



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

RICHARD E. ROGERS, JR.
Director

June 3, 2022

JOHN NICHOLS, PE, CPESC – PUBLIC UTILITY DIRECTOR
BRUNSWICK COUNTY
POST OFFICE BOX 249
BOLIVIA, NORTH CAROLINA 28422

Subject: Permit No. WQ00042579
Mulberry Branch WRF
High-Rate Infiltration System
Brunswick County

Dear Mr. Nichols:

In accordance with your permit application request received June 4, 2021, and subsequent additional information received July 26, 2021, November 29, 2021, and March 14, 2022, we are forwarding herewith Permit No. WQ0042579 dated June 3, 2022, to Brunswick County for the construction and operation of the subject wastewater treatment and high-rate infiltration facilities.

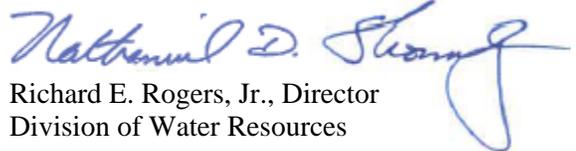
This permit shall be effective from the date of issuance through February 28, 2029, and shall be subject to the conditions and limitations therein. **The Permittee shall submit a renewal application no later than September 1, 2028.**

Please pay attention to the monitoring requirements listed Attachments A, B, and C. Failure to establish an adequate system for collecting and maintaining the required operational information shall result in future compliance problems.

If any parts, requirements, or limitations contained in this permit are unacceptable, the Permittee has the right to request an adjudicatory hearing upon written request within 30 days following receipt of this permit. This request shall be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings at 6714 Mail Service Center, Raleigh, NC 27699-6714. Otherwise, this permit shall be final and binding.

One set of approved plans and specifications is being forwarded to you. If you need additional information concerning this permit, please contact Lauren Raup-Plummer at (919) 707-3660 or Lauren.Plummer@ncdenr.gov.

Sincerely,


Richard E. Rogers, Jr., Director
Division of Water Resources

cc: Brunswick County Health Department (Electronic Copy)
Wilmington Regional Office, Water Quality Regional Operations Section (Electronic Copy)



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1617 Mail Service Center | Raleigh, North Carolina 27699-1617
919.707.9000

T. Carter Hubbard, PE – WK Dickson & Co., Inc. (Electronic Copy)
Jeff Talbott – Protection and Enforcement Branch (Electronic Copy)
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Ali Ajami, PhD– Division of Water Infrastructure (Electronic Copy)
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NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RALEIGH
HIGH-RATE INFILTRATION SYSTEM PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

Brunswick County
Brunswick County

FOR THE

operation of a 750,000 gallon per day (GPD) wastewater treatment and high-rate infiltration facility consisting of the:

construction and operation of a 750,000 GPD wastewater treatment system consisting of: 2,903 feet of 10-inch influent force main from the headworks pump station located at Shallotte WWTP (Permit No. WQ0000798); one anaerobic selector consisting of one 9,600 gallon denitrification tank with one 0.5 horsepower (hp) mixer, one 81,158 gallon Bio-P tank with one 2 hp mixer, one 15,359 gallon selector tank with one 0.75 hp mixer; two 458,466 gallon oxidation ditches consisting of an inlet distribution box with an automatic diversion weir, a jet mixing system with six 1,775 gallon per minute (GPM) solids handling pumps, an aeration system with three 475 standard cubic feet per minute (scfm) blowers, and a combination effluent box; two 35-foot (ft) diameter clarifiers with a 16-ft sidewater depth and effluent weirs; a Return Activated Sludge (RAS) pump station with three 394 GPM self-priming pumps and an in-line magnetic flowmeter; a Waste Activated Sludge (WAS) pump station with two 250 GPM self-priming pumps and an in-line magnetic flowmeter; two 1,875 million gallon per day (MGD) disc filters each with a 41 GPM submersible backwash pump; ultraviolet (UV) disinfection consisting of two channels (one back-up) with each channel containing two 12-bulb banks; a turbidity sensor; an effluent and non-potable pump station with a 16,755 gallon shared wet well, an effluent autosampler, two 1,302 GPM peak capacity self-priming pumps to the infiltration basins, one 330 GPM low flow self-priming pump to the infiltration basins, an in-line magnetic flowmeter for effluent, and two 60 GPM vertical turbine washdown pumps for non-potable on-site use; one 594,520 gallon aerobic digester with one 5,856 GPM solids handling pump and three 580 scfm blowers; a sludge transfer pump station with two 740 GPM self-priming pumps; a drain pump station with a 2,130 gallon tank, one 800 GPM peak flow self-priming pump, and one 400 GPM low flow self-priming pump; a scum pump station with a 1,077 gallon tank and two 275 GPM vertical cantilever chopper pumps; a 1000 kilowatt (kW) generator; and all associated piping, valves, controls, and appurtenances; and the

construction and operation of a 750,000 GPD high-rate infiltration system consisting of: a 1.68 acre high-rate infiltration basin (Basin A) to be loaded at a rate of 4.43 gallons per day per square foot (GPD/ft²), with a capacity of 317,719 GPD, and a flow meter; a 1.01 acre high-rate infiltration basin (Basin B) to be loaded at a rate of 4.43 GPD/ft², with a capacity of 187,273 GPD, and a flow meter; a 1.36 acre high-rate infiltration basin (Basin C) to be loaded at a rate of 4.43 GPD/ft², with a capacity of 245,008 GPD, and a flow meter; a gravity drain groundwater lowering system surrounding the high-rate infiltration basins, with two outfalls each with a level spreader and a flow meter; and all associated piping, valves, controls, and appurtenances;

to serve the Mulberry Branch Water Reclamation Facility (WRF), with no discharge of wastes to surface waters, pursuant to the application received June 4, 2021, and subsequent additional information received July 26, 2021, November 29, 2021, and March 14, 2022, and in conformity with the Division-approved plans and specifications considered a part of this permit.

This permit shall be effective from the date of issuance through February 28, 2029, and shall be subject to the following conditions and limitations:

I. SCHEDULES

1. Upon completion of construction and prior to operation of this permitted facility, the Permittee shall submit an engineering certification from a North Carolina licensed Professional Engineer certifying that the permitted facility has been constructed in accordance with G.S. 143-215.1, Administrative Code Title 15A Subchapter 02T, this permit, and the Division-approved plans and specifications. For phased and partially certified facilities, the Permittee shall retain the responsibility to track further construction approved under this permit, and shall provide a final engineering certification upon project completion. Mail the Engineering Certification to the Division of Water Resources, Non-Discharge Branch, 1617 Mail Service Center, Raleigh, NC 27699-1617, or Non-Discharge.Reports@ncdenr.gov. [15A NCAC 02T .0116(a)]
2. The Permittee shall notify the Wilmington Regional Office, telephone number (910) 796-7215, at least two business days in advance of initial operation of the constructed facilities so that the Division can conduct a startup inspection. [15A NCAC 02T .0108(b)(1)(B)]
3. The Wilmington Regional Office, telephone number (910) 796-7215, shall approve monitoring wells BA-1, BA-2, BA-3, BB-1, BB-2, BB-3, BC-1, BC-2, BC-3, W-1, and W-2 prior to installation, and the monitoring wells shall be installed prior to beginning waste disposal operations. The Wilmington Regional Office shall be notified at least two business days in advance of construction of any monitoring well. The monitoring wells shall be constructed such that the water level in the well is never above or below the screened portion of the well, and in accordance with 15A NCAC 02C .0108. The general location and Division-approved name for each monitoring well is on Figure 2. [15A NCAC 02C .0108, 02T .0108(b)(1)(B)]
4. Within 90 days of completing installation of monitoring wells BA-1, BA-2, BA-3, BB-1, BB-2, BB-3, BC-1, BC-2, BC-3, W-1, and W-2, the Permittee shall submit two original copies and one digital copy of a site map with a scale no greater than 1-inch equals 100 feet; however, special provisions may be granted upon prior approval for large properties. The map shall include the following information:
 - a. Legend, north arrow, scale, and legible in black and white.
 - b. Topographic contour intervals not exceeding 10 feet or 25 percent of total site relief.
 - c. All habitable residences or places of assembly within 500 feet of the infiltration area.
 - d. Location of all wells, streams (ephemeral, intermittent, and perennial), springs, lakes, ponds, ditches, and other surface drainage features within 500 feet of the infiltration area.
 - e. Location and identification of each monitoring well (identify any background/upgradient wells).
 - f. Latitude and longitude coordinates of each monitoring wells (decimal degrees to the sixth decimal degree and in NAD83).
 - g. Location and identification of major components of the waste disposal system.
 - h. The perimeter of all infiltration areas with field names (named according to the approved permit)
 - i. Location and ownership of property boundaries within 500 feet of the infiltration area (including road/rail right-of-ways and easements).
 - j. Latitude and longitude of the established horizontal control monument (decimal degrees to the sixth decimal degree).
 - k. Elevation of the top of the well casing (i.e., measuring point) relative to a common datum.
 - l. Depth of water below the measuring point at the time the measuring point is established.
 - m. Delineation of the compliance and review boundaries.
 - n. Distance measurements verifying all setbacks are being met.
 - o. Stormwater drainage controls.

- p. 100-year floodplain.
- q. The date the map is prepared and/or revised.
- r. Location of the groundwater lowering system and discharge point (if present).

Boundaries and physical features not under purview of other licensed professions shall be provided by a Professional Surveyor. Control monuments shall be installed in such a manner and made of such materials that the monument will not be destroyed due to activities taking place on the property. The map and any supporting documentation shall be sent to the Division of Water Resources, Non-Discharge Branch, 1617 Mail Service Center, Raleigh, NC 27699-1617, or Non-Discharge.Reports@ncdenr.gov. [15A NCAC 02C .0105(f), 02T .0108(b)(1)(B)]

- 5. Within 30 days of construction, a Well Construction Record (Form GW-1) listing this permit number and the appropriate monitoring well identification number shall be completed for each well constructed, and mailed to the Division of Water Resources, Non-Discharge Branch, 1617 Mail Service Center, Raleigh, NC 27699-1617, or Non-Discharge.Reports@ncdenr.gov. A North Carolina Certified Well Contractor shall construct the monitoring wells according to the North Carolina Well Construction Standards (15A NCAC 02C .0113) and local county rules. [15A NCAC 02C .0113, 02T .0108(b)(1)(B)]
- 6. Gauges to monitor waste levels in the high-rate infiltration basins (Basin A, Basin B, and Basin C) shall be installed prior to operation. [15A NCAC 02T .0108(b)(1)(B), 02T .0705(c)]
- 7. Prior to operation of the newly installed facilities, a Final Operation and Maintenance Plan shall be submitted for review. The plan shall be sent to the Division of Water Resources, Non-Discharge Branch, 1617 Mail Service Center, Raleigh, NC 27699-1617 or Non-Discharge.Reports@ncdenr.gov. [15A NCAC 02T .0108(b)(1)(B), 02T .0707(a)]
- 8. Upon completion of construction and prior to infiltration, a soil evaluation shall be completed for all areas where fill material is placed within the permitted infiltration areas. The report shall certify that areas utilizing fill material are capable of accepting the designed loading rate. This report shall specifically address, but not be limited to, soil features such as soil compaction and saturated hydraulic conductivity of the least permeable layer, soil fertility report and any amendments added, verification of fill suitability and depth of fill material (and to the seasonal high water table) across the field, as well as any other properties that might impact the soil's ability to accept infiltrated water. The soil scientist evaluation shall be mailed to the Division of Water Resources, Non-Discharge Branch, 1617 Mail Service Center, Raleigh, NC 27699-1617 or Non-Discharge.Reports@ncdenr.gov. Infiltration shall not occur until the Wilmington Regional Office approves the soils evaluation. [15A NCAC 02T .0108(b)(1)(A)]
- 9. The Permittee shall request renewal of this permit on Division-approved forms no later than September 1, 2028. [15A NCAC 02T .0105(b), 02T .0109]

II. PERFORMANCE STANDARDS

- 1. The Permittee shall maintain and operate the subject non-discharge facilities so there is no discharge to surface waters, nor any contravention of groundwater or surface water standards. In the event the facilities fail to perform satisfactorily, including the creation of nuisance conditions due to improper operation and maintenance, or failure of the infiltration areas to assimilate the effluent, the Permittee shall take immediate corrective actions, including Division required actions, such as the construction of additional or replacement wastewater treatment or disposal facilities. [15A NCAC 02T .0108(b)(1)(A)]
- 2. This permit shall not relieve the Permittee of their responsibility for damages to groundwater or surface water resulting from the operation of this facility. [15A NCAC 02T .0108(b)(1)(A)]

3. Groundwater monitoring wells shall be constructed in accordance with 15A NCAC 02C .0108 (Standards of Construction for Wells Other than Water Supply), and any other jurisdictional laws and regulations pertaining to well construction. [15A NCAC 02C .0108]
4. Effluent quality shall not exceed the limitations specified in Attachment A. [15A NCAC 02T .0705(b)]
5. Application rates, whether hydraulic, nutrient, or other pollutant, shall not exceed those specified in Attachment B. [15A NCAC 02T .0705(m)]
6. High-rate infiltration sites permitted on or after December 30, 1983 have a compliance boundary that is either 250 feet from the infiltration area, or 50 feet within the property boundary, whichever is closest to the infiltration area. **Subsurface groundwater lowering drainage systems shall be prohibited within the compliance boundary.** Any exceedance of groundwater standards at or beyond the compliance boundary shall require corrective action.

A re-defined compliance boundary may be established closer to the waste disposal area provided the groundwater standards are met at the newly established compliance boundary. Division-approved relocation of the compliance boundary shall be noted in Attachment B. Multiple contiguous properties under common ownership and permitted for use as a disposal system shall be treated as a single property with regard to determination of a compliance boundary. [15A NCAC 02L .0106(d)(2), 02L .0107(b), 02T .0105(h), 02T .0705(y), G.S. 143-215.1(i), G.S. 143-215.1(k)]

7. The review boundary is midway between the compliance boundary and the infiltration area. Any exceedance of groundwater standards at or beyond the review boundary shall require preventative action. [15A NCAC 02L .0106(d)(1), 02L .0108]
8. The Permittee shall apply for a permit modification to establish a new compliance boundary prior to any sale or transfer of property affecting a compliance boundary (i.e., parcel subdivision). [15A NCAC 02L .0107(c)]
9. No wells, excluding Division-approved monitoring wells, shall be constructed within the compliance boundary except as provided for in 15A NCAC 02L .0107(g). [15A NCAC 02L .0107]
10. Except as provided for in 15A NCAC 02L .0107(g), the Permittee shall ensure any landowner who is not the Permittee and owns land within the compliance boundary shall execute and file with the Brunswick County Register of Deeds an easement running with the land containing the following items:
 - a. A notice of the permit and number or other description as allowed in 15A NCAC 02L .0107(f)(1);
 - b. Prohibits construction and operation of water supply wells within the compliance boundary; and
 - c. Reserves the right of the Permittee or the State to enter the property within the compliance boundary for purposes related to the permit.

The Director may terminate the easement when its purpose has been fulfilled or is no longer needed.
[15A NCAC 02L .0107(f)]

11. The facilities herein were permitted per the following setbacks:

a. The infiltration sites were originally permitted June 3, 2022. The setbacks for infiltration sites originally permitted or modified on or after September 1, 2018 are as follows (all distances in feet):

i. Each habitable residence or place of assembly under separate ownership:	100 ¹
ii. Each habitable residence or place of assembly owned by the Permittee:	50
iii. Each private or public water supply source:	100
iv. Surface waters:	100 ³
v. Groundwater lowering ditches:	100 ³
vi. Surface water diversions:	50
vii. Each well with exception of monitoring wells:	100
viii. Each property line:	50 ²
ix. Top of slope of embankments or cuts of two feet or more in vertical height:	100
x. Each water line:	10
xi. Subsurface groundwater lowering drainage systems:	100 ³
xii. Public right of way:	50
xiii. Nitrification field:	20
xiv. Each building foundation or basement:	15
xv. Each impounded public surface water supply:	500
xvi. Each public shallow ground water supply (less than 50 feet deep):	500

¹ Habitable residences or places of assembly under separate ownership constructed after the facilities herein were originally permitted or subsequently modified are exempt from this setback.

² Setbacks to property lines are not applicable when the Permittee, or the entity from which the Permittee is leasing, owns both parcels separated by the property line.

³ Setbacks to surface waters, groundwater lowering ditches, and subsurface groundwater lowering drainage systems have been reduced from 200 to 100 feet because the treatment units are designed to meet a Total Nitrogen of 7 mg/L and a Total Phosphorus of 3 mg/L.

[15A NCAC 02T .0706(a), 02T .0706(b), 02T .0706(f), 02T .0706(g)]

b. The storage and treatment units were originally permitted June 3, 2022. The setbacks for storage and treatment units originally permitted or modified on or after September 1, 2018 are as follows (all distances in feet):

i. Each habitable residence or place of assembly under separate ownership:	100 ¹
ii. Each private or public water supply source:	100
iii. Surface waters:	50
iv. Each well with exception of monitoring wells:	100
v. Each property line:	50 ²

¹ Habitable residences or places of assembly under separate ownership constructed after the facilities herein were originally permitted or subsequently modified are exempt from this setback.

² Setbacks to property lines are not applicable when the Permittee, or the entity from which the Permittee is leasing, owns both parcels separated by the property line.

[15A NCAC 02T .0706(d), 02T .0706(f), 02T .0706(g)]

III. OPERATION AND MAINTENANCE REQUIREMENTS

1. The Permittee shall operate and maintain the subject facilities as a non-discharge system. [15A NCAC 02T .0700]
2. The Permittee shall maintain an Operation and Maintenance Plan, which shall include operational functions, maintenance schedules, safety measures, and a spill response plan. [15A NCAC 02T .0707(a)]
3. Upon the Water Pollution Control System Operators Certification Commission's (WPCSOCC) classification of the subject non-discharge facilities, the Permittee shall designate and employ a certified operator in responsible charge (ORC), and one or more certified operators as back-up ORCs. The ORC or their back-up shall operate and visit the facilities as required by the WPCSOCC. [15A NCAC 02T .0117]
4. Infiltration equipment shall be tested and calibrated once per permit cycle. [15A NCAC 02T .0707(d)]
5. Only treated effluent from the Mulberry Branch WRF shall be infiltrated on the sites listed in Attachment B. [15A NCAC 02T .0701]
6. The Permittee shall not allow vehicles or heavy machinery on the infiltration area, except during equipment installation or maintenance activities. [15A NCAC 02T .0707(e)]
7. The Permittee shall prohibit public access to the wastewater treatment, storage, and infiltration facilities. [15A NCAC 02T .0705(p)]
8. The Permittee shall dispose or utilize generated residuals in a Division-approved manner. [15A NCAC 02T .0708, 02T .1100].
9. The Permittee shall not divert or bypass untreated or partially treated wastewater from the subject facilities. [15A NCAC 02T .0705(i)]
10. The Permittee shall provide a water-tight seal on all treatment and storage units, or provide two feet protection from the 100-year flood plain elevation. [15A NCAC 02T .0705(l)]
11. Freeboard in the high-rate infiltration basins (Basin A, Basin B, and Basin C) shall not be less than two feet at any time. [15A NCAC 02T .0705(c)]
12. Gauges to monitor waste levels in the high-rate infiltration basins (Basin A, Basin B, and Basin C) shall be provided. These gauges shall have readily visible permanent markings, at inch or tenth of a foot increments, indicating the following elevations: maximum liquid level at the top of the temporary liquid storage volume; minimum liquid level at the bottom of the temporary liquid storage volume; and the lowest point on top of the dam. [15A NCAC 02T .0707(f)]
13. A protective vegetative cover shall be established and maintained on all berms, pipe runs, erosion control areas, surface water diversions, and earthen embankments (i.e., outside toe of embankment to maximum allowable temporary storage elevation on the inside of the embankment). Trees, shrubs, and other woody vegetation shall not be allowed to grow on the earthen dikes or embankments. Earthen embankments shall be kept mowed or otherwise controlled and accessible. [15A NCAC 02T .0707(g)]
14. Metering equipment shall be tested and calibrated annually. [15A NCAC 02T .0707(d)]
15. An automatically activated standby power source capable of powering all essential treatment units shall be on site and operational at all times. If a generator is employed as an alternate power supply, it shall be tested weekly. [15A NCAC 02T .0705(k)]

16. The infiltration areas shall be cleaned as needed based on performance to remove deposited materials that may impede the infiltration process. Cleaning records shall be maintained at the facility for five years, and shall be made available to the Division upon request. The Wilmington Regional Office, telephone number (910) 796-7215, shall be notified prior to each cleaning. [15A NCAC 02T .0707(h)]

IV. MONITORING AND REPORTING REQUIREMENTS

1. The Permittee shall conduct and report any Division required monitoring necessary to evaluate this facility's impact on groundwater and surface water. [15A NCAC 02T .0108(c)]
2. A Division-certified laboratory shall conduct all analyses for the required effluent, groundwater, and surface water parameters. [15A NCAC 02H .0800]
3. Flow through the treatment facility shall be continuously monitored, and daily flow values shall be reported on Form NDMR. Facilities with a permitted flow less than 10,000 GPD may estimate their flow from water usage records provided the water source is metered. [15A NCAC 02T .0105(k), 02T .0108(c)]
4. The Permittee shall monitor the treated effluent at the frequencies and locations for the parameters specified in Attachment A. [15A NCAC 02T .0108(c)]
5. The Permittee shall maintain records tracking the amount of effluent infiltrated. These records shall include the following information for each infiltration site listed in Attachment B:
 - a. Date of infiltration;
 - b. Volume of effluent infiltrated;
 - c. Site infiltrated;
 - d. Length of time site is infiltrated;
 - e. Loading rates to each infiltration site listed in Attachment B; and
 - f. Weather conditions.[15A NCAC 02T .0108(c)]
6. Freeboard (i.e., waste level to the lowest embankment elevation) in the high-rate infiltration basins (Basin A, Basin B, and Basin C) shall be measured to the nearest inch or tenth of a foot, and recorded weekly. Weekly freeboard records shall be maintained for five years, and shall be made available to the Division upon request. [15A NCAC 02T .0108(c)]
7. Three copies of all monitoring data (as specified in Conditions IV.3. and IV.4.) on Form NDMR for each PPI and three copies of all operation and disposal records (as specified in Conditions IV.5. and IV.6.) on Form NDAR-2 for every site in Attachment B shall be submitted on or before the last day of the following month. If no activities occurred during the monitoring month, monitoring reports are still required documenting the absence of the activity. All information shall be submitted to the following address:

Division of Water Resources
Information Processing Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

[15A NCAC 02T .0105(l)]

8. Pursuant to G.S. 143-215.1C(a), the Permittee shall provide to its users and the Division of Water Resources an annual report summarizing the performance of the wastewater treatment and high-rate infiltration facility and the extent to which the facility has violated this permit, or federal or State laws, regulations, or rules related to the protection of water quality. This report shall be prepared on either a calendar or fiscal year basis and shall be provided no later than 60 days after the end of the calendar or fiscal year. Two copies of the annual report provided to the Permittee's users shall be submitted to:

Division of Water Resources
Water Quality Permitting Section
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

[G.S. 143-215.1C(a)]

9. The Permittee shall maintain a record of all residuals removed from this facility. This record shall be maintained for five years, and shall be made available to the Division upon request. This record shall include:
 - a. Name of the residuals hauler;
 - b. Non-Discharge permit number authorizing the residuals disposal, or a letter from a municipality agreeing to accept the residuals;
 - c. Date the residuals were hauled; and
 - d. Volume of residuals removed.

[15A NCAC 02T .0708(b)]

10. A maintenance log shall be kept at this facility. This log shall be maintained for five years, and shall be made available to the Division upon request. This log shall include:
 - a. Date of flow measurement device calibration;
 - b. Date of infiltration equipment calibration;
 - c. Date and results of power interruption testing on alternate power supply;
 - d. Visual observations of the plant and plant site; and
 - e. Record of preventative maintenance (e.g., changing of equipment, adjustments, testing, inspections and cleanings, etc.).

[15A NCAC 02T .0707(i)]

11. Monitoring wells BA-1, BA-2, BA-3, BB-1, BB-2, BB-3, BC-1, BC-2, BC-3, W-1, and W-2 shall be sampled after construction, and within three months prior to initiating high-rate infiltration operations. Monitoring wells BA-1, BA-2, BA-3, BB-1, BB-2, BB-3, BC-1, BC-2, BC-3, W-1, and W-2 shall be sampled thereafter at the frequencies and for the parameters specified in Attachment C. All mapping, well construction forms, well abandonment forms, and monitoring data shall refer to the permit number and the well nomenclature as provided in Attachment C and Figure 2. [15A NCAC 02T .0105(m)]
12. For initial sampling of monitoring wells BA-1, BA-2, BA-3, BB-1, BB-2, BB-3, BC-1, BC-2, BC-3, W-1, and W-2, the Permittee shall submit a Compliance Monitoring Form (GW-59) and a Well Construction Record Form (GW-1) listing this permit number and the appropriate monitoring well identification number. Initial Compliance Monitoring Forms (GW-59) without copies of the Well Construction Record Forms (GW-1) are deemed incomplete, and may be returned to the Permittee without being processed. [15A NCAC 02T .0105(m)]

13. Two copies of the monitoring well sampling and analysis results shall be submitted on a Compliance Monitoring Form (GW-59), along with attached copies of laboratory analyses, on or before the last working day of the month following the sampling month. The Compliance Monitoring Form (GW-59) shall include this permit number, the appropriate well identification number, and one GW-59a certification form shall be submitted with each set of sampling results. All information shall be submitted to the following address:

Division of Water Resources
Information Processing Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

[15A NCAC 02T .0105(m)]

14. Noncompliance Notification:

The Permittee shall report to the Wilmington Regional Office, telephone number (910) 796-7215, within 24 hours of first knowledge of the following:

- a. Treatment of wastes abnormal in quantity or characteristic, including the known passage of a hazardous substance.
- b. Any process unit failure (e.g., mechanical, electrical, etc.) rendering the facility incapable of adequate wastewater treatment.
- c. Any facility failure resulting in a discharge to surface waters.
- d. Any time self-monitoring indicates the facility has gone out of compliance with its permit limitations.
- e. Effluent breakout from the infiltration sites.

Emergencies requiring reporting outside normal business hours shall call the Division's Emergency Response personnel at telephone number (800) 662-7956, (800) 858-0368, or (919) 733-3300. All noncompliance notifications shall file a written report to the Wilmington Regional Office within five days of first knowledge of the occurrence, and this report shall outline the actions proposed or taken to ensure the problem does not recur. [15A NCAC 02T .0108(b)(1)(A)]

V. INSPECTIONS

1. The Permittee shall perform inspections and maintenance to ensure proper operation of the wastewater treatment and infiltration facilities. [15A NCAC 02T .0707(j)]
2. The Permittee shall inspect the wastewater treatment and infiltration facilities to prevent malfunctions, facility deterioration, and operator errors that may result in discharges of wastes to the environment, threats to human health, or public nuisances. The Permittee shall maintain an inspection log that includes the date and time of inspection, observations made, and maintenance, repairs, or corrective actions taken. The Permittee shall maintain this inspection log for a period of five years from the date of the inspection, and this log shall be made available to the Division upon request. [15A NCAC 02T .0707(i), 02T .0707(j)]
3. Division authorized representatives may, upon presentation of credentials, enter and inspect any property, premises, or place related to the wastewater treatment and infiltration facilities permitted herein at any reasonable time for determining compliance with this permit. Division authorized representatives may inspect or copy records maintained under the terms and conditions of this permit, and may collect groundwater, surface water, or leachate samples. [G.S. 143-215.3(a)(2)]

VI. GENERAL CONDITIONS

1. Failure to comply with the conditions and limitations contained herein may subject the Permittee to a Division enforcement action. [G.S. 143-215.6A, 143-215.6B, 143-215.6C]
2. This permit is effective only with respect to the nature and volume of wastes described in the permit application, and Division-approved plans and specifications. [G.S. 143-215.1(d)]
3. Unless specifically requested and approved in this permit, there are no variances to administrative codes or general statutes governing the construction or operation of the facilities permitted herein. [15A NCAC 02T .0105(n)]
4. The issuance of this permit does not exempt the Permittee from complying with all statutes, rules, regulations, or ordinances that other jurisdictional government agencies (e.g., local, state, and federal) may require. [15A NCAC 02T .0105(c)(6)]
5. If the permitted facilities change ownership, or the Permittee changes their name, the Permittee shall submit a permit modification request on Division-approved forms. The Permittee shall comply with all terms and conditions of this permit until the permit is transferred to the successor-owner. [G.S. 143-215.1(d3)]
6. The Permittee shall retain a set of Division-approved plans and specifications for the life of the facilities permitted herein. [15A NCAC 02T .0105(o)]
7. The Permittee shall maintain this permit until the proper closure of all facilities permitted herein, or until the facilities permitted herein are permitted by another authority. [15A NCAC 02T .0105(j)]
8. This permit is subject to revocation or modification upon 60-day notice from the Division Director, in whole or part for:
 - a. violation of any terms or conditions of this permit or Administrative Code Title 15A Subchapter 02T;
 - b. obtaining a permit by misrepresentation or failure to disclose all relevant facts;
 - c. the Permittee's refusal to allow authorized Department employees upon presentation of credentials:
 - i. to enter the Permittee's premises where a system is located or where any records are required to be kept;
 - ii. to have access to any permit required documents and records;
 - iii. to inspect any monitoring equipment or method as required in this permit; or
 - iv. to sample any pollutants;
 - d. the Permittee's failure to pay the annual fee for administering and compliance monitoring; or
 - e. a Division determination that the conditions of this permit are in conflict with North Carolina Administrative Code or General Statutes.

[15A NCAC 02T .0110]

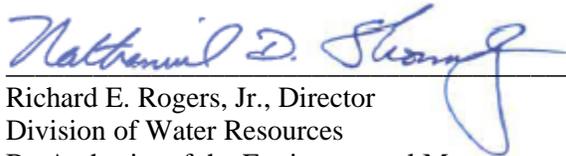
9. Unless the Division Director grants a variance, expansion of the facilities permitted herein shall not occur if any of the following apply:
 - a. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has been convicted of environmental crimes under G.S. 143-215.6B, or under Federal law that would otherwise be prosecuted under G.S. 143-215.6B, and all appeals of this conviction have been abandoned or exhausted.
 - b. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has previously abandoned a wastewater treatment facility without properly closing the facility.
 - c. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has not paid a civil penalty, and all appeals of this penalty have been abandoned or exhausted.
 - d. The Permittee or any parent, subsidiary, or other affiliate of the Permittee is currently not compliant with any compliance schedule in a permit, settlement agreement, or order.
 - e. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has not paid an annual fee.

[15A NCAC 02T .0120(b), 02T .0120(d)]

10. This permit shall not be renewed if the Permittee or any affiliation has not paid the required annual fee.
[15A NCAC 02T .0120(c)]

Permit issued this the 3rd day of June 2022

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



8 Richard E. Rogers, Jr., Director
Division of Water Resources
By Authority of the Environmental Management Commission

Permit Number WQ0042579

ENGINEERING CERTIFICATION

Partial Final

I, _____, as a duly licensed North Carolina Professional Engineer, having periodically / fully observed the construction of the permitted facilities, do hereby state to the best of my abilities that the facility was constructed in compliance with G.S. 143-215.1, Administrative Code Title 15A Subchapter 02T, this permit, and the Division-approved plans and specifications.

Documentation of any variation to this permit, and the Division-approved plans and specifications, is in the attached as-built drawings.

Description of variations: _____

Professional Engineer's Name			
Firm Name		Firm No.	
Address			
City	State	Zip Code	
Telephone	Email	Seal, Signature, and Date	

THE COMPLETED ENGINEERING CERTIFICATION, INCLUDING ALL SUPPORTING DOCUMENTATION, SHALL BE SENT TO THE FOLLOWING ADDRESS:

**NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
 DIVISION OF WATER RESOURCES
 NON-DISCHARGE BRANCH**

By U.S. Postal Service
 1617 MAIL SERVICE CENTER
 RALEIGH, NORTH CAROLINA 27699-1617

By Courier/Special Delivery
 512 N. SALISBURY ST.
 RALEIGH, NORTH CAROLINA 27604

PPI 001 – WWTP Effluent

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PCS Code	Parameter Description	Units of Measure	Monthly Average	Monthly Geometric Mean	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)	mg/L	10				3 x Week	Composite
00940	Chloride (as Cl)	mg/L					3 x Year ¹	Composite
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C	#/100 mL		14			3 x Week	Grab
50050	Flow, in Conduit or thru Treatment Plant	GPD	750,000				Continuous	Recorder
00610	Nitrogen, Ammonia Total (as N)	mg/L	4				3 x Week	Composite
00625	Nitrogen, Kjeldahl, Total (as N)	mg/L					3 x Week	Composite
00620	Nitrogen, Nitrate Total (as N)	mg/L	10				3 x Week	Composite
00600	Nitrogen, Total (as N)	mg/L	7				3 x Week	Composite
00400	pH	su					5 x Week	Grab
00665	Phosphorus, Total (as P)	mg/L	3				3 x Week	Composite
70300	Solids, Total Dissolved – 180 °C	mg/L					3 x Year ¹	Composite
00530	Solids, Total Suspended	mg/L	15				3 x Week	Composite

1. 3 x Year sampling shall be conducted in March, July, and November.

PPI 002 – Groundwater Lowering System Effluent (Basins A and B)

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PCS Code	Parameter Description	Units of Measure	Monthly Average	Monthly Geometric Mean	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
00940	Chloride (as Cl)	mg/L	250				3 x Year ¹	Composite
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C	#/100 mL					Weekly	Grab
50050	Flow, in Conduit or thru Treatment Plant	GPD	816,172 ²				Continuous	Recorder
00610	Nitrogen, Ammonia Total (as N)	mg/L	1.5				Weekly	Composite
00620	Nitrogen, Nitrate Total (as N)	mg/L	10				Weekly	Composite
00600	Nitrogen, Total (as N)	mg/L					Weekly	Composite
00400	pH	su			6.5	8.5	Weekly	Grab
00665	Phosphorus, Total (as P)	mg/L					Weekly	Composite
70300	Solids, Total Dissolved – 180 °C	mg/L	500				3 x Year ¹	Composite

1. 3 x Year sampling shall be conducted in March, July, and November.
2. Groundwater drainage from Basin A drains to contribute 495,265 GPD. Groundwater drainage from Basin B drains to contribute 320,907 GPD.

PPI 003 – Groundwater Lowering System Effluent (Basin C)

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PCS Code	Parameter Description	Units of Measure	Monthly Average	Monthly Geometric Mean	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
00940	Chloride (as Cl)	mg/L	250				3 x Year ¹	Composite
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C	#/100 mL					Weekly	Grab
50050	Flow, in Conduit or thru Treatment Plant	GPD	397,340				Continuous	Recorder
00610	Nitrogen, Ammonia Total (as N)	mg/L	1.5				Weekly	Composite
00620	Nitrogen, Nitrate Total (as N)	mg/L	10				Weekly	Composite
00600	Nitrogen, Total (as N)	mg/L					Weekly	Composite
00400	pH	su			6.5	8.5	Weekly	Grab
00665	Phosphorus, Total (as P)	mg/L					Weekly	Composite
70300	Solids, Total Dissolved – 180 °C	mg/L	500				3 x Year ¹	Composite

1. 3 x Year sampling shall be conducted in March, July, and November.

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Brunswick County – Mulberry Branch WRF ¹

INFILTRATION AREA INFORMATION							APPLICATION LIMITATIONS		
Site	Owner	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Parameter	Rate	Units
Basin A	Brunswick County	Brunswick	34.010667°	-78.382278°	1.68	Baymeade	01284 – Non-Discharge Application Rate	4.43	GPD/ft ²
Basin B	Brunswick County	Brunswick	34.012361°	-78.380306°	1.01	Baymeade	01284 – Non-Discharge Application Rate	4.43	GPD/ft ²
Basin C	Brunswick County	Brunswick	34.011222°	-78.376750°	1.36	Baymeade	01284 – Non-Discharge Application Rate	4.43	GPD/ft ²
Totals					4.05				

1. Pursuant to 15A NCAC 02T .0105(h) and 15A NCAC 02T .0705(y), a re-defined compliance boundary for the high-rate infiltration basins has been approved for this site. This re-defined compliance boundary is located at 90 feet. Note that the 100-foot setback between the subsurface groundwater lowering drainage system and the waste disposal area shall still be met.

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Monitoring Wells: BA-1, BA-2, BA-3, BB-1, BB-2, BB-3, BC-1, BC-2, BC-3, W-1, and W-2

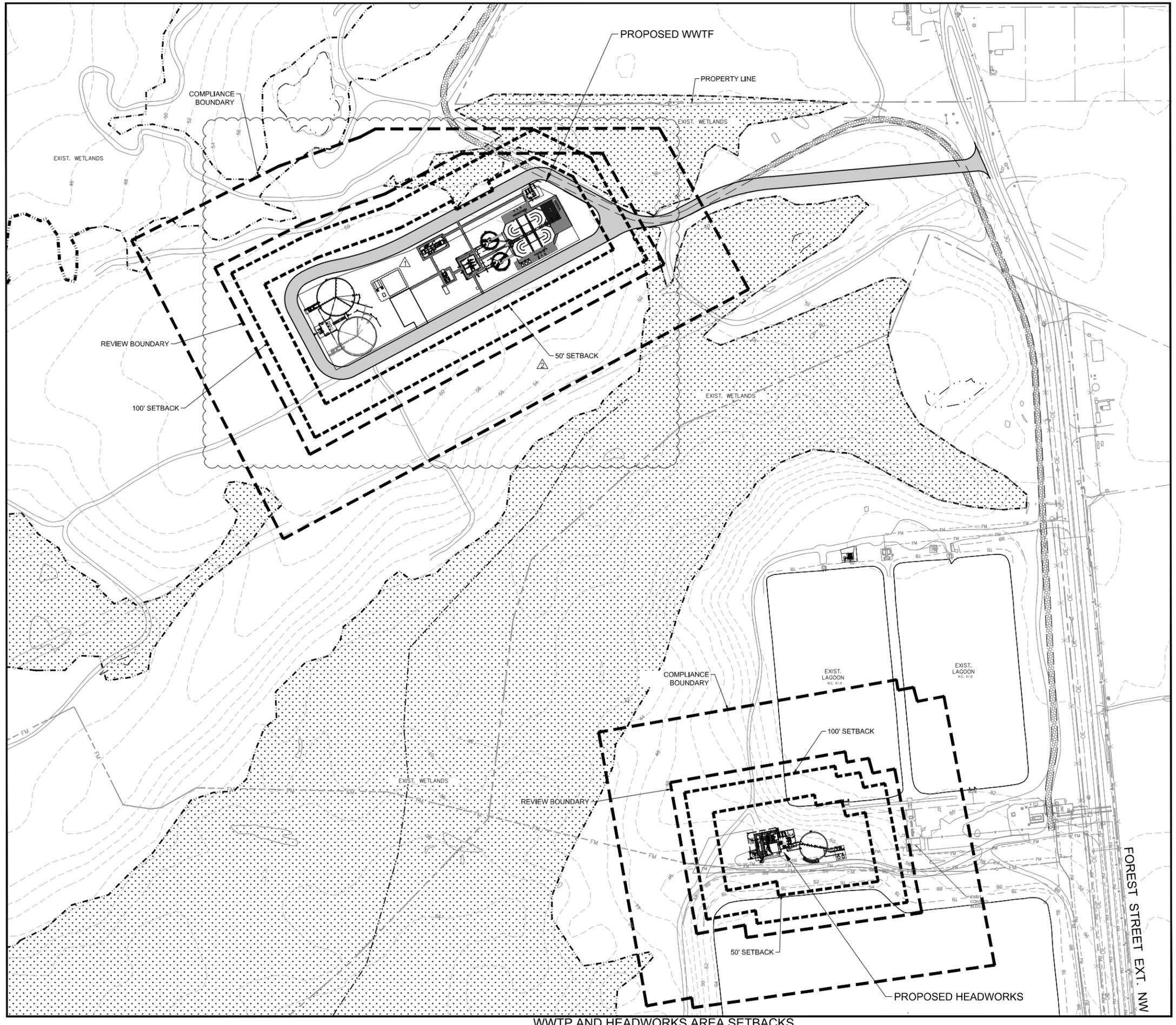
GROUNDWATER CHARACTERISTICS		GROUNDWATER STANDARDS		MONITORING REQUIREMENTS		
PCS Code	Parameter Description	Daily Maximum		Frequency Measurement	Sample Type	Footnotes
00680	Carbon, Tot Organic (TOC)		mg/L	3 x Year	Grab	1, 6
00940	Chloride (as Cl)	250	mg/L	3 x Year	Grab	1
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C		#/100 mL	3 x Year	Grab	1
00610	Nitrogen, Ammonia Total (as N)	1.5	mg/L	3 x Year	Grab	1
00620	Nitrogen, Nitrate Total (as N)	10	mg/L	3 x Year	Grab	1
00400	pH	6.5-8.5	su	3 x Year	Grab	1, 2
00665	Phosphorus, Total (as P)		mg/L	3 x Year	Grab	1
70300	Solids, Total Dissolved - 180 °C	500	mg/L	3 x Year	Grab	1
GWVOC	Volatile Compounds (GW)		Present: Yes/No	Annually	Grab	1, 4, 5
82546	Water Level, Distance from measuring point		feet	3 x Year	Calculated	1, 2, 3

- 3 x Year monitoring shall be conducted in March, July, and November; Annual monitoring shall be conducted in November.
- The measurement of water levels shall be made prior to purging the wells. The depth to water in each well shall be measured from the surveyed point on the top of the casing. The measurement of pH shall be made after purging and prior to sampling for the remaining parameters.
- The measuring points (top of well casing) of all monitoring wells shall be surveyed to provide the relative elevation of the measuring point for each monitoring well. The measuring points (top of casing) of all monitoring wells shall be surveyed relative to a common datum.
- Volatile Organic Compounds (VOC) - In November only, analyze by one of the following methods:
 - Standard Method 6230D, PQL at 0.5 µg/L or less
 - Standard Method 6210D, PQL at 0.5 µg/L or less
 - EPA Method 8021, Low Concentration, PQL at 0.5 µg/L or less
 - EPA Method 8260, Low Concentration, PQL at 0.5 µg/L or less
 - Another method with prior approval by the Water Quality Permitting Section Chief

Any method used shall meet the following qualifications:

 - A laboratory shall be DWR certified to run any method used.
 - The method used shall include all the constituents listed in Table VIII of Standard Method 6230D.
 - The method used shall provide a PQL of 0.5 µg/L or less that shall be supported by laboratory proficiency studies as required by the DWR Laboratory Certification Unit. Any constituents detected above the MDL but below the PQL of 0.5 µg/L shall be qualified (estimated) and reported.
- If any volatile organic compounds (VOC) are detected as a result of monitoring as provided in Attachment C, then the Wilmington Regional Office supervisor, telephone number (910) 796-7215, shall be contacted immediately for further instructions regarding any additional follow-up analyses required.
- If TOC concentrations greater than 10 mg/L are detected in any downgradient monitoring well, additional sampling and analysis shall be conducted to identify the individual constituents comprising this TOC concentration. If the TOC concentration as measured in the background monitor well exceeds 10 mg/L, this concentration will be taken to represent the naturally occurring TOC concentration. Any exceedances of this naturally occurring TOC concentration in the downgradient wells shall be subject to the additional sampling and analysis as described above.
- Monitoring wells shall be reported consistent with the nomenclature and location information provided in Figure 2 and this attachment.

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AND UTILITIES. APPROXIMATE LOCATION OF UTILITIES IS SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.



NOTE:
BOUNDARIES ARE SHOWN FOR REGULATORY COMPLIANCE. CONTRACTOR MUST ABIDE BY LIMITS OF DISTURBANCE.

WK DICKSON
community infrastructure consultants

1213 W. MOREHEAD STREET
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CHARLOTTE, NC 28208
(704) 334-5348
(704) 334-0078

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NC LICENSE NO. F-0374

NORTH CAROLINA
PROFESSIONAL SEAL
ENGINEER
024984
THOMAS C. HUBBARD

Nov 24 2021 7:21 AM
PROFESSIONAL SEAL

REVISION RECORD		NO.	DATE	DESCRIPTION
1	11/2021	2	8/2021	WWTP 50', 100' SETBACKS REVISED
2				PER SEG. OC REVIEW

PROJECT NAME:
WASTEWATER TREATMENT AND DISPOSAL FOR THE CITY OF SOUTHPORT

DRAWING TITLE:
WWTP AND HEADWORKS - SETBACKS

PROJ. MGR.: TCH
DESIGN BY: SEG
DRAWN BY: GCH
PROJ. DATE: 2021
DRAWING NUMBER:
C5
WKD PROJ. NO.:
20170253.00.WL

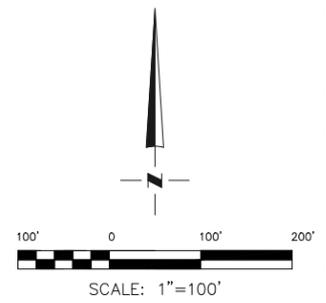


FIGURE 1

WWTP AND HEADWORKS AREA SETBACKS

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL INSTALL THE SILT FENCE AT THE LIMITS OF DISTURBANCE WHERE PROPOSED GRADING IS WITHIN FIVE FEET (5') OF THE LIMITS OF DISTURBANCE. SILT FENCE IS SHOWN OFFSET FROM THE LIMITS OF DISTURBANCE FOR VISUAL PURPOSES ONLY.
2. CONTRACTOR SHALL MODIFY TEMPORARY DIVERSION DITCHES THROUGHOUT CONSTRUCTION TO ENSURE DRAINAGE AREAS FOR BASIN REMAINS THE SAME. CONTRACTOR TO ENSURE NO STORMWATER IS SENT TO SILT FENCE THAT IS SUPPOSE TO GO TO EROSION CONTROL PONDS.
3. DIVERSIONS DITCHES THAT WILL STAY IN PLACE LONGER THAN 30 WORKING DAYS SHOULD BE SEEDED AND MULCHED AS SOON AS THEY ARE CONSTRUCTED TO PRESERVE DIKE HEIGHT AND REDUCE MAINTENANCE.

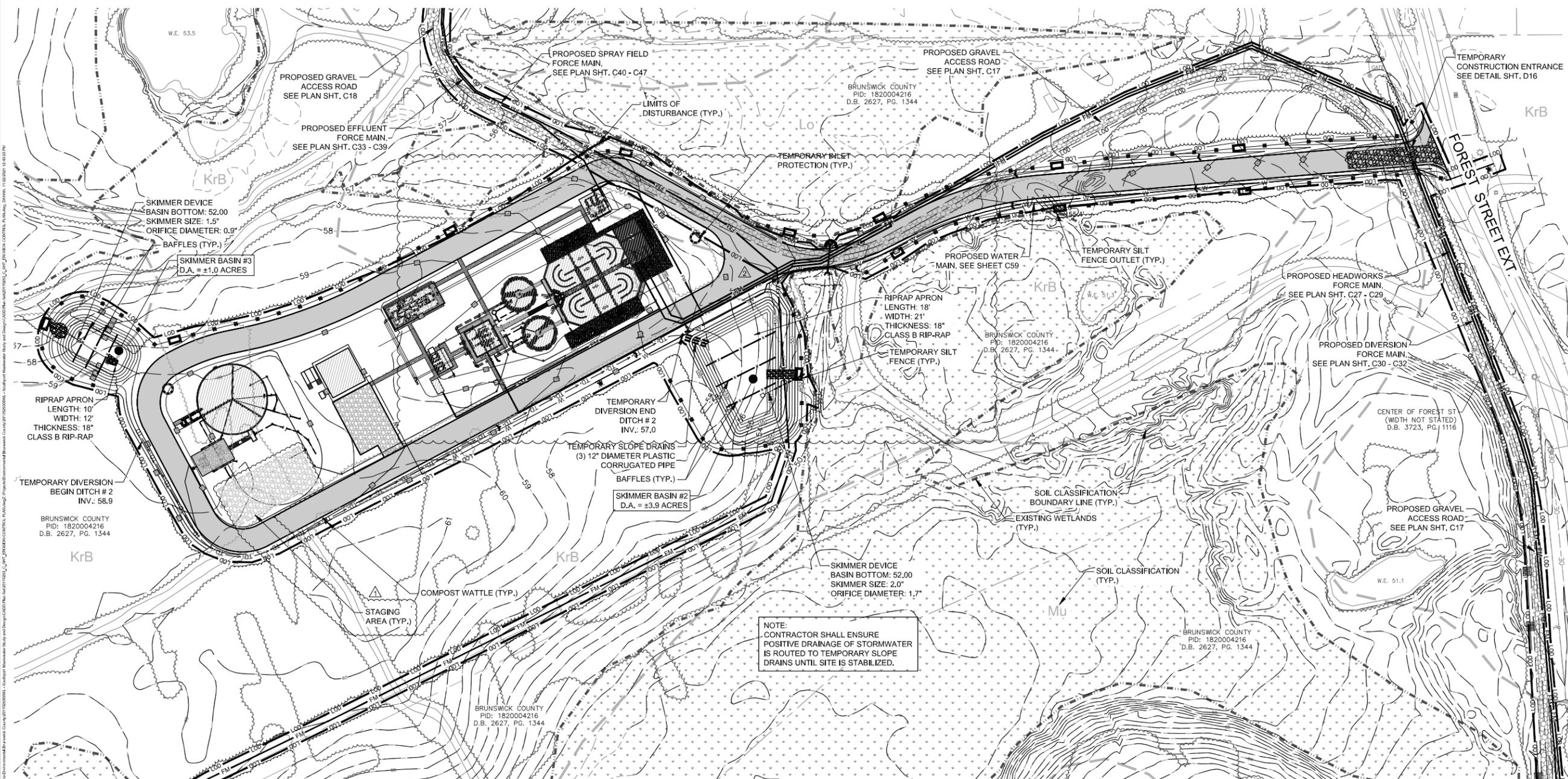
STABILIZATION TIMEFRAMES (Effective Aug. 1, 2010)		
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 2:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 60' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

LEGEND (EROSION CONTROL)

SYMBOL

	STABILIZED CONSTRUCTION ENTRANCE		PROPOSED STORM DRAINAGE
	TEMPORARY SILT FENCE		SEDIMENT BASIN BAFFLE
	TEMPORARY SILT FENCE OUTLET		SEDIMENT BASIN
	INLET PROTECTION		SEDIMENT BASIN SKIMMER
	GRAVEL RIP RAP APRON		SPILLWAY
	LIMITS OF DISTURBANCE		FLEXIBLE PIPE SLOPE DRAIN
	DRAINAGE AREA		TEMPORARY WATTLE CHECK DAM
	TEMPORARY DIVERSION DITCH		SOILS DELINEATION

WWTP SITE DISTURBED AREA = 5.15 ACRES
TOTAL PROJECT DISTURBED AREA = 49.25 AC.



NOTE: CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE OF STORMWATER IS ROUTED TO TEMPORARY SLOPE DRAINS UNTIL SITE IS STABILIZED.

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NC LICENSE NO. F-0374

PROFESSIONAL SEAL

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REVISION RECORD

NO.	DATE	DESCRIPTION	BY
1	11/20/21	LIMITS OF DISTURBANCE UPDATED; FORCE MAIN ALIGNMENTS UPDATED	DK
2	8/20/21	PER Q.C. REVIEW	GCH

PROJECT NAME: WASTEWATER TREATMENT AND DISPOSAL FOR THE CITY OF SOUTHPORT
DRAWING TITLE: EROSION CONTROL PLAN - WWTP SITE

PROJ. MGR.: TCH
DESIGN BY: KR
DRAWN BY: GCH
PROJ. DATE: 2021
DRAWING NUMBER:
C61
WKD PROJ. NO.: 20170253.00.WL

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

FOR CONTINUATION SEE EROSION CONTROL PLAN **FIGURE 6**