683 | 0.22 | 7 | 1383.3 | 1.0 | 0 | 0.00 | 0.0 | 9,683 | 0.22 | 80 |
| EX-OS-6 | 27,387 | 0.63 | 300 | 91.3 | 1.0 | 0 | 0.00 | 0.0 | 27,387 | 0.63 | 80 |
| TOTAL | 107,852 | 2.48 | | | | 0 | 0.00 | 0.0 | 107,852 | 2.48 | 80 |

Proposed Drainage Area Calculation Data

| | Total Area (SF) | Total Area (AC) | Flow Length (FT) | Width (FT) | Slope (%) | Impervious Area (SF) | Impervious Area (AC) | % IMP | Pervious Area (SF) | Pervious Area (AC) | Curve Number (CN) |
|-------|-----------------|-----------------|------------------|------------|-----------|----------------------|----------------------|-------|--------------------|--------------------|-------------------|
| PR-01 | 24,270 | 0.56 | 328 | 74.0 | 1.0 | 13168 | 0.30 | 53.6 | 11,102 | 0.25 | 88.2 |
| PR-02 | 27,100 | 0.62 | 105 | 258.1 | 1.0 | 7258 | 0.17 | 27.4 | 19,842 | 0.46 | 86.2 |
| PR-03 | 6,188 | 0.14 | 87 | 71.1 | 1.0 | 0 | 0.00 | 0.0 | 6,188 | 0.14 | 80.0 |
| PR-04 | 21,983 | 0.50 | 105 | 209.4 | 1.0 | 7254 | 0.17 | 34.0 | 14,729 | 0.34 | 87.7 |
| PR-05 | 6,227 | 0.14 | 87 | 71.6 | 1.0 | 0 | 0.00 | 0.0 | 6,227 | 0.14 | 80.0 |
| PR-06 | 21,699 | 0.50 | 105 | 206.7 | 1.0 | 7255 | 0.17 | 34.0 | 14,444 | 0.33 | 86.1 |
| PR-07 | 6,178 | 0.14 | 87 | 71.0 | 1.0 | 0 | 0.00 | 0.0 | 6,178 | 0.14 | 80.0 |
| PR-08 | 21,849 | 0.50 | 105 | 208.1 | 1.0 | 7258 | 0.17 | 34.0 | 14,591 | 0.33 | 86.1 |
| PR-09 | 6,261 | 0.14 | 87 | 72.0 | 1.0 | 0 | 0.00 | 0.0 | 6,261 | 0.14 | 80.0 |
| PR-10 | 22,669 | 0.52 | 105 | 215.9 | 1.0 | 7309 | 0.17 | 32.7 | 15,360 | 0.35 | 85.9 |
| PR-11 | 13,407 | 0.31 | 84 | 159.6 | 1.0 | 3774 | 0.09 | 29.0 | 9,633 | 0.22 | 80.0 |
| PR-12 | 7,095 | 0.16 | 87 | 81.6 | 1.0 | 0 | 0.00 | 0.0 | 7,095 | 0.16 | 80.0 |
| PR-13 | 22,375 | 0.51 | 74.1 | 302.0 | 1.0 | 7477 | 0.17 | 33.3 | 14,898 | 0.34 | 86.0 |
| PR-14 | 8,234 | 0.19 | 64 | 128.7 | 1.0 | 0 | 0.00 | 0.0 | 8,234 | 0.19 | 80.0 |
| PR-15 | 22,378 | 0.51 | 80 | 279.7 | 1.0 | 7574 | 0.17 | 33.3 | 14,804 | 0.34 | 86.0 |
| PR-16 | 8,261 | 0.19 | 63 | 131.1 | 1.0 | 0 | 0.00 | 0.0 | 8,261 | 0.19 | 80.0 |
| PR-17 | 22,841 | 0.52 | 86 | 265.6 | 1.0 | 7588 | 0.17 | 32.7 | 15,253 | 0.35 | 85.9 |
| PR-18 | 7,500 | 0.17 | 61 | 123.0 | 1.0 | 0 | 0.00 | 0.0 | 7,500 | 0.17 | 80.0 |
| PR-19 | 226,081 | 5.19 | 158 | 1430.9 | 1.0 | 138593 | 3.18 | 61.3 | 87,488 | 2.01 | 91.0 |
| PR-20 | 20,041 | 0.46 | 120 | 167.0 | 1.0 | 3707 | 0.09 | 19.6 | 16,334 | 0.37 | 83.5 |
| PR-21 | 25,019 | 0.57 | 115 | 217.6 | 1.0 | 7294 | 0.17 | 29.8 | 17,725 | 0.41 | 86.8 |
| PR-22 | 24,182 | 0.56 | 99 | 244.3 | 1.0 | 7260 | 0.17 | 30.4 | 16,922 | 0.39 | 85.5 |
| PR-23 | 5,381 | 0.12 | 83 | 64.8 | 1.0 | 0 | 0.00 | 0.0 | 5,381 | 0.12 | 80.0 |
| PR-24 | 23,407 | 0.54 | 87 | 269.0 | 1.0 | 7312 | 0.17 | 31.5 | 16,095 | 0.37 | 85.7 |
| PR-25 | 9,118 | 0.21 | 63 | 144.7 | 1.0 | 0 | 0.00 | 0.0 | 9,118 | 0.21 | 80.0 |
| PR-26 | 17,307 | 0.40 | 105 | 164.8 | 1.0 | 7261 | 0.17 | 42.5 | 10,046 | 0.23 | 87.7 |
| PR-27 | 24,697 | 0.57 | 140 | 176.4 | 1.0 | 3000 | 0.07 | 12.3 | 21,697 | 0.50 | 82.2 |
| PR-28 | 99,085 | 2.27 | 131 | 756.4 | 1.0 | 42627 | 0.98 | 43.2 | 56,458 | 1.30 | 88.1 |
| PR-29 | 23,333 | 0.54 | 156 | 149.6 | 1.0 | 7310 | 0.17 | 31.5 | 16,023 | 0.37 | 85.7 |
| PR-30 | 6,404 | 0.15 | 130 | 49.3 | 1.0 | 3000 | 0.07 | 46.7 | 3,404 | 0.08 | 88.4 |
| PR-31 | 22,277 | 0.51 | 155 | 143.7 | 1.0 | 7269 | 0.17 | 33.3 | 15,008 | 0.34 | 86.0 |
| PR-32 | 6,331 | 0.15 | 107 | 59.2 | 1.0 | 0 | 0.00 | 0.0 | 6,331 | 0.15 | 80.0 |
| PR-33 | 21,894 | 0.50 | 130 | 168.4 | 1.0 | 7287 | 0.17 | 34.0 | 14,607 | 0.34 | 87.7 |
| PR-34 | 5,458 | 0.13 | 94 | 58.1 | 1.0 | 0 | 0.00 | 0.0 | 5,458 | 0.13 | 80.0 |
| PR-35 | 21,420 | 0.49 | 130 | 164.8 | 1.0 | 7233 | 0.17 | 34.7 | 14,187 | 0.33 | 87.9 |
| PR-36 | 6,308 | 0.14 | 104 | 60.7 | 1.0 | 0 | 0.00 | 0.0 | 6,308 | 0.14 | 80.0 |
| PR-37 | 6,286 | 0.14 | 89 | 70.6 | 1.0 | 3000 | 0.07 | 50.0 | 3,286 | 0.08 | 94.7 |
| PR-38 | 15,162 | 0.35 | 150 | 101.1 | 1.0 | 0 | 0.00 | 0.0 | 15,162 | 0.35 | 80.0 |

| | | | | | | | | | | | |
|--------------|------------------|--------------|-----|-------|-----|----------------|--------------|-------------|------------------|--------------|--------------------|
| PR-39 | 21,660 | 0.50 | 112 | 193.4 | 2.0 | 10343 | 0.24 | 48.0 | 11,317 | 0.26 | 88.6 |
| PR-40 | 26,639 | 0.61 | 87 | 306.2 | 1.0 | 9486 | 0.22 | 36.1 | 17,153 | 0.39 | 86.5 |
| PR-41 | 16,828 | 0.39 | 117 | 143.8 | 1.0 | 8680 | 0.20 | 51.3 | 8,148 | 0.19 | 89.2 |
| PR-42 | 12,210 | 0.28 | 93 | 131.3 | 2.0 | 4538 | 0.10 | 35.7 | 7,672 | 0.18 | 86.4 |
| PR-43 | 7,185 | 0.16 | 82 | 87.6 | 1.0 | 4064 | 0.09 | 56.3 | 3,121 | 0.07 | 90.1 |
| PR-44 | 6,780 | 0.16 | 38 | 178.4 | 1.0 | 3828 | 0.09 | 56.3 | 2,952 | 0.07 | 90.1 |
| PR-45 | 23,545 | 0.54 | 45 | 523.2 | 1.0 | 9789 | 0.22 | 40.7 | 13,756 | 0.32 | 87.3 |
| PR-46 | 3,879 | 0.09 | 72 | 53.9 | 2.0 | 2039 | 0.05 | 55.6 | 1,840 | 0.04 | 90.0 |
| PR-47 | 49,678 | 1.14 | 96 | 517.5 | 1.0 | 17975 | 0.41 | 36.0 | 31,703 | 0.73 | 86.5 |
| PR-48 | 5,477 | 0.13 | 59 | 92.8 | 2.0 | 2698 | 0.06 | 46.2 | 2,779 | 0.06 | 82.2 |
| PR-49 | 5,350 | 0.12 | 59 | 90.7 | 1.0 | 1965 | 0.05 | 41.7 | 3,385 | 0.08 | 94.2 |
| PR-50 | 5,350 | 0.12 | 59 | 90.7 | 1.0 | 2385 | 0.05 | 41.7 | 2,965 | 0.07 | 87.5 |
| PR-51 | 5,350 | 0.12 | 59 | 90.7 | 1.0 | 2385 | 0.05 | 41.7 | 2,965 | 0.07 | 87.5 |
| PR-52 | 22,901 | 0.53 | 156 | 146.8 | 1.0 | 6873 | 0.16 | 30.2 | 16,028 | 0.37 | 85.4 |
| PR-53 | 6,152 | 0.14 | 55 | 111.9 | 1.0 | 1532 | 0.04 | 28.6 | 4,620 | 0.11 | 90.9 |
| PR-54 | 6,942 | 0.16 | 62 | 112.0 | 1.0 | 2843 | 0.07 | 43.8 | 4,099 | 0.09 | 87.9 |
| PR-55 | 15,960 | 0.37 | 81 | 197.0 | 1.0 | 6731 | 0.15 | 40.5 | 9,229 | 0.21 | 85.1 |
| PR-56 | 6,151 | 0.14 | 65 | 94.6 | 1.0 | 2580 | 0.06 | 42.9 | 3,571 | 0.08 | 87.7 |
| PR-57 | 3,362 | 0.08 | 72 | 46.7 | 1.0 | 1618 | 0.04 | 50.0 | 1,744 | 0.04 | 89.0 |
| PR-58 | 23,060 | 0.53 | 60 | 384.3 | 1.0 | 4659 | 0.11 | 20.8 | 18,401 | 0.42 | 83.7 |
| PR-59 | 3,251 | 0.07 | 31 | 104.9 | 1.0 | 1510 | 0.03 | 42.9 | 1,741 | 0.04 | 87.7 |
| PR-60 | 19,748 | 0.45 | 55 | 359.1 | 1.0 | 6260 | 0.14 | 31.1 | 13,488 | 0.31 | 85.6 |
| PR-61 | 6,724 | 0.15 | 51 | 131.8 | 1.0 | 2715 | 0.06 | 40.0 | 4,009 | 0.09 | 87.2 |
| PR-62 | 38,930 | 0.89 | 87 | 447.5 | 1.0 | 13620 | 0.31 | 34.8 | 25,310 | 0.58 | 86.3 |
| PR-63 | 7,158 | 0.16 | 82 | 87.3 | 1.0 | 2568 | 0.06 | 37.5 | 4,590 | 0.11 | 91.8 |
| PR-64 | 14,415 | 0.33 | 110 | 131.0 | 1.0 | 7481 | 0.17 | 51.5 | 6,934 | 0.16 | 89.3 |
| PR-65 | 4,961 | 0.11 | 51 | 97.3 | 1.0 | 0 | 0.00 | 0.0 | 4,961 | 0.11 | 80.0 |
| PR-66 | 18,014 | 0.41 | 83 | 217.0 | 1.0 | 7287 | 0.17 | 41.5 | 10,727 | 0.25 | 89.4 |
| PR-67 | 3,795 | 0.09 | 69 | 55.0 | 1.0 | 0 | 0.00 | 0.0 | 3,795 | 0.09 | 80.0 |
| PR-68 | 3,942 | 0.09 | 57 | 69.2 | 1.0 | 0 | 0.00 | 0.0 | 3,942 | 0.09 | 80.0 |
| PR-69 | 4,482 | 0.10 | 69 | 65.0 | 1.0 | 0 | 0.00 | 0.0 | 4,482 | 0.10 | 80.0 |
| PR-70 | 15,172 | 0.35 | 59 | 257.2 | 1.0 | 7464 | 0.17 | 48.6 | 7,708 | 0.18 | 88.7 |
| PR-71 | 4,717 | 0.11 | 77 | 61.3 | 1.0 | 881 | 0.02 | 18.2 | 3,836 | 0.09 | 83.3 |
| PR-72 | 11,516 | 0.26 | 97 | 118.7 | 1.0 | 6569 | 0.15 | 57.7 | 4,947 | 0.11 | 90.4 |
| PR-73 | 10,754 | 0.25 | 42 | 256.0 | 1.0 | 1545 | 0.04 | 16.0 | 9,209 | 0.21 | 82.9 |
| PR-74 | 10,938 | 0.25 | 98 | 111.6 | 1.0 | 6000 | 0.14 | 56.0 | 4,938 | 0.11 | 90.1 |
| PR-75 | 10,764 | 0.25 | 98 | 109.8 | 1.0 | 6000 | 0.14 | 56.0 | 4,764 | 0.11 | 90.1 |
| PR-76 | 8,274 | 0.19 | 47 | 176.0 | 1.0 | 767 | 0.02 | 10.5 | 7,507 | 0.17 | 81.9 |
| PR-77 | 12,063 | 0.28 | 48 | 251.3 | 1.0 | 719 | 0.02 | 7.1 | 11,344 | 0.26 | 81.3 |
| PR-78 | 12,608 | 0.29 | 47 | 268.3 | 1.0 | 1535 | 0.04 | 13.8 | 11,073 | 0.25 | 82.5 |
| PR-79 | 22,290 | 0.51 | 44 | 506.6 | 1.0 | 7405 | 0.17 | 33.3 | 14,885 | 0.34 | 86.0 |
| PR-80 | 13,092 | 0.30 | 44 | 297.5 | 1.0 | 7315 | 0.17 | 46.7 | 5,777 | 0.13 | 90.2 |
| PR-81 | 10,589 | 0.24 | 44 | 240.7 | 1.0 | 7330 | 0.17 | 70.8 | 3,259 | 0.07 | 92.8 |
| PR-82 | 9,529 | 0.22 | 110 | 86.6 | 1.0 | 853 | 0.02 | 9.1 | 8,676 | 0.20 | 81.6 |
| PR-83 | 11,653 | 0.27 | 138 | 84.4 | 1.0 | 6193 | 0.14 | 51.9 | 5,460 | 0.13 | 89.3 |
| PR-84 | 21,210 | 0.49 | 87 | 243.8 | 1.0 | 7066 | 0.16 | 32.7 | 14,144 | 0.32 | 84.2 |
| PR-85 | 21,781 | 0.50 | 54 | 403.4 | 1.0 | 7632 | 0.18 | 36.0 | 14,149 | 0.32 | 86.5 |
| PR-86 | 4,058 | 0.09 | 49 | 82.8 | 1.0 | 0 | 0.00 | 0.0 | 4,058 | 0.09 | 80.0 |
| PR-87 | 4,202 | 0.10 | 58 | 72.4 | 1.0 | 577 | 0.01 | 10.0 | 3,625 | 0.08 | 73.8 |
| PR-88 | 14,100 | 0.32 | 60 | 235.0 | 1.0 | 0 | 0.00 | 0.0 | 14,100 | 0.32 | 80.0 |
| PR-89 | 3,401 | 0.08 | 68 | 50.0 | 1.0 | 937 | 0.02 | 25.0 | 2,464 | 0.06 | 84.5 |
| PR-90 | 4,482 | 0.10 | 68 | 65.9 | 1.0 | 0 | 0.00 | 0.0 | 4,482 | 0.10 | 80.0 |
| PR-91 | 8,017 | 0.18 | 69 | 116.2 | 1.0 | 0 | 0.00 | 0.0 | 8,017 | 0.18 | 80.0 |
| PR-92 | 4,794 | 0.11 | 78 | 61.5 | 1.0 | 0 | 0.00 | 0.0 | 4,794 | 0.11 | 80.0 |
| PR-93 | 4,836 | 0.11 | 78 | 62.0 | 1.0 | 0 | 0.00 | 0.0 | 4,836 | 0.11 | 80.0 |
| PR-94 | 6,040 | 0.14 | 70 | 86.3 | 1.0 | 0 | 0.00 | 0.0 | 6,040 | 0.14 | 80.0 |
| PR-95 | 4,334 | 0.10 | 83 | 52.2 | 1.0 | 0 | 0.00 | 0.0 | 4,334 | 0.10 | 80.0 |
| PR-96 | 9,270 | 0.21 | 69 | 134.3 | 1.0 | 0 | 0.00 | 0.0 | 9,270 | 0.21 | 80.0 |
| PR-97 | 9,426 | 0.22 | 150 | 62.8 | 1.0 | 0 | 0.00 | 0.0 | 9,426 | 0.22 | 80.0 |
| PR-98 | 9,967 | 0.23 | 94 | 106.0 | 1.0 | 487 | 0.01 | 4.3 | 9,480 | 0.22 | 80.8 |
| PR-99 | 8,982 | 0.21 | 108 | 83.2 | 1.0 | 0 | 0.00 | 0.0 | 8,982 | 0.21 | 80.0 |
| PR-100 | 6,151 | 0.14 | 126 | 48.8 | 1.0 | 0 | 0.00 | 0.0 | 6,151 | 0.14 | 80.0 |
| PR-101 | 4,626 | 0.11 | 74 | 62.5 | 1.0 | 0 | 0.00 | 0.0 | 4,626 | 0.11 | 80.0 |
| PR-102 | 12,538 | 0.29 | 47 | 266.8 | 1.0 | 1535 | 0.04 | 13.8 | 11,003 | 0.25 | 82.5 |
| PR-103 | 4,585 | 0.11 | 68 | 67.4 | 1.0 | 0 | 0.00 | 0.0 | 4,585 | 0.11 | 80.0 |
| PR-104 | 3,656 | 0.08 | 69 | 53.0 | 1.0 | 0 | 0.00 | 0.0 | 3,656 | 0.08 | 80.0 |
| PR-105 | 4,918 | 0.11 | 51 | 96.4 | 1.0 | 0 | 0.00 | 0.0 | 4,918 | 0.11 | 80.0 |
| PR-106 | 11,739 | 0.27 | 51 | 230.2 | 1.0 | 6914 | 0.16 | 59.3 | 4,825 | 0.11 | 90.7 |
| PR-107 | 92,532 | 2.12 | 105 | 881.3 | 0.5 | 0 | 0.00 | 0.0 | 92,532 | 2.12 | 80.0 |
| PR-108 | 69,212 | 1.59 | 118 | 586.5 | 0.5 | 0 | 0.00 | 0.0 | 69,212 | 1.59 | 80.0 |
| PR-109 | 25,730 | 0.59 | 83 | 310.0 | 0.5 | 0 | 0.00 | 0.0 | 25,730 | 0.59 | 80.0 |
| PR-110 | 32,702 | 0.75 | 115 | 284.4 | 0.5 | 0 | 0.00 | 0.0 | 32,702 | 0.75 | 80.0 |
| PR-111 | 25,099 | 0.58 | 56 | 448.2 | 0.5 | 472 | 0.01 | 1.7 | 24,627 | 0.57 | 80.3 |
| PR-112 | 17,635 | 0.40 | 25 | 705.4 | 1.0 | 0 | 0.00 | 0.0 | 17,635 | 0.40 | 80.0 |
| TOTAL | 1,899,567 | 43.61 | | | | 562,716 | 12.92 | 29.6 | 1,336,851 | 30.69 | 85.33272185 |

Proposed - Offsite Drainage Area Calculation Data

| | Total Area (SF) | Total Area (AC) | Flow Length (FT) | Width (FT) | Slope (%) | Impervious Area (SF) | Impervious Area (AC) | % IMP | Pervious Area (SF) | Pervious Area (AC) | Curve Number (CN) |
|--------------|-----------------|-----------------|------------------|------------|-----------|----------------------|----------------------|------------|--------------------|--------------------|-------------------|
| PR-OS-1 | 13,528 | 0.31 | 76 | 178.0 | 0.5 | 0 | 0.00 | 0.0 | 13,528 | 0.31 | 80 |
| PR-OS-2 | 39,152 | 0.90 | 98 | 399.5 | 1.0 | 0 | 0.00 | 0.0 | 39,152 | 0.90 | 80 |
| PR-OS-3 | 30,657 | 0.70 | 393 | 78.0 | 1.0 | 0 | 0.00 | 0.0 | 30,657 | 0.70 | 80 |
| TOTAL | 83,337 | 1.91 | | | | 0 | 0.00 | 0.0 | 83,337 | 1.91 | 80 |



Pond Storage Curves

CALCULATIONS BY: ENL
 DATE: 12/31/2025
 PROJECT: New Bridge Creek Subdivision
 PROJECT #: 24102

| | | Proposed Storage Curve | | | | |
|-----------------------|-------|------------------------|----------------|-----------|--------------|---------------|
| Junction: | BMP1 | Depth (ft) | Elevation (ft) | Area (sf) | Inc Vol (cf) | Cumu Vol (cf) |
| Subcatchment: | BMP1 | 0.00 | -3.50 | 95,172 | 0 | 0 |
| Invert: | -3.50 | 1.00 | -2.50 | 100,108 | 97,640 | 97,640 |
| | | 2.00 | -1.50 | 105,101 | 102,605 | 200,245 |
| | | 3.00 | -0.50 | 110,151 | 107,626 | 307,871 |
| | | 4.00 | 0.50 | 115,256 | 112,704 | 420,574 |
| Normal Pool Elevation | | 5.00 | 1.50 | 125,638 | 120,447 | 541,021 |
| | | 6.00 | 2.50 | 136,246 | 130,942 | 671,963 |
| | | 7.00 | 3.50 | 147,080 | 141,663 | 813,626 |
| Top of Bank | | 8.00 | 4.50 | 158,140 | 152,610 | 966,236 |
| Catchment Area | | 9.00 | 5.50 | 1,249,231 | 703,686 | 1,669,922 |
| Catchment Area + 10' | | 19.00 | 15.50 | 1,249,231 | 12,492,310 | 14,162,232 |

| | | Proposed Storage Curve | | | | |
|-----------------------|-------|------------------------|----------------|-----------|--------------|---------------|
| Junction: | BMP2 | Depth (ft) | Elevation (ft) | Area (sf) | Inc Vol (cf) | Cumu Vol (cf) |
| Subcatchment: | BMP2 | 0.00 | -3.50 | 23,018 | 0 | 0 |
| Invert: | -3.50 | 0.50 | -3.00 | 24,608 | 11,907 | 11,907 |
| | | 1.50 | -2.00 | 27,832 | 26,220 | 38,127 |
| | | 2.50 | -1.00 | 31,119 | 29,476 | 67,602 |
| | | 3.50 | 0.00 | 34,465 | 32,792 | 100,394 |
| Normal Pool Elevation | | 4.50 | 1.00 | 41,325 | 37,895 | 138,289 |
| | | 5.50 | 2.00 | 48,426 | 44,876 | 183,165 |
| | | 6.50 | 3.00 | 55,748 | 52,087 | 235,252 |
| | | 7.50 | 4.00 | 63,295 | 59,522 | 294,773 |
| Top of Bank | | 8.00 | 4.50 | 67,152 | 32,612 | 327,385 |
| Catchment Area | | 9.00 | 5.50 | 838,972 | 453,062 | 780,447 |
| Catchment Area + 10' | | 19.00 | 15.50 | 838,972 | 8,389,720 | 9,170,167 |



Inlet Storage Curves

CALCULATIONS BY:
DATE:
PROJECT:
PROJECT #

JTP/ENL
12/31/2025
New Bridge Creek Subdivision
24102

Existing Storage Curves

Junction: X101A
Subcatchment: EX01
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 1 | 0.00 | 488 |
| 2 | 1.00 | 11,130 |
| 3 | 2.00 | 65,909 |
| 4 | 3.00 | 66,769 |
| 14 | 13.00 | 66,769 |

Junction: X101B
Subcatchment: EX01
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 73 |
| 1.00 | 1.00 | 5,056 |
| 2.00 | 2.00 | 35,977 |
| 3.00 | 3.00 | 44,238 |
| 13.00 | 13.00 | 44,238 |

Junction: X102A
Subcatchment: EX02
Invert: 1.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 1.00 | 422 |
| 1.00 | 2.00 | 9,665 |
| 2.00 | 3.00 | 79,919 |
| 3.00 | 4.00 | 82,473 |
| 13.00 | 14.00 | 82,473 |

Junction: X102B
Subcatchment: EX01
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 675 |
| 1.00 | 1.00 | 13,983 |
| 2.00 | 2.00 | 47,534 |
| 3.00 | 3.00 | 77,804 |
| 13.00 | 13.00 | 77,804 |

Junction: X103A
Subcatchment: EX03
Invert: 1.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 1.00 | 145 |
| 1.00 | 2.00 | 6,739 |
| 2.00 | 3.00 | 109,486 |
| 3.00 | 4.00 | 128,862 |
| 14.00 | 15.00 | 128,862 |

Junction: X103B
Subcatchment: EX03
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 931 |
| 1.00 | 1.00 | 7,759 |
| 2.00 | 2.00 | 26,458 |
| 3.00 | 3.00 | 67,978 |
| 13.00 | 13.00 | 67,978 |

Junction: X104A
 Subcatchment: EX04
 Invert: 1.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 1.00 | 419 |
| 1.00 | 2.00 | 2,291 |
| 2.00 | 3.00 | 42,331 |
| 3.00 | 4.00 | 116,227 |
| 4.00 | 14.00 | 116,227 |

Junction: X104B
 Subcatchment: EX04
 Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 2,079 |
| 1.00 | 1.00 | 27,169 |
| 2.00 | 2.00 | 87,606 |
| 3.00 | 3.00 | 105,177 |
| 13.00 | 13.00 | 105,177 |

Junction: X105A
 Subcatchment: EX05
 Invert: 1.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 1.00 | 734 |
| 1.00 | 2.00 | 3,227 |
| 2.00 | 3.00 | 35,223 |
| 3.00 | 4.00 | 96,348 |
| 13.00 | 14.00 | 96,348 |

Junction: X105B
 Subcatchment: EX05
 Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 946 |
| 1.00 | 1.00 | 11,200 |
| 2.00 | 2.00 | 44,045 |
| 3.00 | 3.00 | 50,776 |
| 13.00 | 13.00 | 50,776 |

Junction: X106A
 Subcatchment: EX06
 Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 16 |
| 1.00 | 2.00 | 48 |
| 2.00 | 3.00 | 490 |
| 3.00 | 4.00 | 67,278 |
| 4.00 | 5.00 | 151,009 |
| 14.00 | 15.00 | 151,009 |

Junction: X106B
 Subcatchment: EX06
 Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 8,402 |
| 1.00 | 1.00 | 31,552 |
| 2.00 | 2.00 | 63,343 |
| 3.00 | 3.00 | 100,226 |
| 4.00 | 4.00 | 100,646 |
| 14.00 | 14.00 | 100,646 |

Junction: X107A
 Subcatchment: EX07
 Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 275 |
| 1.00 | 2.00 | 1,102 |
| 2.00 | 3.00 | 2,872 |
| 3.00 | 4.00 | 47,344 |
| 4.00 | 5.00 | 96,515 |
| 14.00 | 15.00 | 96,515 |

Junction: X107B
Subcatchment: EX07
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 14,652 |
| 1.00 | 1.00 | 51,607 |
| 2.00 | 2.00 | 83,028 |
| 3.00 | 3.00 | 116,460 |
| 4.00 | 4.00 | 117,350 |
| 14.00 | 14.00 | 117,350 |

Junction: X108A
Subcatchment: EX08
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 31 |
| 1.00 | 2.00 | 123 |
| 2.00 | 3.00 | 308 |
| 3.00 | 4.00 | 134,389 |
| 4.00 | 5.00 | 163,328 |
| 14.00 | 15.00 | 163,328 |

Junction: X108B
Subcatchment: EX08
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 16,898 |
| 1.00 | 1.00 | 68,120 |
| 2.00 | 2.00 | 100,428 |
| 3.00 | 3.00 | 132,681 |
| 4.00 | 4.00 | 133,087 |
| 14.00 | 14.00 | 133,087 |

Junction: X109
Subcatchment: EX09
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 432 |
| 1.00 | 2.00 | 2,499 |
| 2.00 | 3.00 | 36,515 |
| 3.00 | 4.00 | 52,075 |
| 13.00 | 14.00 | 52,075 |

Junction: X110
Subcatchment: EX10
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 5,001 |
| 1.00 | 2.00 | 23,605 |
| 2.00 | 3.00 | 37,619 |
| 3.00 | 4.00 | 44,452 |
| 4.00 | 5.00 | 44,827 |
| 14.00 | 15.00 | 44,827 |

Junction: X111A
Subcatchment: EX11
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 151 |
| 1.00 | 2.00 | 603 |
| 2.00 | 3.00 | 1,508 |
| 3.00 | 4.00 | 12,596 |
| 4.00 | 5.00 | 109,992 |
| 5.00 | 6.00 | 120,055 |
| 15.00 | 16.00 | 120,055 |

Junction: X111B
Subcatchment: EX11
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 7,659 |
| 1.00 | 1.00 | 11,391 |
| 2.00 | 2.00 | 26,989 |
| 3.00 | 3.00 | 66,038 |
| 4.00 | 4.00 | 88,691 |
| 14.00 | 14.00 | 88,691 |

Junction: X112A
Subcatchment: EX12
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 193 |
| 1.00 | 2.00 | 771 |
| 2.00 | 3.00 | 1,076 |
| 3.00 | 4.00 | 2,856 |
| 4.00 | 5.00 | 54,199 |
| 14.00 | 15.00 | 54,199 |

Junction: X112B
Subcatchment: EX12
Invert: 0.00

| Existing Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 1,107 |
| 1.00 | 1.00 | 4,429 |
| 2.00 | 2.00 | 14,133 |
| 3.00 | 3.00 | 32,286 |
| 4.00 | 4.00 | 42,585 |
| 14.00 | 14.00 | 42,585 |

Proposed Storage Curves

Junction: X103B
Subcatchment: PR108
Invert: 0.00

| Proposed Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 37 |
| 1.00 | 1.00 | 13,314 |
| 2.00 | 2.00 | 47,566 |
| 3.00 | 3.00 | 69,026 |
| 13.00 | 13.00 | 69,026 |

Junction: PR109
Subcatchment: PR109
Invert: 0.00

| Proposed Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 931 |
| 1.00 | 1.00 | 7,207 |
| 2.00 | 2.00 | 24,015 |
| 3.00 | 3.00 | 26,928 |
| 13.00 | 13.00 | 26,928 |

Junction: PR110
Subcatchment: PR110
Invert: -1.00

| Proposed Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | -1.00 | 1,704 |
| 1.00 | 0.00 | 23,999 |
| 2.00 | 1.00 | 39,119 |
| 3.00 | 2.00 | 54,239 |
| 13.00 | 12.00 | 54,239 |

Junction: X101A
Subcatchment: PR-107
Invert: 0

| Proposed Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 38 |
| 1.00 | 1.00 | 481 |
| 2.00 | 2.00 | 10,768 |
| 3.00 | 3.00 | 58,972 |
| 13.00 | 13.00 | 58,972 |

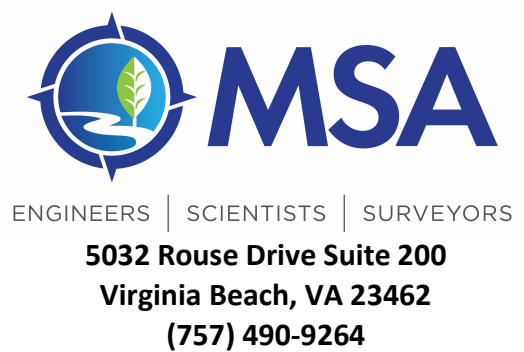
Junction: X101B
Subcatchment: PR-107
Invert: 0

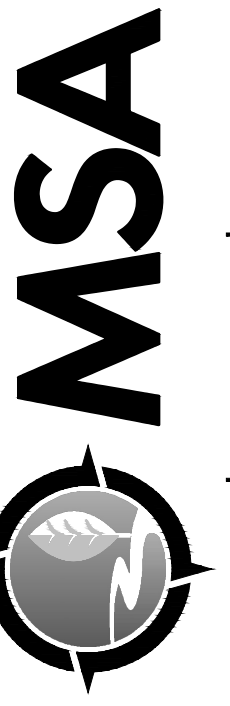
| Proposed Storage Curve | | |
|------------------------|----------------|-----------|
| Depth (ft) | Elevation (ft) | Area (sf) |
| 0.00 | 0.00 | 75 |
| 1.00 | 1.00 | 5,058 |
| 2.00 | 2.00 | 28,011 |
| 3.00 | 3.00 | 36,274 |
| 13.00 | 13.00 | 36,274 |

APPENDIX D

Drainage Area Maps

Prepared by:





ENGINEERS | SCIENTISTS | SURVEYORS

5032 ROUSE DRIVE, SUITE 200 | VIRGINIA BEACH, VA 23462 | 757.490.9264 | MSAONLINE.COM

| | | | | | |
|----------|-----|-----|-----|-----|------|
| DESIGNED | ENL | JTP | RWS | CSA | DATE |
| DRAWN | | | | | |
| CHECKED | | | | | |
| APPROVED | | | | | |

| | | |
|----------|-------------|------|
| REVISION | DESCRIPTION | DATE |
| | | |
| | | |
| | | |
| | | |

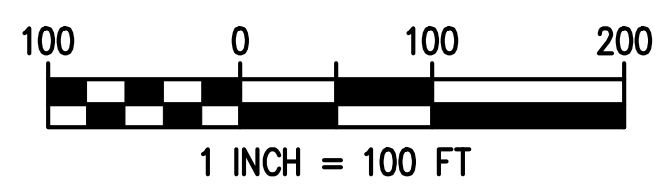
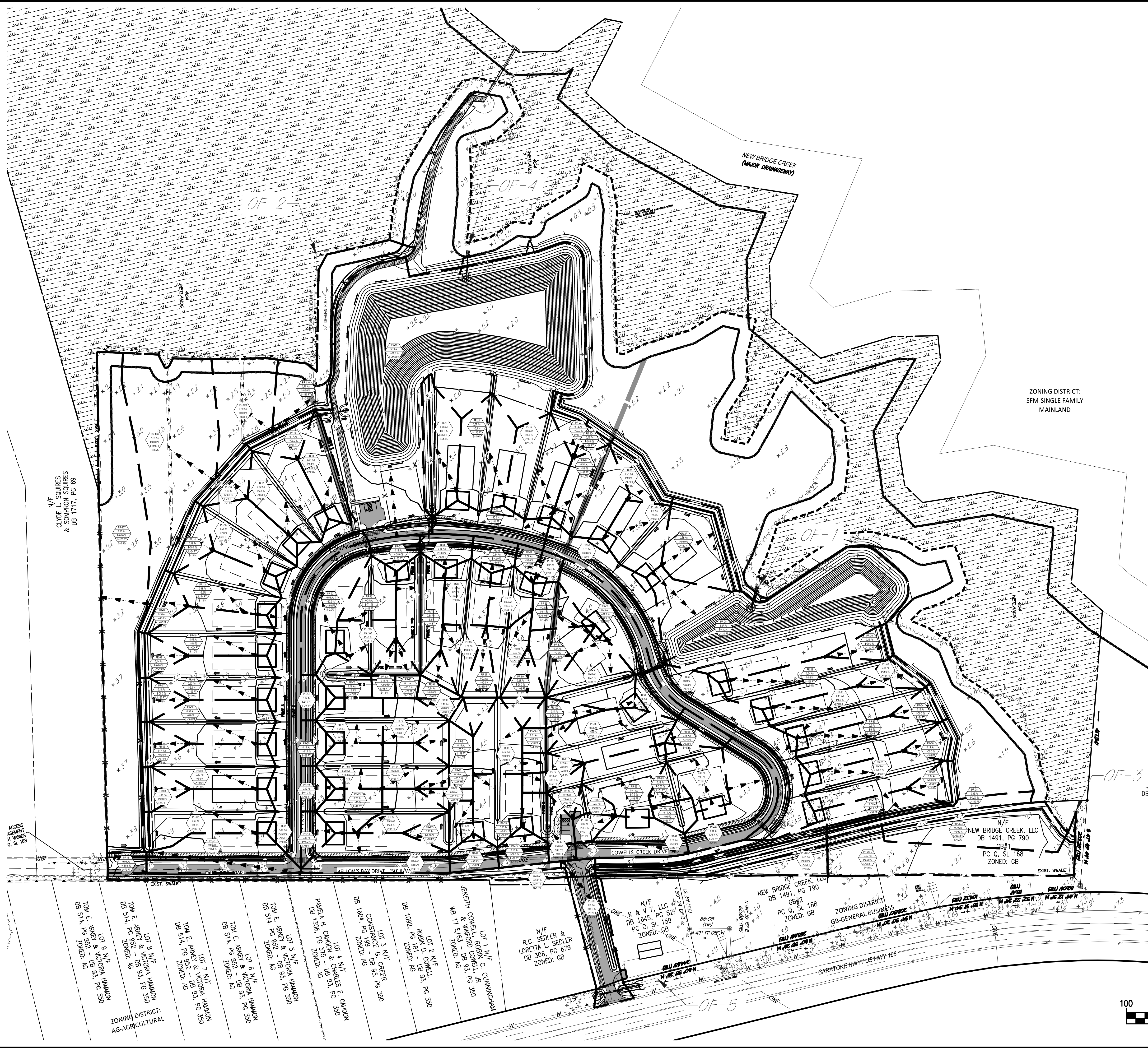
EXISTING DRAINAGE AREA MAP
OF
NEW BRIDGE CREEK

CURRITUCK COUNTY, NORTH CAROLINA
MOTOCK TOWNSHIP

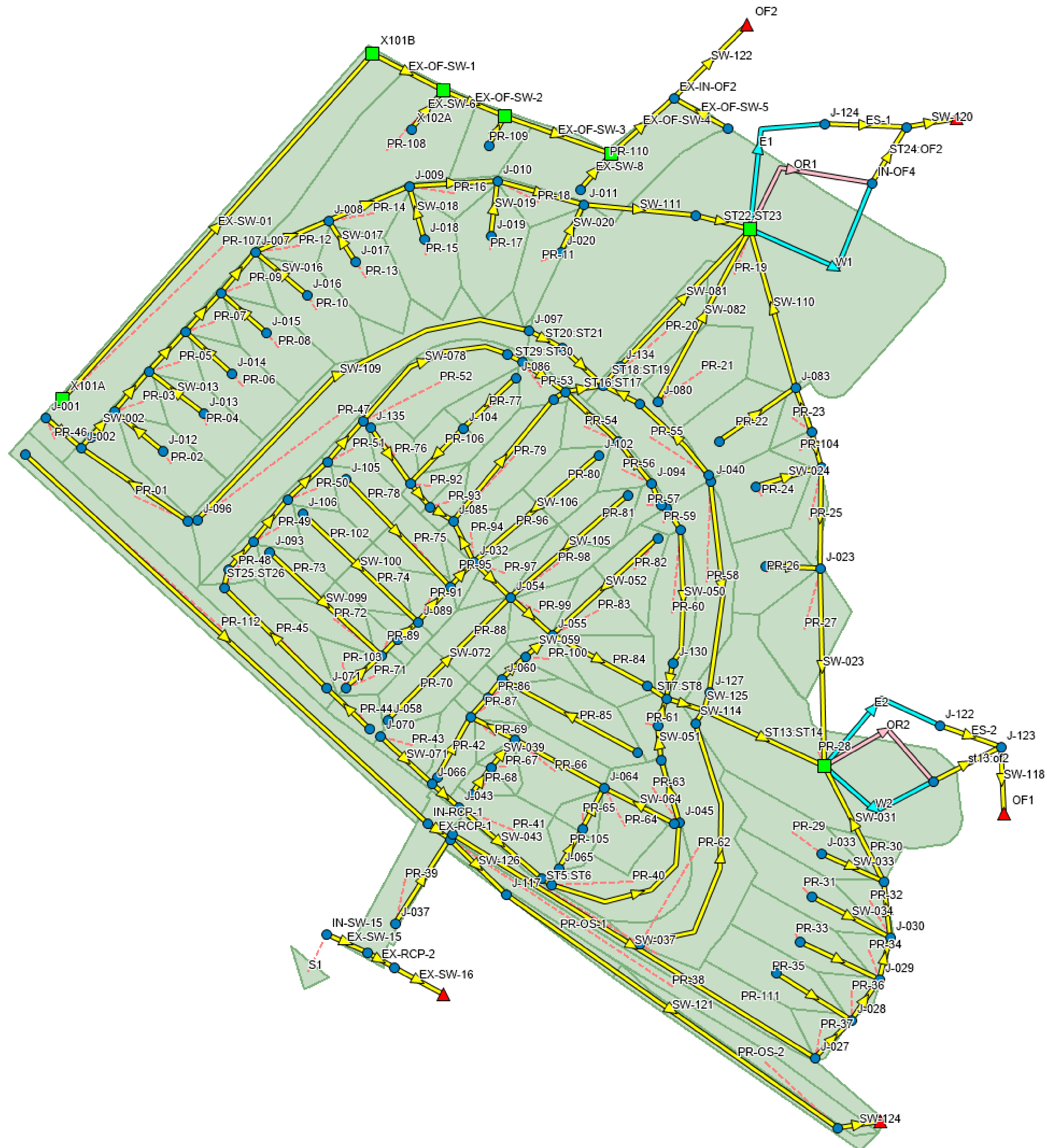
SHEET
DA101
1 of 2 Sheets
SCALE: 1" = 100'
PROJ. NO.: 24102



EXISTING PCSWMM MODEL LAYOUT



| DESIGNED | ENL |
|----------|-----|
| | |
| DRAWN | JTP |
| | |
| CHECKED | RWS |
| | |
| APPROVED | CSA |
| | |
| DATE | |
| | |

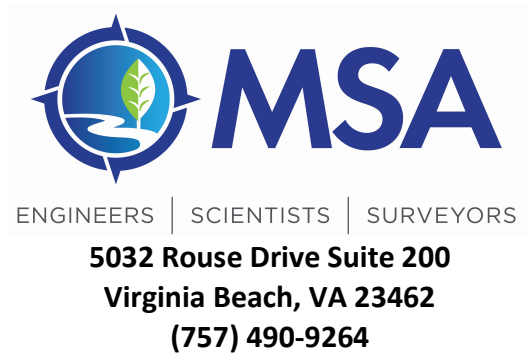


PROPOSED PCSWMM MODEL LAYOUT

APPENDIX E

Stormwater Calculation Summary Tables

Prepared by:





HGL Result Summary

CALCULATIONS BY: ENL
 DATE: 4/3/2026
 PROJECT: New Bridge Creek Subdivision
 PROJECT #: 24102

| Name | Ex Cond New Bridge 2-yr | New Bridge Proposed 2yr | Ex Cond New Bridge 10-yr | New Bridge Proposed 10yr | Ex Cond New Bridge 100-yr | New Bridge Proposed 100yr |
|-----------|-------------------------|-------------------------|--------------------------|--------------------------|---------------------------|---------------------------|
| EX-IN-OF2 | 0.64 | 0.23 | 4.02 | 4.01 | 4.06 | 4.02 |
| IN-OF1 | n/a | 1.29 | n/a | 3.96 | n/a | 4.10 |
| IN-OF4 | n/a | 0.31 | n/a | 3.94 | n/a | 4.10 |
| IN-RCP-1 | n/a | 2.95 | n/a | 4.08 | 5.23 | 4.22 |
| IN-RCP-2 | n/a | 3.64 | n/a | 3.68 | 3.93 | 3.75 |
| IN-SW-14 | n/a | 3.06 | n/a | 4.09 | 5.24 | 4.26 |
| IN-SW-15 | n/a | 3.83 | n/a | 3.89 | 4.06 | 3.95 |
| IN-SW-16 | 3.59 | 3.5 | 3.7 | 3.53 | 3.83 | 3.59 |
| J-001 | n/a | 4.49 | n/a | 4.70 | n/a | 5.03 |
| J-002 | n/a | 4.49 | n/a | 4.70 | n/a | 5.02 |
| J-003 | n/a | 3.85 | n/a | 3.92 | n/a | 4.28 |
| J-004 | n/a | 3.75 | n/a | 3.91 | n/a | 4.28 |
| J-005 | n/a | 3.64 | n/a | 3.91 | n/a | 4.28 |
| J-006 | n/a | 3.56 | n/a | 3.91 | n/a | 4.28 |
| J-007 | n/a | 3.5 | n/a | 3.91 | n/a | 4.28 |
| J-008 | n/a | 3.43 | n/a | 3.91 | n/a | 4.28 |
| J-009 | n/a | 3.42 | n/a | 3.91 | n/a | 4.28 |
| J-010 | n/a | 3.42 | n/a | 3.91 | n/a | 4.28 |
| J-011 | n/a | 3.42 | n/a | 3.91 | n/a | 4.28 |
| J-012 | n/a | 5.15 | n/a | 5.28 | n/a | 5.45 |
| J-013 | n/a | 5.12 | n/a | 5.23 | n/a | 5.38 |
| J-014 | n/a | 5.01 | n/a | 5.12 | n/a | 5.27 |
| J-015 | n/a | 5.1 | n/a | 5.20 | n/a | 5.34 |
| J-016 | n/a | 5 | n/a | 5.11 | n/a | 5.23 |
| J-017 | n/a | 5.32 | n/a | 5.43 | n/a | 5.58 |
| J-018 | n/a | 5.17 | n/a | 5.26 | n/a | 5.38 |
| J-019 | n/a | 4.98 | n/a | 5.08 | n/a | 5.18 |
| J-020 | n/a | 4.74 | n/a | 4.82 | n/a | 4.93 |
| J-021 | n/a | 3.21 | n/a | 3.91 | n/a | 4.26 |
| J-022 | n/a | 3.28 | n/a | 3.91 | n/a | 4.26 |
| J-023 | n/a | 3.28 | n/a | 3.91 | n/a | 4.26 |
| J-024 | n/a | 4.56 | n/a | 4.68 | n/a | 4.84 |
| J-025 | n/a | 4.23 | n/a | 4.47 | n/a | 4.94 |
| J-026 | n/a | 4.8 | n/a | 4.85 | n/a | 4.96 |
| J-027 | n/a | 3.36 | n/a | 3.91 | n/a | 4.26 |
| J-028 | n/a | 3.34 | n/a | 3.91 | n/a | 4.26 |
| J-029 | n/a | 3.33 | n/a | 3.91 | n/a | 4.26 |
| J-030 | n/a | 3.32 | n/a | 3.91 | n/a | 4.26 |
| J-031 | n/a | 3.31 | n/a | 3.91 | n/a | 4.26 |
| J-032 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-033 | n/a | 4.6 | n/a | 4.71 | n/a | 4.86 |
| J-034 | n/a | 5.09 | n/a | 5.22 | n/a | 5.39 |
| J-035 | n/a | 5.13 | n/a | 5.24 | n/a | 5.40 |
| J-036 | n/a | 5.09 | n/a | 5.20 | n/a | 5.36 |
| J-037 | n/a | 5.59 | n/a | 5.71 | n/a | 5.91 |
| J-040 | n/a | 4.71 | n/a | 4.90 | n/a | 5.13 |

| | | | | | | |
|-------|-----|------|-----|------|-----|------|
| J-041 | n/a | 3.87 | n/a | 4.01 | n/a | 4.37 |
| J-042 | n/a | 5.28 | n/a | 5.39 | n/a | 5.55 |
| J-043 | n/a | 4.91 | n/a | 5.11 | n/a | 5.44 |
| J-044 | n/a | 4.68 | n/a | 4.90 | n/a | 5.20 |
| J-045 | n/a | 4.45 | n/a | 4.66 | n/a | 4.99 |
| J-046 | n/a | 4.27 | n/a | 4.46 | n/a | 4.87 |
| J-047 | n/a | 4.8 | n/a | 5.03 | n/a | 5.34 |
| J-049 | n/a | 4.57 | n/a | 4.69 | n/a | 4.80 |
| J-050 | n/a | 4.57 | n/a | 4.69 | n/a | 4.80 |
| J-051 | n/a | 3.52 | n/a | 4.09 | n/a | 4.92 |
| J-054 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-055 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-058 | n/a | 5.57 | n/a | 5.67 | n/a | 5.76 |
| J-060 | n/a | 4.42 | n/a | 4.64 | n/a | 4.95 |
| J-061 | n/a | 4.49 | n/a | 4.71 | n/a | 5.01 |
| J-062 | n/a | 4.5 | n/a | 4.71 | n/a | 5.02 |
| J-063 | n/a | 5.24 | n/a | 5.36 | n/a | 5.52 |
| J-064 | n/a | 5.55 | n/a | 5.69 | n/a | 5.87 |
| J-065 | n/a | 5.59 | n/a | 5.72 | n/a | 5.91 |
| J-066 | n/a | 4.92 | n/a | 5.13 | n/a | 5.47 |
| J-067 | n/a | 4.23 | n/a | 4.47 | n/a | 4.94 |
| J-068 | n/a | 4.23 | n/a | 4.47 | n/a | 4.94 |
| J-069 | n/a | 5.34 | n/a | 5.56 | n/a | 5.95 |
| J-070 | n/a | 5.01 | n/a | 5.17 | n/a | 5.48 |
| J-071 | n/a | 5.33 | n/a | 5.55 | n/a | 5.94 |
| J-072 | n/a | 4.97 | n/a | 5.20 | n/a | 5.53 |
| J-073 | n/a | 4.91 | n/a | 5.14 | n/a | 5.49 |
| J-074 | n/a | 4.85 | n/a | 5.09 | n/a | 5.45 |
| J-075 | n/a | 4.79 | n/a | 5.03 | n/a | 5.42 |
| J-076 | n/a | 4.16 | n/a | 4.48 | n/a | 4.90 |
| J-078 | n/a | 3.95 | n/a | 4.27 | n/a | 4.65 |
| J-080 | n/a | 4.97 | n/a | 5.09 | n/a | 5.25 |
| J-081 | n/a | 3.97 | n/a | 4.29 | n/a | 4.67 |
| J-082 | n/a | 5.06 | n/a | 5.12 | n/a | 5.25 |
| J-083 | n/a | 3.08 | n/a | 3.91 | n/a | 4.26 |
| J-084 | n/a | 4.06 | n/a | 4.40 | n/a | 4.86 |
| J-085 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-086 | n/a | 5.28 | n/a | 5.39 | n/a | 5.54 |
| J-087 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-089 | n/a | 4.23 | n/a | 4.47 | n/a | 4.94 |
| J-090 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-093 | n/a | 5.5 | n/a | 5.59 | n/a | 5.68 |
| J-094 | n/a | 4.19 | n/a | 4.41 | n/a | 4.86 |
| J-095 | n/a | 4.06 | n/a | 4.40 | n/a | 4.86 |
| J-096 | n/a | 5.23 | n/a | 5.43 | n/a | 5.66 |
| J-097 | n/a | 4.03 | n/a | 4.43 | n/a | 5.07 |
| J-098 | n/a | 4.45 | n/a | 4.67 | n/a | 4.98 |
| J-099 | n/a | 4.35 | n/a | 4.55 | n/a | 4.94 |
| J-100 | n/a | 5.01 | n/a | 5.08 | n/a | 5.18 |
| J-101 | n/a | 5.33 | n/a | 5.40 | n/a | 5.49 |
| J-102 | n/a | 5.36 | n/a | 5.43 | n/a | 5.53 |
| J-103 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-104 | n/a | 4.92 | n/a | 4.99 | n/a | 5.08 |
| J-105 | n/a | 5.31 | n/a | 5.38 | n/a | 5.43 |
| J-106 | n/a | 5.41 | n/a | 5.48 | n/a | 5.52 |
| J-108 | n/a | 5.3 | n/a | 5.41 | n/a | 5.57 |
| J-109 | n/a | 5.57 | n/a | 5.71 | n/a | 5.89 |
| J-110 | n/a | 4.61 | n/a | 4.74 | n/a | 4.91 |
| J-111 | n/a | 4.25 | n/a | 4.41 | n/a | 4.86 |
| J-112 | n/a | 5.1 | n/a | 5.39 | n/a | 5.88 |

| | | | | | | |
|-------|-----|-------|-----|------|-----|------|
| J-113 | n/a | 4.74 | n/a | 4.92 | n/a | 5.19 |
| J-116 | n/a | 2.83 | n/a | 4.07 | n/a | 4.19 |
| J-117 | n/a | 2.75 | n/a | 4.06 | n/a | 4.18 |
| J-119 | n/a | 1.45 | n/a | 4.03 | n/a | 4.09 |
| J-121 | n/a | 5.28 | n/a | 5.48 | n/a | 5.79 |
| J-122 | n/a | 4.1 | n/a | 4.10 | n/a | 4.24 |
| J-123 | n/a | 0.82 | n/a | 4.00 | n/a | 4.00 |
| J-124 | n/a | 4.1 | n/a | 4.10 | n/a | 4.26 |
| J-125 | n/a | -0.12 | n/a | 4.00 | n/a | 4.00 |
| J-126 | n/a | 3.41 | n/a | 3.91 | n/a | 4.28 |
| J-127 | n/a | 3.74 | n/a | 3.91 | n/a | 4.37 |
| J-128 | n/a | 4.34 | n/a | 4.71 | n/a | 5.28 |
| J-129 | n/a | 5.55 | n/a | 5.69 | n/a | 5.88 |
| J-130 | n/a | 3.49 | n/a | 3.97 | n/a | 4.77 |
| J-131 | n/a | 3.78 | n/a | 4.08 | n/a | 5.04 |
| J-132 | n/a | 3.62 | n/a | 4.02 | n/a | 4.88 |
| J-133 | n/a | 4.05 | n/a | 4.41 | n/a | 4.91 |
| J-134 | n/a | 3.81 | n/a | 4.05 | n/a | 4.28 |
| J-135 | n/a | 4.22 | n/a | 4.47 | n/a | 4.94 |
| J-136 | n/a | 2.78 | n/a | 3.91 | n/a | 4.38 |
| J-137 | n/a | 3.88 | n/a | 3.94 | n/a | 4.28 |
| J-138 | n/a | 5.03 | n/a | 5.26 | n/a | 5.56 |
| J-139 | n/a | 4.9 | n/a | 4.90 | n/a | 4.95 |
| J-140 | n/a | 4.71 | n/a | 4.96 | n/a | 5.35 |
| J-141 | n/a | 4.14 | n/a | 4.27 | n/a | 4.66 |
| X102A | n/a | 1.25 | n/a | 4.06 | n/a | 4.13 |
| X103A | n/a | 1 | n/a | 4.05 | n/a | 4.11 |
| X104A | n/a | 0.67 | n/a | 4.04 | n/a | 4.09 |
| X105B | n/a | 0.23 | n/a | 4.03 | n/a | 4.02 |



Pond HGL Results

CALCULATIONS BY: ENL
DATE: 4/3/2026
PROJECT: New Bridge Creek Subdivision
PROJECT #: 24102

| 10-YR STORM | | | |
|-------------|-------------------------|------------------|------------------------|
| Pond ID | Post-Dev 10 Yr HGL (FT) | Top of Bank (FT) | 10-Year Freeboard (FT) |
| BMP-1 | 3.91 | 4.50 | 0.59 |
| BMP-2 | 3.91 | 4.50 | 0.59 |

| 100-YR STORM | | | |
|--------------|--------------------------|------------------|-------------------------|
| Pond ID | Post-Dev 100 Yr HGL (FT) | Top of Bank (FT) | 100-Year Freeboard (FT) |
| BMP-1 | 4.26 | 4.50 | 0.24 |
| BMP-2 | 4.26 | 4.50 | 0.24 |



2-YR Storm Velocity Check

CALCULATIONS BY: ENL
 DATE: 4/3/2026
 PROJECT: New Bridge Creek Subdivision
 PROJECT #: 24102

The 2-year bare soil flow velocity must be less than or equal to 2 ft/s; otherwise, a temporary channel liner is required to prevent erosion.
 Outlet protection has been proposed at pipe outlets with a velocity greater than 2 ft/s

| Name | Cross-Section | Max. Velocity (ft/s) | Allowable Velocity (ft/s) | +/- Reduction | Check |
|------------|---------------|------------------------|---------------------------|---------------|--------------|
| ES-1 | TRAPEZOIDAL | 0.00 | 2 | 2.00 | OKAY |
| ES-2 | TRAPEZOIDAL | 0.00 | 2 | 2.00 | OKAY |
| EW-SW-14 | TRIANGULAR | 0.25 | 2 | 1.75 | OKAY |
| EX-OF-SW-1 | TRIANGULAR | 0.55 | 2 | 1.45 | OKAY |
| EX-OF-SW-2 | TRIANGULAR | 0.70 | 2 | 1.30 | OKAY |
| EX-OF-SW-3 | TRIANGULAR | 1.05 | 2 | 0.95 | OKAY |
| EX-OF-SW-4 | TRIANGULAR | 0.99 | 2 | 1.01 | OKAY |
| EX-OF-SW-5 | TRIANGULAR | 0.04 | 2 | 1.96 | OKAY |
| EX-RCP-1 | CIRCULAR | 1.31 | 2 | 0.69 | PIPED SYSTEM |
| EX-RCP-2 | CIRCULAR | 1.2 | 2 | 0.80 | PIPED SYSTEM |
| EX-SW-01 | TRIANGULAR | 0.67 | 2 | 1.33 | OKAY |
| EX-SW-15 | TRIANGULAR | 0.47 | 2 | 1.53 | OKAY |
| EX-SW-16 | TRIANGULAR | 0.72 | 2 | 1.28 | OKAY |
| EX-SW-6 | TRIANGULAR | 0 | 2 | 2.00 | OKAY |
| EX-SW-7 | TRIANGULAR | 0 | 2 | 2.00 | OKAY |
| EX-SW-8 | TRIANGULAR | 0.02 | 2 | 1.98 | OKAY |
| st13:of2 | CIRCULAR | 4.33 | 2 | -2.33 | PIPED SYSTEM |
| ST13:ST14 | CIRCULAR | 2.96 | 2 | -0.96 | PIPED SYSTEM |
| ST14:ST15 | CIRCULAR | 2.82 | 2 | -0.82 | PIPED SYSTEM |
| ST16:ST17 | CIRCULAR | 2.28 | 2 | -0.28 | PIPED SYSTEM |
| ST18:ST19 | CIRCULAR | 2.98 | 2 | -0.98 | PIPED SYSTEM |
| ST20:ST21 | CIRCULAR | 1.95 | 2 | 0.05 | PIPED SYSTEM |
| ST22:ST23 | CIRCULAR | 3 | 2 | -1.00 | PIPED SYSTEM |
| ST24:OF2 | CIRCULAR | 3.93 | 2 | -1.93 | PIPED SYSTEM |
| ST25:ST26 | CIRCULAR | 1.69 | 2 | 0.31 | PIPED SYSTEM |
| ST27:ST28 | CIRCULAR | 4.22 | 2 | -2.22 | PIPED SYSTEM |
| ST29:ST30 | CIRCULAR | 2.5 | 2 | -0.50 | PIPED SYSTEM |
| ST3:ST4 | CIRCULAR | 0.55 | 2 | 1.45 | PIPED SYSTEM |
| ST5:ST6 | CIRCULAR | 1.2 | 2 | 0.80 | PIPED SYSTEM |
| ST7:ST8 | CIRCULAR | 3.4 | 2 | -1.40 | PIPED SYSTEM |
| ST9:ST12 | CIRCULAR | 5.32 | 2 | -3.32 | PIPED SYSTEM |
| SW-001 | TRAPEZOIDAL | 0.17 | 2 | 1.83 | OKAY |
| SW-002 | IRREGULAR | 0.18 | 2 | 1.82 | OKAY |
| SW-003 | IRREGULAR | 0.32 | 2 | 1.68 | OKAY |
| SW-004 | TRAPEZOIDAL | 0.42 | 2 | 1.58 | OKAY |
| SW-005 | IRREGULAR | 0.35 | 2 | 1.65 | OKAY |
| SW-006 | IRREGULAR | 0.35 | 2 | 1.65 | OKAY |
| SW-007 | IRREGULAR | 0.35 | 2 | 1.65 | OKAY |
| SW-008 | IRREGULAR | 0.35 | 2 | 1.65 | OKAY |
| SW-009 | IRREGULAR | 0.22 | 2 | 1.78 | OKAY |
| SW-010 | IRREGULAR | 0.1 | 2 | 1.90 | OKAY |
| SW-012 | TRIANGULAR | 1.13 | 2 | 0.87 | OKAY |
| SW-013 | TRIANGULAR | 1.13 | 2 | 0.87 | OKAY |
| SW-014 | TRIANGULAR | 1.14 | 2 | 0.86 | OKAY |
| SW-015 | TRIANGULAR | 1.19 | 2 | 0.81 | OKAY |
| SW-016 | TRIANGULAR | 1.22 | 2 | 0.78 | OKAY |
| SW-017 | TRIANGULAR | 1.17 | 2 | 0.83 | OKAY |
| SW-018 | TRIANGULAR | 1.34 | 2 | 0.66 | OKAY |
| SW-019 | TRIANGULAR | 1.31 | 2 | 0.69 | OKAY |
| SW-020 | TRIANGULAR | 0.63 | 2 | 1.37 | OKAY |

| | | | | | |
|--------|-------------|------|---|------|------|
| SW-021 | IRREGULAR | 0.52 | 2 | 1.48 | OKAY |
| SW-022 | IRREGULAR | 0.16 | 2 | 1.84 | OKAY |
| SW-023 | TRAPEZOIDAL | 1.07 | 2 | 0.93 | OKAY |
| SW-024 | TRIANGULAR | 1.1 | 2 | 0.90 | OKAY |
| SW-025 | TRAPEZOIDAL | 0.83 | 2 | 1.17 | OKAY |
| SW-026 | TRIANGULAR | 1.22 | 2 | 0.78 | OKAY |
| SW-027 | TRAPEZOIDAL | 0.23 | 2 | 1.77 | OKAY |
| SW-028 | TRAPEZOIDAL | 0.23 | 2 | 1.77 | OKAY |
| SW-029 | TRAPEZOIDAL | 0.24 | 2 | 1.76 | OKAY |
| SW-030 | IRREGULAR | 0.16 | 2 | 1.84 | OKAY |
| SW-031 | TRAPEZOIDAL | 1.84 | 2 | 0.16 | OKAY |
| SW-032 | TRAPEZOIDAL | 0.59 | 2 | 1.41 | OKAY |
| SW-033 | TRIANGULAR | 0.62 | 2 | 1.38 | OKAY |
| SW-034 | TRIANGULAR | 0.97 | 2 | 1.03 | OKAY |
| SW-035 | TRIANGULAR | 1.07 | 2 | 0.93 | OKAY |
| SW-036 | TRIANGULAR | 1.03 | 2 | 0.97 | OKAY |
| SW-037 | TRAPEZOIDAL | 1.18 | 2 | 0.82 | OKAY |
| SW-038 | TRAPEZOIDAL | 0.81 | 2 | 1.19 | OKAY |
| SW-039 | TRIANGULAR | 0.31 | 2 | 1.69 | OKAY |
| SW-040 | TRIANGULAR | 0.89 | 2 | 1.11 | OKAY |
| SW-041 | TRIANGULAR | 0.25 | 2 | 1.75 | OKAY |
| SW-042 | TRIANGULAR | 0.23 | 2 | 1.77 | OKAY |
| SW-043 | TRIANGULAR | 0.51 | 2 | 1.49 | OKAY |
| SW-044 | TRIANGULAR | 0.78 | 2 | 1.22 | OKAY |
| SW-045 | TRIANGULAR | 0.88 | 2 | 1.12 | OKAY |
| SW-047 | TRIANGULAR | 0.9 | 2 | 1.10 | OKAY |
| SW-049 | TRIANGULAR | 0.13 | 2 | 1.87 | OKAY |
| SW-050 | TRIANGULAR | 0.98 | 2 | 1.02 | OKAY |
| SW-051 | TRIANGULAR | 1.54 | 2 | 0.46 | OKAY |
| SW-052 | TRIANGULAR | 0.27 | 2 | 1.73 | OKAY |
| SW-053 | IRREGULAR | 0.08 | 2 | 1.92 | OKAY |
| SW-054 | IRREGULAR | 0.05 | 2 | 1.95 | OKAY |
| SW-055 | TRAPEZOIDAL | 1 | 2 | 1.00 | OKAY |
| SW-059 | TRAPEZOIDAL | 1.1 | 2 | 0.90 | OKAY |
| SW-060 | TRIANGULAR | 0 | 2 | 2.00 | OKAY |
| SW-061 | TRAPEZOIDAL | 0.6 | 2 | 1.40 | OKAY |
| SW-062 | TRIANGULAR | 0.93 | 2 | 1.07 | OKAY |
| SW-063 | TRIANGULAR | 0.6 | 2 | 1.40 | OKAY |
| SW-064 | TRAPEZOIDAL | 0.07 | 2 | 1.93 | OKAY |
| SW-065 | TRIANGULAR | 0.24 | 2 | 1.76 | OKAY |
| SW-066 | TRAPEZOIDAL | 0.27 | 2 | 1.73 | OKAY |
| SW-068 | IRREGULAR | 0.24 | 2 | 1.76 | OKAY |
| SW-069 | IRREGULAR | 0.03 | 2 | 1.97 | OKAY |
| SW-070 | TRIANGULAR | 0.19 | 2 | 1.81 | OKAY |
| SW-071 | TRIANGULAR | 0.52 | 2 | 1.48 | OKAY |
| SW-072 | TRIANGULAR | 1.08 | 2 | 0.92 | OKAY |
| SW-073 | TRIANGULAR | 0.64 | 2 | 1.36 | OKAY |
| SW-074 | TRIANGULAR | 0.58 | 2 | 1.42 | OKAY |
| SW-075 | TRIANGULAR | 0.58 | 2 | 1.42 | OKAY |
| SW-076 | TRIANGULAR | 0.59 | 2 | 1.41 | OKAY |
| SW-077 | TRIANGULAR | 0.6 | 2 | 1.40 | OKAY |
| SW-078 | TRIANGULAR | 0.92 | 2 | 1.08 | OKAY |
| SW-079 | TRIANGULAR | 1.08 | 2 | 0.92 | OKAY |
| SW-081 | TRAPEZOIDAL | 1.64 | 2 | 0.36 | OKAY |
| SW-082 | TRIANGULAR | 1.16 | 2 | 0.84 | OKAY |
| SW-083 | TRIANGULAR | 1.26 | 2 | 0.74 | OKAY |
| SW-084 | IRREGULAR | 0.52 | 2 | 1.48 | OKAY |
| SW-086 | TRAPEZOIDAL | 0.13 | 2 | 1.87 | OKAY |
| SW-087 | TRIANGULAR | 0.6 | 2 | 1.40 | OKAY |
| SW-088 | TRIANGULAR | 0.44 | 2 | 1.56 | OKAY |
| SW-089 | TRAPEZOIDAL | 0.82 | 2 | 1.18 | OKAY |
| SW-090 | IRREGULAR | 0.08 | 2 | 1.92 | OKAY |
| SW-091 | IRREGULAR | 0.16 | 2 | 1.84 | OKAY |
| SW-092 | IRREGULAR | 0.03 | 2 | 1.97 | OKAY |

| | | | | | |
|--------|-------------|------|---|-------|------|
| SW-094 | IRREGULAR | 0.13 | 2 | 1.87 | OKAY |
| SW-095 | IRREGULAR | 0.14 | 2 | 1.86 | OKAY |
| SW-099 | TRIANGULAR | 0.92 | 2 | 1.08 | OKAY |
| SW-100 | TRIANGULAR | 0.98 | 2 | 1.02 | OKAY |
| SW-101 | TRIANGULAR | 0.97 | 2 | 1.03 | OKAY |
| SW-102 | TRIANGULAR | 0.4 | 2 | 1.60 | OKAY |
| SW-103 | TRIANGULAR | 0.75 | 2 | 1.25 | OKAY |
| SW-104 | TRIANGULAR | 0.69 | 2 | 1.31 | OKAY |
| SW-105 | TRIANGULAR | 0.83 | 2 | 1.17 | OKAY |
| SW-106 | TRIANGULAR | 0.9 | 2 | 1.10 | OKAY |
| SW-107 | TRIANGULAR | 0.86 | 2 | 1.14 | OKAY |
| SW-109 | TRIANGULAR | 0.89 | 2 | 1.11 | OKAY |
| SW-110 | TRAPEZOIDAL | 1.98 | 2 | 0.02 | OKAY |
| SW-111 | TRAPEZOIDAL | 0.54 | 2 | 1.46 | OKAY |
| SW-112 | IRREGULAR | 0.15 | 2 | 1.85 | OKAY |
| SW-114 | TRIANGULAR | 2.81 | 2 | -0.81 | BAD |
| SW-115 | TRIANGULAR | 0.56 | 2 | 1.44 | OKAY |
| SW-116 | TRAPEZOIDAL | 0.6 | 2 | 1.40 | OKAY |
| SW-118 | TRAPEZOIDAL | 2.02 | 2 | -0.02 | BAD |
| SW-120 | TRAPEZOIDAL | 1.86 | 2 | 0.14 | OKAY |
| SW-121 | TRAPEZOIDAL | 0.67 | 2 | 1.33 | OKAY |
| SW-122 | TRIANGULAR | 1.44 | 2 | 0.56 | OKAY |
| SW-124 | TRAPEZOIDAL | 1.23 | 2 | 0.77 | OKAY |
| SW-125 | TRIANGULAR | 2.02 | 2 | -0.02 | BAD |
| SW-126 | TRAPEZOIDAL | 0.41 | 2 | 1.59 | OKAY |
| SW-127 | TRIANGULAR | 1.87 | 2 | 0.13 | OKAY |
| SW-128 | TRIANGULAR | 0.97 | 2 | 1.03 | OKAY |
| SW-129 | TRIANGULAR | 0.5 | 2 | 1.50 | OKAY |



10-YR Storm Velocity Check

CALCULATIONS BY: ENL
 DATE: 4/3/2026
 PROJECT: New Bridge Creek Subdivision
 PROJECT #: 24102

The 10-year bare soil flow velocity must be less than or equal to 4 ft/s; otherwise, a temporary channel liner is required to prevent erosion.
 Outlet protection has been proposed at pipe outlets with a velocity greater than 4 ft/s

| Name | Cross-Section | Max. Velocity (ft/s) | Allowable Velocity (ft/s) | +/- Reduction | Check |
|------------|---------------|------------------------|---------------------------|---------------|--------------|
| ES-1 | TRAPEZOIDAL | 0.00 | 4 | 4.00 | OKAY |
| ES-2 | TRAPEZOIDAL | 0.00 | 4 | 4.00 | OKAY |
| EW-SW-14 | TRIANGULAR | 0.18 | 4 | 3.82 | OKAY |
| EX-OF-SW-1 | TRIANGULAR | 0.25 | 4 | 3.75 | OKAY |
| EX-OF-SW-2 | TRIANGULAR | 0.41 | 4 | 3.59 | OKAY |
| EX-OF-SW-3 | TRIANGULAR | 0.46 | 4 | 3.54 | OKAY |
| EX-OF-SW-4 | TRIANGULAR | 0.54 | 4 | 3.46 | OKAY |
| EX-OF-SW-5 | TRIANGULAR | 0.01 | 4 | 3.99 | OKAY |
| EX-RCP-1 | CIRCULAR | 0.82 | 4 | 3.18 | PIPED SYSTEM |
| EX-RCP-2 | CIRCULAR | 1.45 | 4 | 2.55 | PIPED SYSTEM |
| EX-SW-01 | TRIANGULAR | 0.26 | 4 | 3.74 | OKAY |
| EX-SW-15 | TRIANGULAR | 0.54 | 4 | 3.46 | OKAY |
| EX-SW-16 | TRIANGULAR | 0.82 | 4 | 3.18 | OKAY |
| EX-SW-6 | TRIANGULAR | 0 | 4 | 4.00 | OKAY |
| EX-SW-7 | TRIANGULAR | 0 | 4 | 4.00 | OKAY |
| EX-SW-8 | TRIANGULAR | 0.01 | 4 | 3.99 | OKAY |
| st13:of2 | CIRCULAR | 0 | 4 | 4.00 | PIPED SYSTEM |
| ST13:ST14 | CIRCULAR | 5.12 | 4 | -1.12 | PIPED SYSTEM |
| ST14:ST15 | CIRCULAR | 3.22 | 4 | 0.78 | PIPED SYSTEM |
| ST16:ST17 | CIRCULAR | 2.55 | 4 | 1.45 | PIPED SYSTEM |
| ST18:ST19 | CIRCULAR | 3.59 | 4 | 0.41 | PIPED SYSTEM |
| ST20:ST21 | CIRCULAR | 2.25 | 4 | 1.75 | PIPED SYSTEM |
| ST22:ST23 | CIRCULAR | 3.37 | 4 | 0.63 | PIPED SYSTEM |
| ST24:OF2 | CIRCULAR | 0 | 4 | 4.00 | PIPED SYSTEM |
| ST25:ST26 | CIRCULAR | 2.3 | 4 | 1.70 | PIPED SYSTEM |
| ST27:ST28 | CIRCULAR | 4.76 | 4 | -0.76 | PIPED SYSTEM |
| ST29:ST30 | CIRCULAR | 3.01 | 4 | 0.99 | PIPED SYSTEM |
| ST3:ST4 | CIRCULAR | 0.64 | 4 | 3.36 | PIPED SYSTEM |
| ST5:ST6 | CIRCULAR | 1.67 | 4 | 2.33 | PIPED SYSTEM |
| ST7:ST8 | CIRCULAR | 4.29 | 4 | -0.29 | PIPED SYSTEM |
| ST9:ST12 | CIRCULAR | 6.6 | 4 | -2.60 | PIPED SYSTEM |
| SW-001 | TRAPEZOIDAL | 0.18 | 4 | 3.82 | OKAY |
| SW-002 | IRREGULAR | 0.19 | 4 | 3.81 | OKAY |
| SW-003 | IRREGULAR | 0.34 | 4 | 3.66 | OKAY |
| SW-004 | TRAPEZOIDAL | 0.49 | 4 | 3.51 | OKAY |
| SW-005 | IRREGULAR | 0.39 | 4 | 3.61 | OKAY |
| SW-006 | IRREGULAR | 0.39 | 4 | 3.61 | OKAY |
| SW-007 | IRREGULAR | 0.39 | 4 | 3.61 | OKAY |
| SW-008 | IRREGULAR | 0.33 | 4 | 3.67 | OKAY |
| SW-009 | IRREGULAR | 0.19 | 4 | 3.81 | OKAY |
| SW-010 | IRREGULAR | 0.09 | 4 | 3.91 | OKAY |
| SW-012 | TRIANGULAR | 1.33 | 4 | 2.67 | OKAY |
| SW-013 | TRIANGULAR | 1.31 | 4 | 2.69 | OKAY |
| SW-014 | TRIANGULAR | 1.33 | 4 | 2.67 | OKAY |
| SW-015 | TRIANGULAR | 1.38 | 4 | 2.62 | OKAY |
| SW-016 | TRIANGULAR | 1.42 | 4 | 2.58 | OKAY |
| SW-017 | TRIANGULAR | 1.36 | 4 | 2.64 | OKAY |
| SW-018 | TRIANGULAR | 1.57 | 4 | 2.43 | OKAY |
| SW-019 | TRIANGULAR | 1.53 | 4 | 2.47 | OKAY |
| SW-020 | TRIANGULAR | 0.66 | 4 | 3.34 | OKAY |

| | | | | | |
|--------|-------------|------|---|------|------|
| SW-021 | IRREGULAR | 0.93 | 4 | 3.07 | OKAY |
| SW-022 | IRREGULAR | 0.46 | 4 | 3.54 | OKAY |
| SW-023 | TRAPEZOIDAL | 1.24 | 4 | 2.76 | OKAY |
| SW-024 | TRIANGULAR | 1.28 | 4 | 2.72 | OKAY |
| SW-025 | TRAPEZOIDAL | 1 | 4 | 3.00 | OKAY |
| SW-026 | TRIANGULAR | 1.38 | 4 | 2.62 | OKAY |
| SW-027 | TRAPEZOIDAL | 0.23 | 4 | 3.77 | OKAY |
| SW-028 | TRAPEZOIDAL | 0.26 | 4 | 3.74 | OKAY |
| SW-029 | TRAPEZOIDAL | 0.3 | 4 | 3.70 | OKAY |
| SW-030 | IRREGULAR | 0.23 | 4 | 3.77 | OKAY |
| SW-031 | TRAPEZOIDAL | 2 | 4 | 2.00 | OKAY |
| SW-032 | TRAPEZOIDAL | 0.71 | 4 | 3.29 | OKAY |
| SW-033 | TRIANGULAR | 0.71 | 4 | 3.29 | OKAY |
| SW-034 | TRIANGULAR | 1.14 | 4 | 2.86 | OKAY |
| SW-035 | TRIANGULAR | 1.25 | 4 | 2.75 | OKAY |
| SW-036 | TRIANGULAR | 1.2 | 4 | 2.80 | OKAY |
| SW-037 | TRAPEZOIDAL | 1.4 | 4 | 2.60 | OKAY |
| SW-038 | TRAPEZOIDAL | 0.89 | 4 | 3.11 | OKAY |
| SW-039 | TRIANGULAR | 0.37 | 4 | 3.63 | OKAY |
| SW-040 | TRIANGULAR | 1.05 | 4 | 2.95 | OKAY |
| SW-041 | TRIANGULAR | 0.25 | 4 | 3.75 | OKAY |
| SW-042 | TRIANGULAR | 0.24 | 4 | 3.76 | OKAY |
| SW-043 | TRIANGULAR | 0.54 | 4 | 3.46 | OKAY |
| SW-044 | TRIANGULAR | 0.9 | 4 | 3.10 | OKAY |
| SW-045 | TRIANGULAR | 1.05 | 4 | 2.95 | OKAY |
| SW-047 | TRIANGULAR | 1.07 | 4 | 2.93 | OKAY |
| SW-049 | TRIANGULAR | 0.15 | 4 | 3.85 | OKAY |
| SW-050 | TRIANGULAR | 1.1 | 4 | 2.90 | OKAY |
| SW-051 | TRIANGULAR | 1.82 | 4 | 2.18 | OKAY |
| SW-052 | TRIANGULAR | 0.3 | 4 | 3.70 | OKAY |
| SW-053 | IRREGULAR | 0.08 | 4 | 3.92 | OKAY |
| SW-054 | IRREGULAR | 0.05 | 4 | 3.95 | OKAY |
| SW-055 | TRAPEZOIDAL | 1.12 | 4 | 2.88 | OKAY |
| SW-059 | TRAPEZOIDAL | 1.27 | 4 | 2.73 | OKAY |
| SW-060 | TRIANGULAR | 0 | 4 | 4.00 | OKAY |
| SW-061 | TRAPEZOIDAL | 0.73 | 4 | 3.27 | OKAY |
| SW-062 | TRIANGULAR | 1.05 | 4 | 2.95 | OKAY |
| SW-063 | TRIANGULAR | 0.71 | 4 | 3.29 | OKAY |
| SW-064 | TRAPEZOIDAL | 0.08 | 4 | 3.92 | OKAY |
| SW-065 | TRIANGULAR | 0.28 | 4 | 3.72 | OKAY |
| SW-066 | TRAPEZOIDAL | 0.27 | 4 | 3.73 | OKAY |
| SW-068 | IRREGULAR | 0.23 | 4 | 3.77 | OKAY |
| SW-069 | IRREGULAR | 0.03 | 4 | 3.97 | OKAY |
| SW-070 | TRIANGULAR | 0.2 | 4 | 3.80 | OKAY |
| SW-071 | TRIANGULAR | 0.51 | 4 | 3.49 | OKAY |
| SW-072 | TRIANGULAR | 1.24 | 4 | 2.76 | OKAY |
| SW-073 | TRIANGULAR | 0.69 | 4 | 3.31 | OKAY |
| SW-074 | TRIANGULAR | 0.62 | 4 | 3.38 | OKAY |
| SW-075 | TRIANGULAR | 0.64 | 4 | 3.36 | OKAY |
| SW-076 | TRIANGULAR | 0.66 | 4 | 3.34 | OKAY |
| SW-077 | TRIANGULAR | 0.68 | 4 | 3.32 | OKAY |
| SW-078 | TRIANGULAR | 0.99 | 4 | 3.01 | OKAY |
| SW-079 | TRIANGULAR | 1.05 | 4 | 2.95 | OKAY |
| SW-081 | TRAPEZOIDAL | 1.86 | 4 | 2.14 | OKAY |
| SW-082 | TRIANGULAR | 1.35 | 4 | 2.65 | OKAY |
| SW-083 | TRIANGULAR | 1.42 | 4 | 2.58 | OKAY |
| SW-084 | IRREGULAR | 0.95 | 4 | 3.05 | OKAY |
| SW-086 | TRAPEZOIDAL | 0.13 | 4 | 3.87 | OKAY |
| SW-087 | TRIANGULAR | 0.73 | 4 | 3.27 | OKAY |
| SW-088 | TRIANGULAR | 0.53 | 4 | 3.47 | OKAY |
| SW-089 | TRAPEZOIDAL | 0.87 | 4 | 3.13 | OKAY |
| SW-090 | IRREGULAR | 0.08 | 4 | 3.92 | OKAY |
| SW-091 | IRREGULAR | 0.17 | 4 | 3.83 | OKAY |
| SW-092 | IRREGULAR | 0.04 | 4 | 3.96 | OKAY |

| | | | | | |
|--------|-------------|------|---|------|------|
| SW-094 | IRREGULAR | 0.12 | 4 | 3.88 | OKAY |
| SW-095 | IRREGULAR | 0.15 | 4 | 3.85 | OKAY |
| SW-099 | TRIANGULAR | 1.08 | 4 | 2.92 | OKAY |
| SW-100 | TRIANGULAR | 1.14 | 4 | 2.86 | OKAY |
| SW-101 | TRIANGULAR | 1.12 | 4 | 2.88 | OKAY |
| SW-102 | TRIANGULAR | 0.43 | 4 | 3.57 | OKAY |
| SW-103 | TRIANGULAR | 0.82 | 4 | 3.18 | OKAY |
| SW-104 | TRIANGULAR | 0.72 | 4 | 3.28 | OKAY |
| SW-105 | TRIANGULAR | 0.78 | 4 | 3.22 | OKAY |
| SW-106 | TRIANGULAR | 0.86 | 4 | 3.14 | OKAY |
| SW-107 | TRIANGULAR | 1 | 4 | 3.00 | OKAY |
| SW-109 | TRIANGULAR | 1.01 | 4 | 2.99 | OKAY |
| SW-110 | TRAPEZOIDAL | 2.36 | 4 | 1.64 | OKAY |
| SW-111 | TRAPEZOIDAL | 0.55 | 4 | 3.45 | OKAY |
| SW-112 | IRREGULAR | 0.15 | 4 | 3.85 | OKAY |
| SW-114 | TRIANGULAR | 3.16 | 4 | 0.84 | OKAY |
| SW-115 | TRIANGULAR | 0.54 | 4 | 3.46 | OKAY |
| SW-116 | TRAPEZOIDAL | 0.67 | 4 | 3.33 | OKAY |
| SW-118 | TRAPEZOIDAL | 0.01 | 4 | 3.99 | OKAY |
| SW-120 | TRAPEZOIDAL | 0 | 4 | 4.00 | OKAY |
| SW-121 | TRAPEZOIDAL | 0.24 | 4 | 3.76 | OKAY |
| SW-122 | TRIANGULAR | 0.54 | 4 | 3.46 | OKAY |
| SW-124 | TRAPEZOIDAL | 0.51 | 4 | 3.49 | OKAY |
| SW-125 | TRIANGULAR | 2.28 | 4 | 1.72 | OKAY |
| SW-126 | TRAPEZOIDAL | 0.2 | 4 | 3.80 | OKAY |
| SW-127 | TRIANGULAR | 2.92 | 4 | 1.08 | OKAY |
| SW-128 | TRIANGULAR | 2.22 | 4 | 1.78 | OKAY |
| SW-129 | TRIANGULAR | 0.52 | 4 | 3.48 | OKAY |



2-YR Pre vs 10-YR Post Peak Flow Comparison

CALCULATIONS BY: ENL
DATE: 4/3/2026
PROJECT: New Bridge Creek Subdivision
PROJECT #: 24102

| Outfall | Pre-developed (wooded) 2-YR Peak Flow Rate (cfs) | Post-developed 10-YR Peak Flow Rate without tailwater (cfs) 1* | +/- Change | Check |
|---------|--|--|------------|----------|
| OF-1 | 5.67 | 4.17 | -1.50 | OK |
| OF-2 | 6.43 | 3.24 | -3.19 | OK |
| OF-3 | 3.96 | 5.77 | 1.81 | NOT OKAY |
| OF-4 | 3.50 | 3.39 | -0.11 | OK |
| OF-5 | 0.72 | 0.21 | -0.51 | OK |

1* The post developed 10-YR storm results were ran without a tailwater for this comparison. As the BMP HGL does not rise over elevation 4, and the tailwater is set at elevation 4 resulting in substantially small outflows being resulted. Therefore this analysis allows peak flows to be compared accurately. All other results within this report for the 10-YR storm use a static tailwater at elevation 4

2* Post developed flow considered allowable as on site drainage area has been reduced and no developed stormwater is sent to this outfall. A greater flow is caused by the larger design storm.



Outfall Peak HGL & Flow Results

CALCULATIONS BY: ENL
 DATE: 4/3/2026
 PROJECT: New Bridge Creek Subdivision
 PROJECT #: 24102

2-YR 24-HR Storm Peak Flow Results

| Outfall | Pre-developed (wooded) 2-YR Peak Flow (cfs) | Post-developed 2-YR Peak Flow (cfs) | +/- Change | Check |
|---------|---|-------------------------------------|------------|-------|
| OF-1 | 5.67 | 3.08 | -2.59 | OK |
| OF-2 | 6.43 | 1.47 | -4.96 | OK |
| OF-3 | 3.96 | 2.80 | -1.16 | OK |
| OF-4 | 3.50 | 2.36 | -1.14 | OK |
| OF-5 | 0.72 | 0.13 | -0.59 | OK |

2-YR 24-HR Storm Max HGL Results

| Outfall | Pre-developed (wooded) 2-YR Max HGL (ft) | Post-developed 2-YR Max HGL (ft) | +/- Change | Check |
|---------|--|----------------------------------|------------|-------|
| OF-1 | 1.14 | 0.71 | -0.43 | OK |
| OF-2 | 0.27 | -0.51 | -0.78 | OK |
| OF-3 | 1.04 | 0.40 | -0.64 | OK |
| OF-4 | 0.10 | -0.23 | -0.33 | OK |
| OF-5 | 3.08 | 2.94 | -0.14 | OK |

10-YR 24-HR Storm Peak Flow Results

| Outfall | Pre-developed 10-YR Peak Flow (cfs) | Post-developed 10-YR Peak Flow (cfs) | +/- Change | Check |
|---------|-------------------------------------|--------------------------------------|------------|-------|
| OF-1 | 24.51 | 2.54 | -21.97 | OK |
| OF-2 | 12.82 | 6.52 | -6.30 | OK |
| OF-3 | 12.46 | 8.49 | -3.97 | OK |
| OF-4 | 15.12 | 0.76 | -14.36 | OK |
| OF-5 | 1.38 | 0.22 | -1.16 | OK |

10-YR 24-HR Storm Max HGL Results

| Outfall | Pre-developed 10-YR Max HGL (ft) | Post-developed 10-YR Max HGL (ft) | +/- Change | Check |
|---------|----------------------------------|-----------------------------------|------------|-------|
| OF-1 | 4 | 4 | 0.00 | OK |
| OF-2 | 4 | 4 | 0.00 | OK |
| OF-3 | 4 | 4 | 0.00 | OK |
| OF-4 | 4 | 4 | 0.00 | OK |
| OF-5 | 3.16 | 2.96 | -0.20 | OK |

100-YR 24-HR Storm Peak Flow Results

| Outfall | Pre-developed 100-YR Peak Flow (cfs) | Post-developed 100-YR Peak Flow (cfs) | +/- Change | Check |
|---------|--------------------------------------|---------------------------------------|------------|-------|
| OF-1 | 43.94 | 0.31 | -43.63 | OK |
| OF-2 | 19.09 | 6.48 | -12.61 | OK |
| OF-3 | 25.58 | 8.46 | -17.12 | OK |
| OF-4 | 22.17 | 0.02 | -22.15 | OK |
| OF-5 | 2.70 | 0.21 | -2.49 | OK |

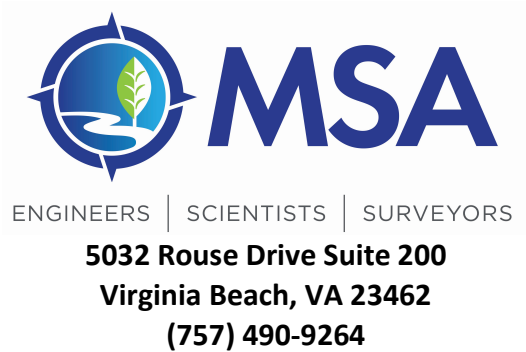
100-YR 24-HR Storm Max HGL Results

| Outfall | Pre-developed 100-YR Max HGL (ft) | Post-developed 100-YR Max HGL (ft) | +/- Change | Check |
|---------|-----------------------------------|------------------------------------|------------|-------|
| OF-1 | 4.00 | 4.00 | 0.00 | OK |
| OF-2 | 4.00 | 4.00 | 0.00 | OK |
| OF-3 | 4.00 | 4.00 | 0.00 | OK |
| OF-4 | 4.00 | 4.00 | 0.00 | OK |
| OF-5 | 3.27 | 2.99 | -0.28 | OK |

APPENDIX F

Rainfall Data

Prepared by:





POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerials](#)

PF tabular

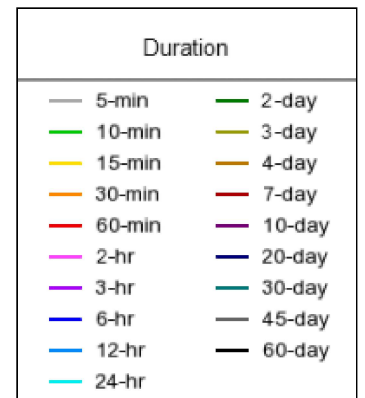
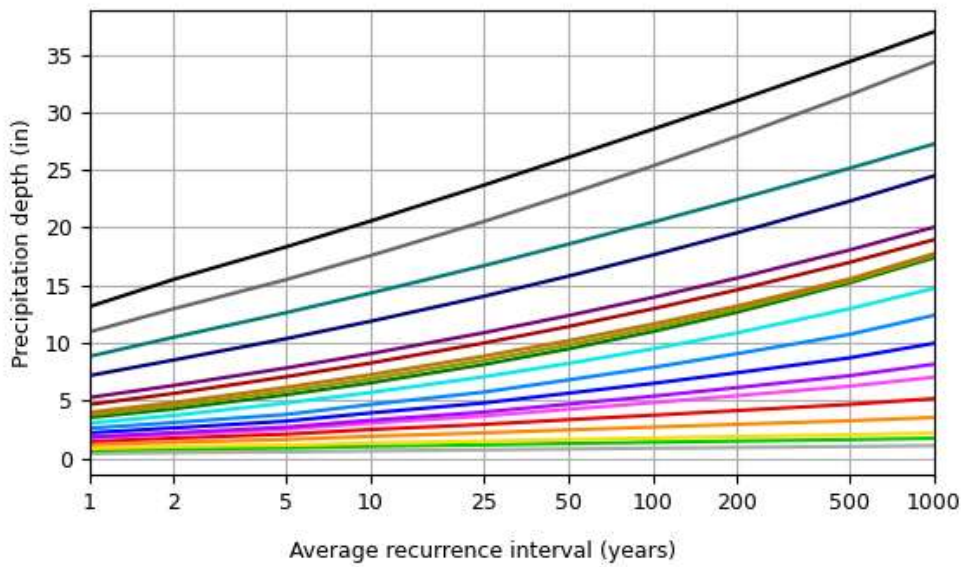
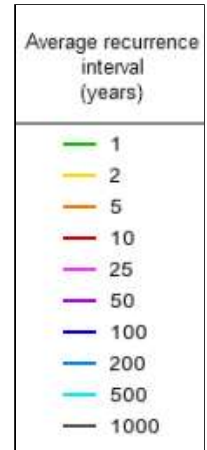
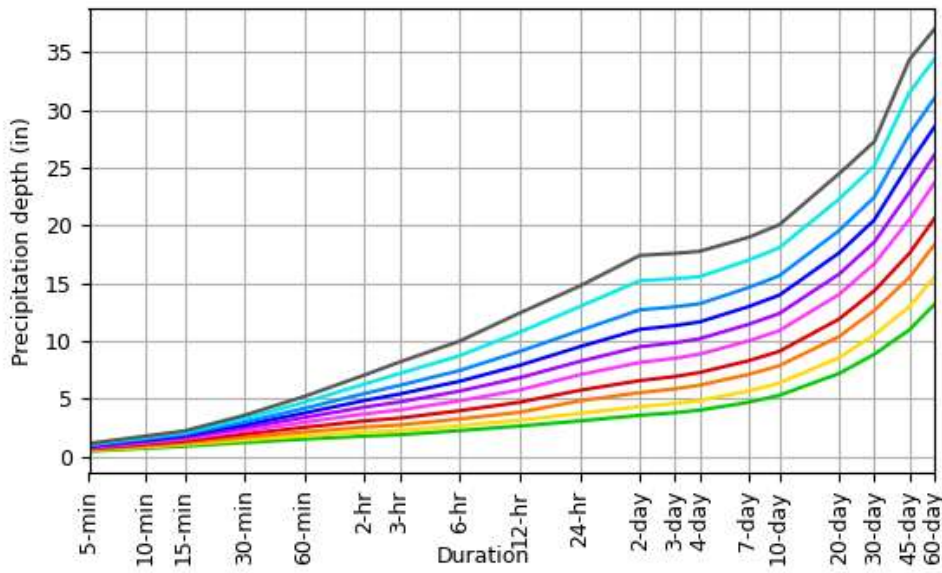
| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹ | | | | | | | | | | |
|--|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|
| Duration | Average recurrence interval (years) | | | | | | | | | |
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.435 (0.395-0.480) | 0.507 (0.458-0.561) | 0.570 (0.516-0.632) | 0.657 (0.592-0.727) | 0.740 (0.664-0.817) | 0.816 (0.730-0.901) | 0.884 (0.787-0.977) | 0.951 (0.842-1.05) | 1.03 (0.905-1.14) | 1.11 (0.967-1.23) |
| 10-min | 0.695 (0.630-0.766) | 0.811 (0.733-0.897) | 0.914 (0.826-1.01) | 1.05 (0.946-1.16) | 1.18 (1.06-1.30) | 1.30 (1.16-1.44) | 1.40 (1.25-1.55) | 1.51 (1.34-1.66) | 1.63 (1.43-1.80) | 1.75 (1.52-1.94) |
| 15-min | 0.868 (0.788-0.958) | 1.02 (0.921-1.13) | 1.16 (1.04-1.28) | 1.33 (1.20-1.47) | 1.49 (1.34-1.65) | 1.64 (1.47-1.82) | 1.78 (1.58-1.96) | 1.90 (1.68-2.10) | 2.05 (1.80-2.27) | 2.19 (1.91-2.43) |
| 30-min | 1.19 (1.08-1.31) | 1.41 (1.27-1.56) | 1.64 (1.48-1.82) | 1.92 (1.73-2.13) | 2.21 (1.99-2.44) | 2.48 (2.22-2.74) | 2.72 (2.42-3.00) | 2.96 (2.62-3.27) | 3.26 (2.87-3.61) | 3.55 (3.10-3.94) |
| 60-min | 1.48 (1.35-1.64) | 1.77 (1.60-1.96) | 2.10 (1.90-2.33) | 2.51 (2.26-2.77) | 2.95 (2.64-3.26) | 3.36 (3.00-3.71) | 3.74 (3.34-4.14) | 4.15 (3.68-4.59) | 4.68 (4.12-5.18) | 5.19 (4.52-5.75) |
| 2-hr | 1.74 (1.57-1.94) | 2.08 (1.87-2.32) | 2.53 (2.27-2.81) | 3.06 (2.74-3.40) | 3.67 (3.27-4.07) | 4.26 (3.78-4.72) | 4.83 (4.26-5.36) | 5.44 (4.77-6.04) | 6.26 (5.44-6.95) | 7.04 (6.07-7.82) |
| 3-hr | 1.87 (1.68-2.09) | 2.23 (2.00-2.50) | 2.71 (2.43-3.04) | 3.31 (2.96-3.70) | 4.01 (3.56-4.48) | 4.70 (4.16-5.23) | 5.39 (4.74-5.99) | 6.14 (5.35-6.81) | 7.17 (6.18-7.96) | 8.17 (6.98-9.07) |
| 6-hr | 2.22 (2.01-2.48) | 2.65 (2.38-2.97) | 3.23 (2.90-3.62) | 3.95 (3.52-4.41) | 4.80 (4.26-5.35) | 5.65 (4.99-6.28) | 6.50 (5.70-7.21) | 7.43 (6.46-8.23) | 8.71 (7.49-9.66) | 9.98 (8.48-11.1) |
| 12-hr | 2.62 (2.35-2.93) | 3.11 (2.78-3.50) | 3.81 (3.40-4.28) | 4.68 (4.16-5.25) | 5.74 (5.07-6.41) | 6.80 (5.97-7.58) | 7.88 (6.85-8.77) | 9.08 (7.82-10.1) | 10.7 (9.12-11.9) | 12.4 (10.4-13.8) |
| 24-hr | 3.06 (2.81-3.35) | 3.72 (3.42-4.08) | 4.80 (4.40-5.27) | 5.71 (5.22-6.25) | 7.06 (6.41-7.71) | 8.22 (7.40-8.96) | 9.49 (8.46-10.3) | 10.9 (9.60-11.9) | 13.0 (11.2-14.2) | 14.7 (12.6-16.2) |
| 2-day | 3.55 (3.26-3.88) | 4.30 (3.95-4.70) | 5.51 (5.06-6.03) | 6.56 (6.00-7.16) | 8.12 (7.37-8.85) | 9.48 (8.53-10.3) | 11.0 (9.78-12.0) | 12.7 (11.1-13.8) | 15.2 (13.1-16.7) | 17.4 (14.7-19.2) |
| 3-day | 3.77 (3.48-4.11) | 4.57 (4.22-4.98) | 5.84 (5.38-6.35) | 6.91 (6.35-7.50) | 8.49 (7.74-9.21) | 9.84 (8.90-10.7) | 11.3 (10.1-12.3) | 12.9 (11.4-14.1) | 15.4 (13.4-16.8) | 17.6 (15.0-19.3) |
| 4-day | 4.00 (3.71-4.34) | 4.84 (4.49-5.26) | 6.16 (5.70-6.68) | 7.26 (6.69-7.85) | 8.85 (8.10-9.57) | 10.2 (9.27-11.0) | 11.6 (10.5-12.6) | 13.2 (11.8-14.3) | 15.6 (13.6-17.0) | 17.8 (15.4-19.5) |
| 7-day | 4.67 (4.35-5.05) | 5.63 (5.25-6.09) | 7.08 (6.57-7.64) | 8.27 (7.66-8.91) | 9.98 (9.20-10.8) | 11.4 (10.4-12.3) | 13.0 (11.7-14.0) | 14.6 (13.1-15.8) | 17.0 (15.0-18.5) | 19.0 (16.5-20.7) |
| 10-day | 5.28 (4.94-5.66) | 6.33 (5.93-6.78) | 7.84 (7.33-8.39) | 9.08 (8.47-9.72) | 10.9 (10.1-11.6) | 12.4 (11.4-13.2) | 13.9 (12.7-14.9) | 15.6 (14.1-16.8) | 18.1 (16.1-19.5) | 20.0 (17.6-21.8) |
| 20-day | 7.17 (6.74-7.64) | 8.54 (8.04-9.10) | 10.4 (9.76-11.1) | 11.9 (11.1-12.7) | 14.0 (13.1-14.9) | 15.8 (14.6-16.8) | 17.6 (16.2-18.8) | 19.6 (17.8-20.9) | 22.3 (20.0-24.0) | 24.5 (21.8-26.5) |
| 30-day | 8.84 (8.34-9.38) | 10.5 (9.92-11.1) | 12.6 (11.9-13.4) | 14.3 (13.5-15.2) | 16.7 (15.6-17.7) | 18.6 (17.3-19.7) | 20.5 (19.0-21.8) | 22.4 (20.6-24.0) | 25.1 (22.9-27.0) | 27.3 (24.6-29.4) |
| 45-day | 11.0 (10.4-11.7) | 13.0 (12.3-13.8) | 15.5 (14.6-16.5) | 17.6 (16.5-18.7) | 20.5 (19.2-21.8) | 22.9 (21.3-24.3) | 25.3 (23.5-27.0) | 27.9 (25.7-29.8) | 31.5 (28.6-33.7) | 34.4 (30.9-37.0) |
| 60-day | 13.1 (12.4-13.9) | 15.5 (14.7-16.4) | 18.3 (17.3-19.4) | 20.6 (19.4-21.8) | 23.7 (22.2-25.0) | 26.1 (24.4-27.6) | 28.5 (26.6-30.3) | 31.0 (28.7-33.0) | 34.4 (31.5-36.8) | 37.0 (33.7-39.7) |

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

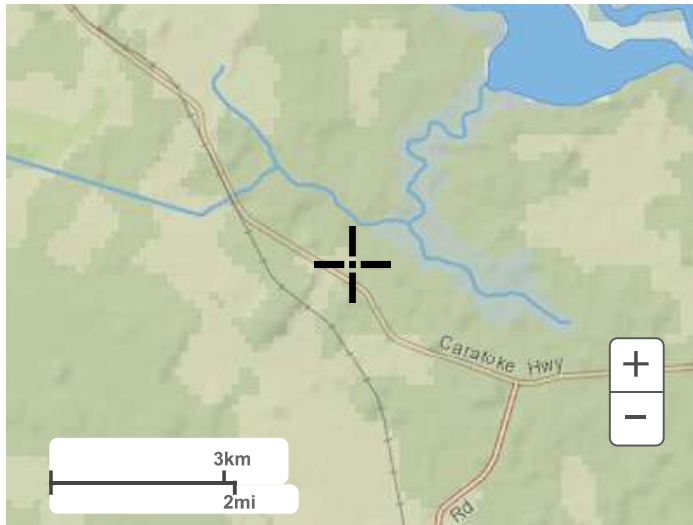
PDS-based depth-duration-frequency (DDF) curves
 Latitude: 36.4715°, Longitude: -76.1084°



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Maps & aeriels

Small scale terrain



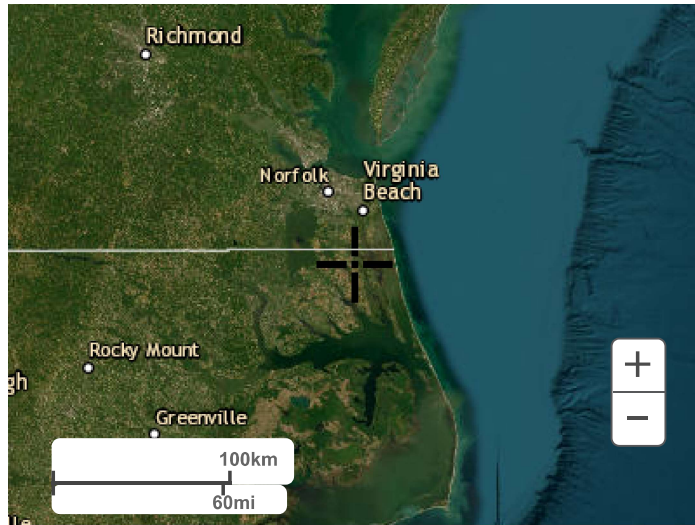
Large scale terrain



Large scale map



Large scale aerial



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[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

Major Subdivision Submittal Checklist – Construction Drawings

Staff will use the following checklist to determine the completeness of your application for construction drawings within ten business days of submittal. Please make sure all of the listed items are included. The Director shall not process an application for further review until it is determined to be complete.

Major Subdivision Submittal Checklist – Construction Drawings

Date Received: _____

TRC Date: _____

Project Name: New Bridge Creek

Applicant/Property Owner: _____

| Construction Drawings Submittal Checklist | | |
|---|--|-----|
| 1 | Complete Major Subdivision application (For amended drawings include \$250 fee) | X |
| 2 | Construction drawing with engineer's seal | X |
| 3 | Proposed landscape plan, including common areas, open space set-aside configuration and schedule, required buffers, fences and walls, and tree protection plan | X |
| 4 | Stormwater form(s), final stormwater management narrative and grading plan, if changed since preliminary plat | X |
| 5 | Proposed construction drawings (road, stormwater management infrastructure, utilities) | X |
| 6 | NCDEQ wastewater line extension permit, if applicable | X |
| 7 | NCDEQ wastewater plant construction permit, if applicable | N/A |
| 8 | NCDEQ waterline extension permit, if applicable | X |
| 9 | NCDEQ stormwater permit including application, plan, and narrative with calculations | X |
| 10 | NCDEQ soil erosion and sedimentation control permit | X |
| 11 | NCDEQ CAMA major permit, if applicable | N/A |
| 12 | NCDOT driveway permit and encroachment agreement, if applicable | N/A |
| 13 | Wetland fill permit(s), if applicable | N/A |

For Staff Only

Pre-application Conference (Optional)

Pre-application Conference was held on _____ and the following people were present:

Comments

CERTIFICATE OF PLAN APPROVAL



The posting of this certificate certifies that an erosion and sedimentation control plan has been approved for this project by the North Carolina Department of Environmental Quality in accordance with North Carolina General Statute 113A – 57 (4) and 113A – 54 (d) (4) and North Carolina Administrative Code, Title 15A, Chapter 4B.0107 (c). This certificate must be posted at the primary entrance of the job site before construction begins and until establishment of permanent groundcover as required by North Carolina Administrative Code, Title 15A, Chapter 4B.0127 (b).

New Bridge Creek
Caratoke Hwy Moyock, NC 27958

06/10/2026

Date of Plan Approval

CURRI-2026-0163

Project Identifier



Certificate of Coverage Number: _____

DEPARTMENT OF TRANSPORTATION

THREE PARTY RIGHT OF WAY
ENCROACHMENT AGREEMENT ON
PRIMARY AND SECONDARY SYSTEM

~~-AND-~~
New Bridge Creek, LLC
Moyock, NC 27958

~~-AND-~~
Currituck County, NC
Currituck, NC 27927

THIS AGREEMENT, made and entered into this the 2 day of April, 2026, by and between the Department of Transportation, party of the first part; and New Bridge Creek, LLC party of the second part; and Currituck County, NC party of the third part,

WITNESSETH

THAT WHEREAS, the party of the second part desires to encroach on the right of way of the public road designated as Route(s) NC168, located 0.33 miles northeast of the intersection between SRI281 and NC168 toward SRI342

with the construction and/or erection of: waterline

WHEREAS, it is to the material advantage of the party of the second part to effect this encroachment, and the party of the first part in the exercise of authority conferred upon it by statute, is willing to permit the encroachment within the limits of the right of way as indicated, subject to the conditions of this agreement;

NOW, THEREFORE, IT IS AGREED that the party of the first part hereby grants to the party of the second part the right and privilege to make this encroachment as shown on attached plan sheet(s), specifications and special provisions which are made a part hereof upon the following conditions, to wit:

That the installation, operation, and maintenance of the above described facility will be accomplished in accordance with the party of the first part's latest UTILITIES ACCOMMODATIONS MANUAL, and such revisions and amendments thereto as may be in effect at the date of this agreement. Information as to these policies and procedures may be obtained from the Division Engineer or State Utilities Manager of the party of the first part.

That the said party of the second part binds and obligates himself to install and maintain the encroaching facility in such safe and proper condition that it will not interfere with or endanger travel upon said highway, nor obstruct nor interfere with the proper maintenance thereof, to reimburse the party of the first part for the cost incurred for any repairs or maintenance to its roadways and structures necessary due to installation and existence of the facilities of the party of the second part, and if at any time the party of the first part shall require the removal of or changes in the location of the said facilities, that the said party of the second part binds himself, his successors and assigns, to promptly remove or alter the said facilities, in order to conform to the said requirement, without any cost to the party of the first part.

That the party of the second part agrees to provide during construction and any subsequent maintenance proper signs, signal lights, flagmen and other warning devices for the protection of traffic in conformance with the latest Manual on Uniform Traffic Control Devices for Streets and Highways and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the Division Engineer of the party of the first.

That the party of the second part hereby agrees to indemnify and save harmless the party of the first part from all damages and claims for damage that may arise by reason of the installation and maintenance of this encroachment.

That the party of the second part agrees to restore all areas disturbed during installation and maintenance to the satisfaction of the Division Engineer of the party of the first part. The party of the second part agrees to exercise every reasonable precaution during construction and maintenance to prevent eroding of soil; silting or pollution of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property; or pollution of the air. There shall be compliance with applicable rules and regulations of the North Carolina Division of Environmental Management, North Carolina Sedimentation Control Commission, and with ordinances and regulations of various counties, municipalities and other official agencies relating to pollution prevention and control. When any installation or maintenance operation disturbs the ground surface and existing ground cover, the party of the second part agrees to remove and replace the sod or otherwise reestablish the grass cover to meet the satisfaction of the Division Engineer of the party of the first part.

That the party of the second part agrees to assume the actual cost of any inspection of the work considered to be necessary by the Division Engineer of the party of the first part.

That the party of the second part agrees to have available at the construction site, at all times during construction, a copy of this agreement showing evidence of approval by the party of the first part. The party of the first part reserves the right to stop all work unless evidence of approval can be shown.

Provided the work contained in this agreement is being performed on a completed highway open to traffic; the party of the second part agrees to give written notice to the Division Engineer of the party of the first part when all work contained herein has been completed. Unless specifically requested by the party of the first part, written notice of completion of work on highway projects under construction will not be required.

That in the case of noncompliance with the terms of this agreement by the party of the second part, the party of the first part reserves the right to stop all work until the facility has been brought into compliance or removed from the right of way at no cost to the party of the first part.

That it is agreed by both parties that this agreement shall become void if actual construction of the work contemplated herein is not begun within one (1) year from the date of authorization by the party of the first part unless written waiver is secured by the party of the second part from the party of the first part.


During the performance of this contract, the second party, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor"), agrees as follows:

- a. **Compliance with Regulations:** The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- b. **Nondiscrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- c. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- d. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
- e. **Sanctions for Noncompliance:** In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to,
 - (1) withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (2) cancellation, termination or suspension of the contract, in whole or in part.
- f. **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs "a" through "f" in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Department of Transportation to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

That when title to the subject that constitutes the aforesaid encroachment passes from the party of the second part and vests in the party of the third part, the party of the third part agrees to assume all responsibilities and rights and to perform all obligations as agreed to herein by the party of the second part.

R/W (166) : Party of the Second Part certifies that this agreement is true and accurate copy of the form R/W (166) incorporating all revisions to date.

IN WITNESS WHEREOF, each of the parties to this agreement has caused the same to be executed the day and year first above written.

WITNESS:


 Mark S Bissell

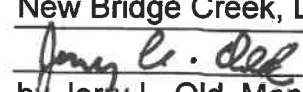
 PO Box 1068

 Kitty Hawk, NC 27949

WITNESS:

DEPARTMENT OF TRANSPORTATION
 BY: _____
 DIVISION ENGINEER

 New Bridge Creek, LLC


 by Jerry L. Old, Manager

 PO Box 505, Moyock, NC 27958

 Second Party

Currituck County

 by Rebecca Gay, County Manager

 153 Courthouse Rd, Ste 204, Currituck NC 27929

 Third Party

APPLICATION IDENTIFICATION

| | |
|------------------------------------|---------------------|
| Driveway Permit No. | Date of Application |
| | 4-2-26 |
| County: Currituck | |
| Development Name: New Bridge Creek | |

N.C. DEPARTMENT OF TRANSPORTATION

STREET AND DRIVEWAY ACCESS

PERMIT APPLICATION

LOCATION OF PROPERTY

| | | | | | | | |
|--|-------|---|-------------------------------|---------------------------------------|----------------------------|---------------------------------------|----------------------------|
| Route/Road: NC158 | | | | | | | |
| Exact Distance | 0.421 | <input checked="" type="checkbox"/> Miles | <input type="checkbox"/> Feet | <input checked="" type="checkbox"/> N | <input type="checkbox"/> S | <input checked="" type="checkbox"/> E | <input type="checkbox"/> W |
| From the Intersection of Route No. SR1210 | | and Route No. NC158 | | Toward | | SR1214 | |
| Property Will Be Used For: <input checked="" type="checkbox"/> Residential/Subdivision <input type="checkbox"/> Commercial <input type="checkbox"/> Educational Facilities <input type="checkbox"/> TND <input type="checkbox"/> Emergency Services <input type="checkbox"/> Other | | | | | | | |
| Property: <input type="checkbox"/> is <input type="checkbox"/> is not within _____ City Zoning Area. | | | | | | | |

AGREEMENT

- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a \$50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
- I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.
- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

SIGNATURES OF APPLICANT

| | | | |
|----------------------------|--|-----------|-----------------------------|
| PROPERTY OWNER (APPLICANT) | | WITNESS | |
| COMPANY | <u>New Bridge Creek, LLC</u> | NAME | <u>Mark Bissell</u> |
| SIGNATURE | <u><i>James Le. O'Neal</i></u> | SIGNATURE | <u><i>Mark Bissell</i></u> |
| ADDRESS | <u>422A Caratoke Highway</u> | ADDRESS | <u>P.O. Box 1068</u> |
| | <u>Moyock, NC 27958 Phone No. (252) 207-3002</u> | | <u>Kitty Hawk, NC 27949</u> |

| | | | |
|------------------|--|-----------|------------------------------|
| AUTHORIZED AGENT | | WITNESS | |
| COMPANY | <u>Bissell Professional Group</u> | NAME | <u>Marcie Respass</u> |
| SIGNATURE | <u><i>[Signature]</i></u> | SIGNATURE | <u><i>Marcie Respass</i></u> |
| ADDRESS | <u>P.O. Box 1068</u> | ADDRESS | <u>P.O. Box 1068</u> |
| | <u>Kitty Hawk, NC 27949 Phone No. (252) 261-3266</u> | | <u>Kitty Hawk, NC 27949</u> |

APPROVALS

APPLICATION RECEIVED BY DISTRICT ENGINEER

SIGNATURE DATE

APPLICATION APPROVED BY LOCAL GOVERNMENTAL AUTHORITY (when required)

SIGNATURE TITLE DATE

APPLICATION APPROVED BY NCDOT

SIGNATURE TITLE DATE

INSPECTION BY NCDOT

SIGNATURE TITLE DATE

COMMENTS:



Major Stormwater Plan Form SW-002

OFFICIAL USE ONLY:
 Permit Number: _____
 Date Filed: _____
 Date Approved: _____

Contact Information

| | | | |
|-------------------|--|------------------------|-------------|
| APPLICANT: | | PROPERTY OWNER: | |
| Name: | <u>New Bridge Creek, LLC</u> | Name: | <u>Same</u> |
| Address: | <u>PO Box 505</u> <u>Moyock, NC 27958</u> | Address: | _____ |
| Telephone: | <u>252-435-6366</u> | Telephone: | _____ |
| E-Mail Address: | <u>jlo@currituckhomes.com</u> | E-Mail Address: | _____ |

Property Information

Physical Street Address: Caratoke Highway between Beechwood Shore Drive and Munden Lane
 0031-000-064C-0000, 0031-000-064M-0000, 0031-000-064L-0000, 0031-000-064K-0000,
 Parcel Identification Number(s): 0031-000-064D-0000, 0031-000-064N-0000, and portion of 0031-000-064P-0000
 FEMA Flood Zone Designation: X & AE (4')

Request

Project Description: 35 Lot Residential Conservation Subdivision
 Total land disturbance activity: 1782475 sf / 40.92 ac Calculated volume of BMPs: 614,311 cf of dry storage
 Maximum lot coverage: 7,714 sf Proposed lot coverage: 7,714 sf

TYPE OF REQUEST

- Major subdivision (10-year, 24-hour rate)
- Major site plan (5-year, 24-hour rate)

METHOD USED TO CALCULATE PEAK DISCHARGE

- Rational Method
- NRCS Method (TR-55 and TR-20)
- Simple volume calculation for small sites (less than 10 acres)
- Alternative stormwater runoff storage analysis *PCSWMM Modeling
- Downstream drainage capacity analysis

I hereby authorize county officials to enter my property for the purpose of determining compliance. All information submitted and required as part of this process shall become public record.

Jerry L. Olds
 Applicant

7-2-2026
 Date

 Property Owner(s)

 Date

*NOTE: Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.



NORTH CAROLINA
Environmental Quality

June 8, 2026

JOSH STEIN
Governor

D. REID WILSON
Secretary

RICHARD E. ROGERS, JR.
Director

Currituck County
Attention: Rebecca Gay, County Manager
153 Courthouse Road, Suite 204
Currituck, NC 27929

Re: Engineering Plans Approval
Distribution Extension
New Bridge Creek
CURRITUCK COUNTY WATER SYSTEM
Water System No.: NC0427010
Currituck County
Serial No.: 26-00412

Dear Applicant:

Enclosed please find one copy of the "Application for Approval..." together with one copy of the referenced engineering plans bearing the Division of Water Resources stamp of approval for the referenced project. These engineering plans are approved under Division of Water Resources Serial Number, 26-00412 dated June 8, 2026.

Engineering plans prepared by Mark Bissell, P.E. call for the installation of approximately 3,520 feet of 8-inch water main, fire hydrants, valves, and associated appurtenances within rights-of-way along New Bridge Creek Road, Cowells Creek Drive, and Bellows Bay Drive in Moyock, Currituck County. The proposed water main along New Bridge Creek Road will connect to an existing 8-inch water main at the intersection with Caratoke Highway. **The project will be completed in three phases:** Phase 1 will include the southeast side of Cowells Creek Drive and the entirety of New Bridge Creek Road, this area includes lots 13– 22, lot 34, and lot 35; Phase 2 will include the northeast side of Cowells Creek Drive and Bellows Bay Drive, this area includes lots 10 – 12, lots 31 – 33, and lots 23 – 28; and Phase 3 will include the northwest side of Cowells Creek Drive, this area includes lots 1 – 9, 29, and 30. Construction of this project must be in accordance with Currituck County Water System's standard specifications.

Please note that in accordance with 15A NCAC 18C .0309(a), no construction, alteration, or expansion of a water system shall be placed into service or made available for human consumption until the Public Water Supply Section has issued Final Approval. Final Approval will be issued and mailed to the applicant upon receipt of both an Engineer's Certification and an Applicant's Certification submitted in accordance with 15A NCAC 18C .0303 (a) and (c).



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1634 Mail Service Center | Raleigh, North Carolina 27699-1634
919.707.9100

Currituck County
Attention: Rebecca Gay, County Manager
Page 2 of 2
June 8, 2026

These plans in the foregoing application are approved insofar as the protection of public health is concerned as provided in the rules, standards and criteria adopted under the authority of Chapter 130A-317 of the General Statutes. This approval does not constitute a warranty of the design, construction or future operation of the water system.

One copy of the "Application for Approval..." and a copy of the plans with a seal of approval from the department are enclosed. One copy of the approved documents in a digital format is being forwarded to our Washington Regional Office. Another copy is being retained in our records.

If the Public Water Supply Section can be of further service, please call (919) 707-9100.

Sincerely,



Rebecca Sadosky, Ph.D., Chief
Public Water Supply Section
Division of Water Resources

RS/OH

Enclosures: Approval Documents

cc: Jamie Midgette, P.E., Washington Regional Office (via email)
Currituck County Health Department
Bissell Professional Group



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1634 Mail Service Center | Raleigh, North Carolina 27699-1634
919.707.9100