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April 17, 2026

Jason Kam
NCDEQ – Division of Waste Management
Superfund Section
Special Remediation Branch – Pre-Regulatory Landfill Unit
1646 Mail Service Center
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Re: Draft Remedial Action Plan Revision 1

Angier Refuse Dump
Rawls Church Road, Angier, Harnett County, North Carolina
Site ID No. NONCD0000349
Task Order No. 349RA-4
Terracon Project No. 70247315

Dear Mr. Kam:

Terracon Consultants, Inc. (Terracon) is pleased to submit this draft Remedial Action Plan (dRAP) Revision 1 for the above-referenced site to the North Carolina Department of Environmental Quality (NCDEQ), Division of Waste Management, Superfund Section – Special Remediation Branch, Pre-Regulatory Landfill (PRLF) Unit. This dRAP Revision 1 presents a preliminary design and specifications for the approved remedy. Terracon completed this dRAP Revision 1 in general accordance with the work plan for Task Order 349RA-4 (Draft Remedial Action Plan) dated July 19, 2024, and NCDEQ's Authorization to Proceed dated October 23, 2024.

Terracon appreciates the opportunity to provide this dRAP Revision 1 to the NCDEQ PRLF Unit and looks forward to continuing to work with you on this project. If you have any questions regarding this report, or need additional information, please contact Michael Dail at (984) 202-4055.



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Sincerely,

Terracon

A handwritten signature in black ink, appearing to read 'Angie'.

For:

Angie Ardila

Staff Environmental Engineer

A handwritten signature in black ink, appearing to read 'Allison Stenger'.

Allison Stenger

Department Manager

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Kyle F. Church

Department Manager

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Michael B. Dail, P.G.

Senior Geologist

Attachments: Draft Remedial Action Plan Revision 1

Draft Remedial Action Plan Revision 1 – Angier Refuse Dump

Rawls Church Road

Angier, Harnett County, North Carolina

Site ID No. NONCD0000349

State Contract No. N42621A

Task Order No. 349RA-4

April 17, 2026 | Terracon Project No. 70247315

Prepared By:



For:

Angie Ardila
Staff Environmental Engineer



Allison Stenger
Department Manager



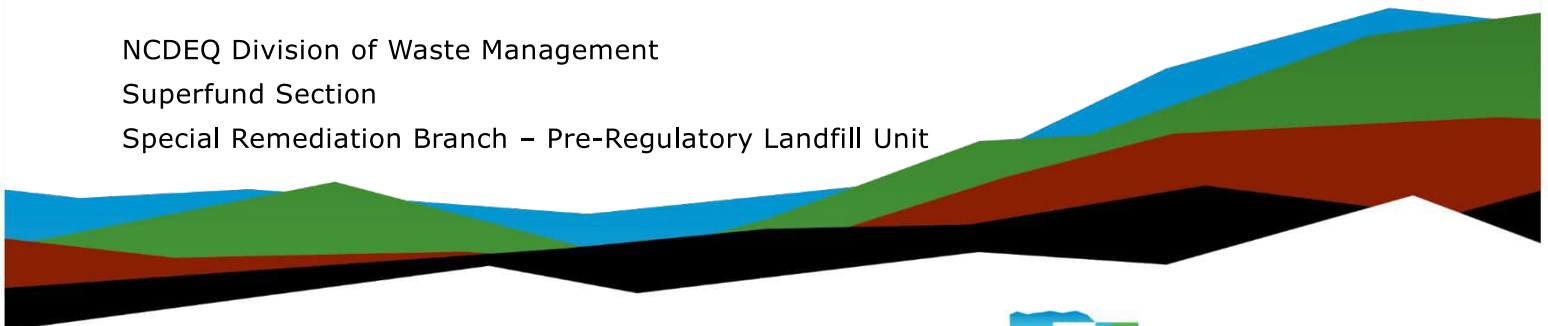
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Prepared for:

NCDEQ Division of Waste Management
Superfund Section
Special Remediation Branch – Pre-Regulatory Landfill Unit



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1.0 Introduction

Terracon Consultants, Inc. (Terracon) prepared this draft Remedial Action Plan (dRAP) for the Angier Refuse Dump site (Site ID No. NONCD0000349), located in Angier, Harnett County, North Carolina. The site location is shown on a United States Geological Survey (USGS) Topographic Vicinity Map (**Figure 1**).

1.1 Purpose

This dRAP was prepared on behalf of the North Carolina Department of Environmental Quality (NCDEQ), Division of Waste Management, Superfund Section – Special Remediation Branch, Pre-Regulatory Landfill (PRLF) Unit. This dRAP evaluates and presents a preliminary design for the selected remedial alternative, as recommended in the Feasibility Study Revision 1 dated December 3, 2025 (Terracon, 2025). The NCDEQ PRLF Unit reviewed the Feasibility Study and approved Remedial Alternative 2 as the preferred remedial action alternative for the site. Remedial Alternative 2 includes the installation of a soil cover system on the northern parcel and a dual-purpose cellular confinement system (CCS) on the southern parcel. This dRAP was developed in accordance with the NCDEQ – PRLF Unit’s Guidelines for Addressing Pre-Regulatory Landfills and Dumps (Guidelines), dated February 2025 (NCDEQ, 2025).

1.2 Objectives for Remedial Action

Terracon prepared this dRAP to evaluate and present a preliminary design for the selected remedial alternative, as recommended in the Feasibility Study Revision 1 dated December 3, 2025 (Terracon, 2025) for the site. This dRAP also identifies potential logistical issues that must be resolved in future remedial design planning stages. The proposed remedial actions were developed based on the following:

- The results of remedial investigation activities completed at the site;
- Feedback from the NCDEQ PRLF Unit;
- Conceptual engineering design of the selected remedial alternative;
- Erosion and Sediment Control Plan; and
- Proposed perpetual land use restrictions for the site parcels.

2.0 Remedial Investigation Summary

2.1 Site Description

The Angier Refuse Dump is located on two parcels located at 2200 Rawls Church Road and 57 Woodridge Court in Angier, North Carolina. The site consists of an approximate 1.45-acre waste disposal area (WDA) that extends across both parcels. The southern site parcel (2200 Rawls Church Road, Harnett County; Parcel PIN 0674-09-7389.000) is 2.13 acres and contains a single-family home, a barn, a shed, and a cleared field. The northern site parcel (57 Woodridge Court, Harnett County; Parcel PIN 0674-09-7685.000) is 3.43 acres and includes a single-family home and wooded land. The site is bordered to the north and west by a 7.71-acre parcel (Harnett County Parcel PIN 0674-09-9914.000), which is currently under development. Rawls Church Road lies to the south, while Woodridge Court and adjacent residential properties are located to the east. Additionally, Neills Creek and an unnamed tributary are located to the west of the site. A site layout map is depicted in **Figure 2**.

The land surrounding the site consists of residential properties and wooded land. According to the Harnett County Geographic Information System mapping tool, the site is zoned as conservation (CONS) and residential agricultural (RA-30), (Harnett County, 2025). Surrounding properties are zoned conservation, residential agricultural, residential (R-6), and conditional zoning residential (CZ-R-6). A Site Vicinity Map is included as **Figure 3**.

2.2 Geology and Hydrology

The site is located in the Piedmont Physiographic Province of North Carolina, which is characterized by low, rounded hills and long, rolling, northeast-southwest trending ridges. The surficial lithology consists of clay-rich, unconsolidated material and saprolite, derived from in-situ weathering of the underlying bedrock. In some areas, alluvium underlies the Piedmont land surface (Heath, 1984).

According to the North Carolina Department of Environment and Natural Resources (NCDENR) Preliminary Bedrock Geologic Map of the Raleigh 30' x 60' Quadrangle, the site is situated within the Crabtree Terrane, which is composed primarily of schist and gneiss units (Clark et al., 2004). Specifically, the site lies within undifferentiated alluvial and floodplain sediments and the Richland Creek Schist, a mixed unit of well-foliated schist and moderately foliated felsic gneiss, with interlayers of muscovite schist (Clark et al., 2004).

The regional hydrogeology of Piedmont generally consists of two primary zones, the regolith and the bedrock. The regolith zone is composed of unconsolidated material that stores water within its pore spaces. This zone is recharged by precipitation through infiltration and

percolation to the water table. The bedrock zone consists of competent rock containing varying degrees of fracturing, which allows water to permeate. Groundwater stored in the regolith often feeds into these fractures within the bedrock (Heath, 1984).

Areas with thicker regolith and surface depressions typically exhibit a higher potential for bedrock fracturing due to increased recharge and enhanced weathering and erosion (Heath, 1984). Surface topography generally controls both the direction of groundwater flow and the depth of the water table within the regolith. In September 2019, Terracon installed six monitoring wells (MW-01 through MW-06) as part of a groundwater assessment. Groundwater elevations ranged from 253.71 to 256.76 feet mean sea level, with groundwater flowing southwest toward Neills creek and an unnamed tributary (Terracon, 2022).

2.3 Sensitive Environments

In April 2019, Terracon conducted a desktop evaluation of the area within 500 feet of the WDA boundary to assess the potential presence of sensitive environments. The findings of this evaluation were presented in the First Phase Report submitted to the NCDEQ on June 14, 2019 (Terracon, 2019a), and are summarized below:

- The project area is classified as “Environmentally Sensitive” or “State-Designated Areas for Protection or Maintenance of Aquatic Life.”
- Regal Darner and Coppery Emerald dragonflies (identified as rare species) have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists.
- Threatened and endangered species, the Red-cockaded Woodpecker, the Cape Fear Shiner, Atlantic Pigtoe, Rough-leaved Loosestrife and Michaux's Sumac were identified as potentially occurring within the 500-foot buffer of the site if suitable habitat exists.
- Wetlands and waters of the United States may be present on the site.

Based on the evaluation findings, Terracon recommended further assessment to determine the presence of suitable habitats for the identified species, a wetlands delineation survey, and the implementation of measures to eliminate runoff during any activities conducted at the site.

Terracon performed a Waters of the United States (WOTUS) delineation survey in September 2019 to characterize the site conditions and identify potential waterbodies, such as wetlands, streams, and ponds, that may be considered jurisdictional by the United States Army Corp of Engineers (USACE) and NCDEQ. The WOTUS delineation survey was conducted utilizing readily available data sources, including topographical, aerial imagery, soil surveys, floodplain data, and wetland inventories. The identified wetlands and streams intersecting the waste disposal boundary are shown in **Figure 4**. These findings were

presented in the Wetland Delineation Report submitted to the NCDEQ on November 14, 2019 (Terracon, 2019b), and are summarized below:

- Wetlands were located in the northwestern and southwestern portions of the site, totaling approximately 0.95 acres. These areas exhibited hydrophytic vegetation, hydrology, and hydric soil indicators.
- Streams totaling approximately 1,454 linear feet were delineated. They ranged from 1 to 15 feet wide and 1 to 4 feet deep, with moderate to strong sinuosity, baseflow, diverse substrates, and aquatic life.
- Drainage across the site generally flows southwest toward Neills Creek, located along the western boundary.
- The site lies within the Cape Fear watershed, where surface waters may be subject to state and/or NCDEQ mandatory riparian buffer regulations.

2.4 Waste Disposal Area

In April 2019, Terracon conducted a geophysical survey to delineate the horizontal extent of waste. The survey was performed using electromagnetic (EM) conductivity along a 10-foot grid. Based on the survey results, the waste boundary was estimated to encompass approximately 1.20 acres (Terracon, 2019a).

To further refine the WDA following the geophysical survey, Terracon advanced waste delineation borings at 56 locations to assess the presence or absence of waste. Primary waste delineation borings (WD-01a through WD-22a) were advanced across the suspected waste area. Secondary borings were installed between the primary locations to provide additional delineation. These secondary borings were identified sequentially with a "b," "c," or "d" suffix (e.g., WD-18b, WD-04c, WD-18d). The locations of the borings, the location of fence dividing the site from west to east, and the refined WDA are presented in **Figure 5**. Waste delineation borings and visual observations indicate that both surficial and buried waste are generally located in the following areas:

- North of the fence line: This waste disposal area primarily consisted of surficial white goods or other metal debris covering approximately 0.89 acres. The waste appeared to be piled directly on top of the natural grade. Waste pile borings (WP-01 through WP-05) indicated a waste thickness ranging from 6 to 8 feet below land surface (bls), which based on topographic comparisons, is approximately 5 to 15 feet above the native grade across the pile. Based on the identified thickness and area, the estimated waste volume for the northern waste pile is approximately 12,000 Cubic Yards (CY).
- South of the fence line: This area generally consisted of fill material and cover soil overlying waste. The fill material consisted of 0.5 to 2 feet and the cover soil consisted of 0.5 to 3.5 feet of fill material with waste. The thickest waste interval observed was 5 feet (WD-08a). In some locations within the waste boundary, the fill

contained only trace amounts of waste. The southern, buried portion of the WDA encompasses approximately 0.55 acres and primarily contains glass, plastic, and construction and demolition debris. Based on the identified thickness and area, the estimated waste volume for the southern waste region is approximately 2,000 CYs.

Detailed information regarding the WDA delineation is presented in the Remedial Investigation Report submitted to the NCDEQ on July 2, 2020 (Terracon, 2020a). Based on the delineation activities, Terracon estimated that the waste disposal area encompasses approximately 1.45 acres and that the waste in place totals approximately 14,000 CYs.

2.5 Media Characterization

Media characterization field activities were conducted in September and December 2019 (Terracon, 2020a), August 2020 (Terracon, 2020b), and February and May 2021 (Terracon, 2021). During these activities, Terracon assessed contamination in soil, sediment, surface water, and groundwater. Detailed information regarding the environmental assessments are included in the corresponding Remedial Investigation Reports.

2.5.1 Background Soil Investigation

In September 2019, background soil borings BG-01 through BG-03 were advanced using a decontaminated stainless-steel hand auger. Soil samples were collected from approximately one foot bls at each boring location and submitted for laboratory analysis of volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260, semi-volatile organic compounds (SVOCs) via USEPA Method 8270, metals via USEPA Method 6020/7471, and ammonia, nitrate, and sulfate via USEPA Method 300/9056A. The analytical results of the background soil samples were not compared to the Inactive Hazardous Sites Branch (IHSB) Residential Preliminary Soil Remediation Goals (PSRGs), as they were considered site-specific background samples and therefore not subject to the PSRGs (Terracon, 2020a).

For constituents detected in more than one sample, a range of detections was provided as the background range. Additionally, the representative background value for each analyzed constituent was calculated using the average plus two standard deviations. A value of half the reporting limit was used for compounds that were not detected when calculating averages and standard deviations (Terracon, 2020a).

2.5.2 Cover Soil Investigation

Ten cover soil and waste characterization borings (CS/WC-01 through CS/WC-10) were advanced using a decontaminated stainless-steel hand auger at ten locations within the southern portion of the waste boundary. Cover soil samples were collected at depths of 0.5 or 1.0 feet bls, depending on the thickness of the cover soil. All cover soil samples were submitted for laboratory analysis of VOCs via USEPA Method 8260, SVOCs via USEPA 8270,

metals via USEPA Method 6020/7471 and ammonia, nitrate, and sulfate via USEPA Method 9056A (Terracon, 2020a).

In accordance with the 2020 NCDEQ Guidelines for Addressing Pre-Regulatory Landfills and Dumps, the analytical results were compared to the residential and the protection-of-groundwater PSRGs and entered into the NCDEQ risk calculator to evaluate potential risk (NCDEQ, 2020). When the highest concentrations of detected constituents were input into the risk calculator, the results indicated potential risk to both residents and construction workers. Upon further review, arsenic, chromium, and iron were found to be within soil background concentrations. When these background-level detections were excluded from the risk calculator, the results no longer indicated an unacceptable risk (Terracon, 2022). The risk calculator results were included in the Remedial Investigation Summary Report submitted to NCDEQ on February 17, 2022 (Terracon, 2022).

2.5.3 Waste Characterization Investigation

Ten cover soil and waste characterization borings (CS/WC-01 through CS/WC-10) were advanced using a decontaminated stainless-steel hand auger at ten locations within the southern portion of the waste boundary. Waste characterization samples were collected from both the waste material and the native soil underlying the waste. All samples were submitted for laboratory analysis of VOCs via USEPA Method 8260, SVOCs via USEPA 8270, metals via USEPA Method 6020/7471 and ammonia, nitrate, and sulfate via USEPA Method 9056A (Terracon, 2020a).

In accordance with the Guidelines for Addressing Pre-Regulatory Landfills and Dumps, dated February 2025, the waste analytical results will be compared to the permitted receiving facility requirements (NCDEQ, 2025). Also, in accordance with the Guidelines, the analytical results of the native soil beneath the waste were compared to residential and protection of groundwater PSRGs. Arsenic, iron, and thallium were detected above the PSRGs; however, the results were not in exceedance of background concentrations (Terracon, 2022).

2.5.4 Sediment Investigation

In September 2019, Terracon collected sediment samples from five locations (SED-01 through SED-05) of the Neills Creek and an unnamed tributary located to the west and north of the WDA. Sediment sampling was conducted following paired surface water sampling in the same water bodies. Sediment samples SED-04 and SED-05 were collected upstream and served as background samples. The sediment samples were submitted to the laboratory for analysis of VOCs via USEPA Method 8260, 1,4-Dioxane via USEPA Method 8260-SIM, SVOCs via US2019EPA Method 8270, ammonia via USEPA Method 350.1, and nitrate and sulfate via USEPA Method 300/9056A).

The sediment analytical results were compared to the residential PSRGs. Arsenic and chromium were detected above the PSRGs in both background and downstream samples. The results were also compared to the sediment background concentrations. The results

were within background levels, except for chromium in samples SED-01 and SED-03. Although chromium exceeded sediment background concentrations at these locations, the concentrations were an order of magnitude lower than the soil background concentrations determined from background soil borings BG-01 through BG-03 (Terracon, 2022). Given the natural presence of chromium in local soils, the concentrations in SED-01 and SED-03 are considered to be within background levels.

2.5.5 Groundwater Investigation

In September 2019, six monitoring wells (MW-01 through MW-06) were installed using a track-mounted drill rig equipped with hollow-stem augers, to depths ranging from 5 to 40 feet bls (**Figure 2**). Groundwater samples were collected from wells MW-02 through MW-06 between September and October 2019. Monitoring well MW-01 was dry at the time of sampling; therefore, no sample was collected from the well. Monitoring wells MW-02, MW-03 and MW-06 are considered upgradient of the WDA and serve as background wells. Groundwater samples were collected using low-flow sampling procedures and submitted for laboratory analysis of VOCs via USEPA Method 8260, SVOCs via USEPA Method 8270, metals via USEPA Methods 6020/7471, ammonia via USEPA Method 350.1, and nitrate and sulfate via USEPA Method 300/9056A.

Analytical results were compared to the North Carolina Administrative Code (NCAC) 15A 02L .0202 Groundwater Quality Standards (2L Standards) or Interim Maximum Allowable Concentrations (IMACs) where 2L Standards were not established. Iron and manganese were detected at concentrations exceeding their respective 2L Standards in samples collected from background wells MW-03 and MW-06 and downgradient wells MW-04 and MW-05. A groundwater sample collected from background well MW-02 exhibited a manganese concentration exceeding the 2L Standard; however, iron was not detected at a concentration exceeding the standard. Downgradient wells MW-04 and MW-05 exceeded iron background concentrations, and MW-05 exceeded manganese background concentrations.

2.5.6 Surface Water Investigation

Surface water samples were collected from five locations (SW-01 through SW-05) of Neills Creek and an unnamed tributary located to the west and north of the WDA. Sampling was conducted from downstream to upstream to minimize sediment disturbance. Surface water samples were collected prior to the paired sediment sampling described in **Section 2.5.4**.

Surface water analytical results were compared to the NCAC 02B.0202 Water Quality Standards for Surface Waters (2B Standards). Iron was detected above the 2B Standard in three of the five sampling locations, including background sample SW-04 (Terracon, 2022).

2.5.7 Potable Water Supply Well Investigation

In April 2019, Terracon conducted a visual receptor survey and a desktop review of the public water supply records to determine the potential water supply wells within 1,000 feet

of the site. A total of nine water supply wells were identified during the receptor survey (Terracon, 2019a). Identified water supply wells are presented on **Table 1**, and their locations are shown in **Figure 6**.

Potable water supply sampling was not conducted for the adjacent water supply wells as part of the remedial investigation activities conducted by Terracon. However, several of these wells were previously sampled during environmental investigations conducted in 2011 by Marshall Miller & Associates, Inc. and in 2016 by URS Corporation – North Carolina. Results from those sampling events did not indicate exceedances of applicable drinking water standards in the surrounding potable water supply wells, except for iron and manganese detected in the well located on the southern parcel (Terracon, 2022). However, according to owner interviews and historical reports, the well did not have a pump and was not used as a drinking water source.

2.5.8 Soil Gas Investigation

2.5.8.1 Soil Gas Probes

Three soil gas probes (SG-01 through SG-03) were installed outside the waste disposal boundary (**Figure 2**). During the initial sampling attempt in 2019, SG-02 did not exhibit airflow. As a result, the soil gas point was offset, and a temporary point was installed and sampled. Issues were not encountered during the collection of soil gas samples SG-01 and SG-03 (Terracon, 2020a).

The soil gas samples were analyzed for VOCs using USEPA Method TO-15 with individually certified canisters. Analytical results were summarized and compared to the NCDEQ Vapor Intrusion Sub-Slab and Exterior Soil Gas Screening Levels (VI-SGSLs). Chloroform was detected at a concentration exceeding its respective residential VI-SGSL in sample SG-03.

Soil gas monitoring point SG-03 was resampled for chloroform in August 2020. The analytical results were compared to the residential VI-SGSLs. Chloroform exceeded its respective residential VI-SGSL (Terracon, 2020b).

2.5.8.2 Passive Soil Gas Investigation

To delineate the extent of chloroform concentrations at the site, 20 passive soil gas samplers (PSG-01 through PSG-20) were installed and sampled in 2021. Soil gas analytical results were compared to the residential VI-SGSLs.

Chloroform was detected at the highest concentrations on the southern site parcel and to the east of the southern site parcel (Terracon, 2022). Concentrations between these exceedance locations and the WDA were below the residential VI-SGSLs, suggesting that the landfill is not the source of the chloroform (Terracon, 2022).

2.5.8.3 Indoor Air Investigation

During the 2021 passive soil gas sampling event, Terracon collected crawlspace gas samples (CWL-01 and CWL-02) from the southern site parcel residence, along with a background outdoor air sample (CWL-BG), for chloroform analysis. Crawlspace analytical results were compared to the NCDEQ Residential Vapor Intrusion Indoor Air Screening Level (VI-IASL). Chloroform exceeded the residential VI-IASL in sample CWL-02 (Terracon, 2021).

In accordance with the 2020 NCDEQ Guidelines for Addressing Pre-Regulatory Landfills and Dumps, chloroform concentrations were entered into the NCDEQ risk calculator to evaluate potential health risks (NCDEQ, 2020). The highest concentrations, those from PSG-15 and CWL-02, were used for risk comparison. The calculator identified exceedances for both residential soil gas-to-indoor air and residential indoor air pathways.

Due to the potential risk indicated by the calculator, the sample results were submitted to the NCDEQ Division of Waste Management Environmental Toxicologist for a health risk evaluation. In a letter provided to the PRLF Unit on June 1, 2021, the toxicologist concluded that “risk at all crawlspace sampling locations were within acceptable levels for residential use” (Terracon, 2022).

2.6 Contaminants of Concern

As discussed above, groundwater samples collected from monitoring wells MW-04 and MW-05 exhibited iron concentrations exceeding the 2L Standard and background concentrations. In addition, manganese concentrations in monitoring well MW-05 exceeded the 2L Standard and background levels. **Table 2** summarizes the site-specific contaminants of concern.

3.0 Feasibility Study

Terracon submitted a Feasibility Study to the NCDEQ PRLF Unit on September 4, 2025, to screen and select remedial alternatives for the WDA. Following consultation with the NCDEQ PRLF Unit Project Manager, Revision 1 of the Feasibility Study was submitted to the NCDEQ PRLF Unit on December 3, 2025. Remedial technologies were identified based on experience at similar sites, feedback, and guidelines from NCDEQ PRLF, professional judgment regarding the technical feasibility of various technologies, and knowledge of site-specific conditions. These site-specific conditions and identified constraints limit the number of feasible remedial technologies and process options. As a result, two remedial technologies were selected for evaluation and developed into four remedial alternatives.

3.1 Issues Affecting Remedy Implementation Viability

The site possesses several logistical, environmental, and engineering challenges. The following factors are considered in the remedial design:

- Proximity to environmentally sensitive areas (i.e., wetlands, residential neighborhoods);
- Proximity to a North Carolina Department of Transportation (NCDOT)-maintained road (Rawls Church Road, SR-1415);
- Time required for site stabilization;
- Long-term stability and resistance to weathering;
- Complexity of implementation;
- Protection against human interference;
- Logistical challenges of structural fill and aggregate borrow locations/sources;
- Volumes and costs of required materials; and
- Costs and labor required for installation.

3.2 Remedy Technology Description

Terracon selected two remedial technologies for evaluation and developed into four remedial alternatives. The remedial technologies are described below.

3.2.1 Cellular Confinement System

Cellular confinement systems (CCS), also known as geocells, are lightweight, expandable, three-dimensional honeycomb-like structures typically made from high-density polyethylene (HDPE). These systems form a grid of interconnected cells that confine and stabilize infill materials, enhancing the strength and stability of cohesionless soils across a wide range of applications.

The CCS grids are generally 8 to 10 feet wide and 12 to 60 feet long. They require tendons, ties, or keys to connect adjacent panels and are anchored using various devices, such as stakes or driven anchors, depending on site conditions. Each cell is filled with materials such as soil, aggregate base course (ABC), or NCDOT #57 stone, based on the product type, manufacturer specifications, or intended use case.

3.2.2 Soil Cover

A soil cover system typically consists of placing a non-woven orange geotextile demarcation fabric directly over the waste, followed by 12 inches of soil. The uppermost 6 inches of the 12-inch soil layer generally consists of topsoil or amended fill to support vegetation growth. The demarcation fabric, made from a non-woven geotextile weighing between 6 and 8 ounces, serves as both a visual and physical indicator of the underlying waste.

3.3 Remedy Technology Evaluation

Terracon has evaluated both cellular confinement systems and traditional soil cover remedies as part of this assessment. Each approach will be implemented in conjunction with land use controls (LUCs) recorded on the property deed and will comply with applicable federal, state, and local regulations. The following subsections compare cellular confinement systems and soil cover systems against eight evaluation criteria outlined in the Guidance for Addressing Pre-Regulatory Landfill and Dumps, February 2025, which include the following:

- Overall protection of human health and the environment;
- Compliance with applicable or relevant and appropriate requirements (ARARs);
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume through treatment;
- Short-term effectiveness;
- Implementability;
- Acceptance by state regulatory agencies and the local community; and
- Cost.

3.3.1 Protection of Human Health and the Environment

Cellular Confinement System

A cellular confinement system would act as physical barrier that deters digging and limits exposure to underlying waste, thereby protecting human health and the environment. Additionally, the system would serve as a visual indicator, signaling the presence of potential waste beneath the surface. It would enhance surface resistance to weathering and human interference, requiring heavy equipment to breach the cellular panel layer.

When applied to slopes, cellular confinement systems provide greater stability compared to vegetated slopes without such reinforcement. This increased stability would reduce the

likelihood of slope failure, thereby minimizing the risk of waste exposure and decreasing potential sediment loading into surface water bodies.

Soil Cover

The soil cover would protect human health and the environment by establishing a 12-inch buffer between the waste and the land surface, thereby preventing direct contact with or exposure to the waste. Additionally, the compacted soil cover would enhance slope stability within the waste disposal area. Demarcation fabric would also be installed to serve as a visual indicator, discouraging excavation in areas where waste is present.

3.3.2 Compliance with Applicable Federal, State, and Local Regulations

Upon NCDEQ approval of this dRAP, the plan will be subject to regulatory review and approval to ensure compliance with ARARs prior to implementation of the selected remedy. Additionally, implementation of the selected remedial alternative may require the following permits, plans, and assessments:

- Clean Water Act Section 404 (USACE);
- Clean Water Act Section 401 (NCDEQ Division of Water Resources [DWR]);
- Certificate of Coverage under the NCG01 Permit (NCDEQ Division of Energy, Mineral, and Land Resources [DEMLR]);
- Erosion and Sediment Control (E&SC) Plan (DEMLR);
- Sensitive Environmental Restoration Plan (NCDEQ); and
- On-Site Habitat Assessment (United States Fish and Wildlife Service [USFWS]).

No local permits are required for the implementation of the proposed remedial alternatives; however, local authorities will be notified of approvals, planning activities, and implementation steps.

3.3.3 Long-Term Effectiveness and Permanence

Cellular Confinement System

Cellular confinement systems are typically made from HDPE, which is resistant to ultraviolet degradation, chemical exposure, and biological decay, making them well-suited for long-term use in harsh environmental conditions. The life expectancy of an HDPE CCS ranges from 20 to 100 years, depending on factors such as material composition, environmental conditions, application type, and installation quality.

Soil Cover

The demarcation fabric within the soil cover system contributes to long-term effectiveness by serving as a warning barrier in the event of digging. However, soil cover systems incorporating demarcation fabric remain vulnerable to human interference, as they can be penetrated without the need for heavy or specialized equipment.

Additionally, vegetation established on the soil cover will require routine mowing to prevent the growth of deep-rooted plants that could compromise the integrity of the demarcation layer. Sloped areas with soil covers may also require additional monitoring following significant storm events to assess for erosion or structural instability.

3.3.4 Reduction of Toxicity, Mobility, and Volume

Cellular confinement systems and soil covers would serve as physical barriers between waste and the surface environment, preventing direct contact with waste materials and reducing the potential for waste to be transported by wind, water, or animals. When combined with LUCs, both remedial technologies also act as visual and legal deterrents to excavation or development that could disturb the underlying waste.

3.3.5 Short-Term Effectiveness

As mentioned above, cellular confinement systems and soil covers prevent direct contact with waste materials and reduce the potential for waste to be transported by wind, water, or animals. As a result, both remedial technologies would help minimize the impact of the site remedial action on the environment and the local community.

3.3.6 Implementability

Prior to the implementation of either remedial technology, E&SC measures would be installed to reduce off-site sedimentation during construction. The area of disturbance would be cleared and grubbed, and the site would be properly staged. White goods and other materials unsuitable for compaction would be removed and disposed of off the site. The subgrade would then be graded and compacted in preparation for the installation of either the cellular confinement system or the soil cover. Following installation, the disturbed area would be stabilized with appropriate vegetative cover to ensure compliance with the E&SC permit requirements.

Cellular Confinement System

After the subgrade has been properly graded, leveled, and compacted, a 6-ounce (oz) non-woven geotextile fabric would be installed to enhance separation and drainage. The CCS panels would then be expanded to their full dimensions and securely anchored using stakes or rebar. Adjacent panels would be connected using clips, staples, or zip ties. Once in place, the cells would be filled with appropriate infill material, which would be evenly distributed and compacted to match the top of the cells. Lastly, the disturbed area would be stabilized with suitable vegetative cover to ensure compliance with the E&SC permit requirements.

Soil Cover

After the subgrade has been properly graded and compacted, the soil cover system would be installed in sequential layers. The soil cover system would consist of placing a non-woven orange geotextile demarcation fabric directly over the waste, followed by 12 inches of soil.

The uppermost 6 inches of the 12-inch soil layer would consist of topsoil or amended fill to support vegetation. The demarcation fabric would be made of a non-woven geotextile weighing between 6 and 8 oz per square yard.

3.3.7 Community and Industry Acceptance

Cellular Confinement System

Cellular confinement systems offer a faster and more efficient alternative to traditional soil covers, generally requiring less grading and reducing installation time. Because these systems require less subgrade compaction preparation than traditional vegetative soil covers with demarcation fabric, fewer equipment working hours are required. Additionally, cellular confinement systems are more resilient to wet weather conditions compared to un-vegetated soil caps, offering better erosion control and lower maintenance needs.

First introduced in the late 1970s, these systems have become widely used in civil engineering for load support and slope stabilization. They are also approved for use by the NCDOT.

Soil Cover

Implementing a soil cover system typically involves extensive soil relocation and grading using heavy equipment. However, many contractors are familiar with the standard construction equipment and grading practices involved. Achieving the 12-inch-thick cover often requires importing soil from an approved borrow source, which can increase traffic on surrounding roads and contribute to longer project timelines. Traditional soil covers are a well-established and proven method that meets the NCDEQ standards.

3.3.8 Cost

Cost and schedule are discussed and compared in **Section 3.5**.

3.4 Remedy Alternative Descriptions

Terracon developed four remedial alternatives utilizing CCS, soil covers, or a combination of both technologies. Each alternative includes the installation of an engineered cover system over approximately 1.45 acres of land. Additionally, each remedy generally includes the same or similar erosion and sediment control measures that will be installed at the beginning of implementation and maintained throughout construction. Rough order of magnitude cost estimates and schedules for each remedial option are included in **Table 3**.

3.4.1 Alternative 1 (Soil Cover – Entire Site)

Alternative 1 includes the installation of a soil cover across the entire WDA (**Figure 5**). The southern parcel would be cleared and grubbed, as necessary, to prepare it for installation of the cover system and laydown area. Waste currently located in the southern parcel and

south of the existing wire fence would be compacted and then covered with a 6 oz non-woven orange geotextile demarcation fabric directly over the waste, followed by 12 inches of imported soil from an approved source to serve as the final cover system. Due to the lack of suitable construction laydown area, the cover system would then be covered with a 6 oz non-woven black geotextile to serve as a separation layer before placement of approximately 6 inches of imported NCDOT Class A erosion control stone to serve as the construction laydown and staging area.

Preparation of the northern parcel would begin once the construction laydown and staging area is completed. Approximately 1.15 acres of wooded land would require clearing and grubbing prior to grading. White goods and other materials unsuitable for compaction would be removed and disposed of offsite. The subgrade would then be graded to promote positive drainage and compacted in preparation for the installation of the soil cover. The soil cover system would be installed, starting with the installation of a 6 oz non-woven orange geotextile demarcation fabric directly over the waste. Approximately 12 inches of imported soil from an approved borrow source would then be placed on top of the fabric. The uppermost 6 inches of the 12-inch soil layer would consist of topsoil or amended fill to support vegetation.

After the northern parcel soil cover system is installed, the staging area would be removed, and any damage to the previously installed southern parcel cover system would be repaired. Following remedial implementation, the disturbed area would be stabilized with appropriate vegetative cover to ensure compliance with E&SC permit requirements.

3.4.2 Alternative 2 (Dual Purpose CCS and Soil Cover)

Alternative 2 includes the installation of both remedial technologies presented in **Section 3.2**. A CCS would be installed in the southern parcel, and a soil cover would be placed on the northern parcel, including slopes. The southern parcel CCS would serve as both a construction laydown and staging area during the remedial action and the final cover system for the southern parcel.

The southern parcel would be cleared and grubbed, as necessary, to prepare it for installation of the laydown and staging area. Waste currently located in the southern parcel and south of the existing wire fence would be compacted and then covered with a 6 oz non-woven geotextile fabric that would serve as a separation layer enhancing structural stability of the CCS. The CCS panels would be expanded to their full dimensions and securely anchored using stakes or rebar. Adjacent panels would be connected using clips, staples, or zip ties. Once the CCS has been fully expanded and secured, 6 inches of NCDOT ABC or #57 aggregate would be added to the system and compacted to serve as the construction laydown and staging area.

Once the southern parcel laydown and staging area has been installed, preparation of the northern parcel would begin. Approximately 1.15 acres of wooded land would require clearing and grubbing prior to grading. White goods and other materials unsuitable for

compaction would be removed and disposed of off the site. The subgrade would then be graded to promote positive drainage and compacted in preparation for the installation of the soil cover. The soil cover system would be installed, starting with the installation of a 6 oz non-woven orange geotextile demarcation fabric. Approximately 12 inches of imported soil from an approved borrow source would then be placed on top of the fabric. The uppermost 6 inches of the 12-inch soil layer would consist of topsoil or amended fill to support vegetation.

After the northern parcel soil cover system is installed, the laydown and staging area would be inspected for damages prior to adding the final layer of the cover system. The compacted layer of NCDOT ABC or #57 aggregate would remain in place, and 6 inches of imported soil from an approved borrow source would then be placed on top of the aggregate. This soil layer would consist of topsoil or amended fill to support vegetation. Following remedial implementation, the disturbed area would be stabilized with appropriate vegetative cover to ensure compliance with E&SC permit requirements.

3.4.3 Alternative 3 (Dual Purpose and Slope CCS with Soil Cover Top Deck)

Alternative 3 includes a similar implementation as Alternative 2 (a dual purpose CCS on the southern parcel and a soil cover on the northern parcel) with key difference being the addition of CCS on the slopes of the northern parcel.

The southern parcel would be cleared and grubbed as necessary to prepare for installation of the laydown and staging area. Waste currently located in the southern parcel and south of the existing wire fence would be compacted and covered with a 6 oz non-woven geotextile fabric, serving as a separation layer to enhance CCS structural stability. CCS panels would then be expanded to their full dimensions and securely anchored using stakes or rebar, with adjacent panels connected using clips, staples, or zip ties. Once fully expanded and secured, 6 inches of NCDOT ABC or #57 aggregate would be placed and compacted to create the construction laydown and staging area.

After the southern parcel laydown and staging area is installed, preparation of the northern parcel would begin. Approximately 1.15 acres of wooded land would require clearing and grubbing prior to grading. White goods and other unsuitable materials would be removed and disposed of off the site. The subgrade would then be graded for positive drainage and compacted in preparation for cover system installation. Installation would start with the soil cover on the northern parcel's top deck, beginning with a 6 oz non-woven orange geotextile demarcation fabric, followed by approximately 12 inches of imported soil from an approved borrow source. The uppermost 6 inches would consist of topsoil or amended fill to support vegetation.

Once the soil cover is installed, CCS installation on the northern parcel slopes would begin. The subgrade would first be covered by 6 inches of compacted soil imported from an approved source before installation of the CCS. The CCS panels would be expanded to full dimensions and anchored with stakes or rebar. After securing the CCS, 6 additional inches

of imported soil would be placed and compacted. Before proceeding to the next implementation phase, all cover systems would be inspected for damage.

After the northern parcel systems are installed, the laydown and staging area would be inspected prior to adding the final cover layer. The compacted NCDOT ABC or #57 aggregate layer would remain in place, and 6 inches of imported soil from an approved borrow source would be placed on top, consisting of topsoil or amended fill to support vegetation. Following remedial implementation, the disturbed area would be stabilized with appropriate vegetative cover to ensure compliance with E&SC permit requirements.

3.4.4 Alternative 4 (CCS – Entire Site)

Alternative 4 includes installing a CCS across the entire WDA. The CCS on the southern parcel would initially serve as a laydown and staging area for implementation; however, 6 inches of imported soil would later be added to create the final cover system for the southern parcel.

The southern parcel would be cleared and grubbed, as necessary, to prepare it for installation of the CCS. Waste currently located in the southern parcel and south of the existing wire fence would be compacted and then covered with a 6 oz non-woven geotextile fabric, serving as a separation layer to enhance CCS structural stability. CCS panels would then be expanded to their full dimensions and securely anchored using stakes or rebar, with adjacent panels connected using clips, staples, or zip ties. Once fully expanded and secured, 6 inches of NCDOT ABC or #57 aggregate would be placed and compacted to create the construction laydown and staging area.

After the southern parcel laydown and staging area is installed, preparation of the northern parcel would begin. Approximately 1.15 acres of wooded land would require clearing and grubbing prior to grading. White goods and other unsuitable materials would be removed and disposed of off the site. The subgrade would then be graded for positive drainage and compacted in preparation for CCS installation.

The CCS on the northern parcel would be installed differently than on the southern parcel. The layering would consist of 6 inches of imported soil followed by CCS infilled with 6 inches of compacted imported topsoil or amended fill to support vegetation growth.

After the northern parcel CCS is installed, the staging area would be inspected for damage prior to adding the final CCS layer on the southern parcel. The compacted NCDOT ABC or #57 aggregate layer would remain in place, and 6 inches of imported soil from an approved borrow source would be placed on top, consisting of topsoil or amended fill to support vegetation. Following remedial implementation, all disturbed areas would be stabilized with appropriate vegetative cover to ensure compliance with E&SC permit requirements.

3.5 Cost and Implementation Schedule

The estimated probable costs of the proposed remedial alternatives and design options are presented in **Table 3** and summarized below:

- Alternative 1: Soil Cover – Entire Site
 - Probable estimated costs between \$1,670,000 and \$2,320,000
 - Estimated schedule: 18-20 weeks
- Alternative 2: Dual Purpose CCS and Soil Cover
 - Probable estimated costs between \$1,590,000 and \$2,200,000
 - Estimated schedule: 16-18 weeks
- Alternative 3: Dual Purpose and Slope CCS with Soil Cover Top Deck
 - Probable estimated costs between \$1,600,000 and \$2,220,000
 - Estimated schedule: 17-19 weeks
- Alternative 4: CCS – Entire Site
 - Probable estimated costs between \$1,630,000 and \$2,270,000
 - Estimated schedule: 16-18 weeks

4.0 Preliminary Engineering Design

4.1 Remedy Summary

The NCDEQ PRLF Unit selected Alternative 2 (Dual Purpose CCS and Soil Cover) as the preferred remedial action for the site based on the results of prior remedial investigations, specific-site conditions, NCDEQ policies, and the evaluation of alternatives in the Feasibility Study Revision 1 (Terracon, 2025). The following sections present the preliminary conceptual engineering design for the proposed remedy, including, where applicable, an evaluation of its potential impact on sensitive environments. The general features of the remedy are listed below:

1. Clear and grub the proposed disturbance area. Approximately 1.15 acres of wooded land must be cleared prior to grading.
2. Install and maintain E&SC best management practices (BMPs).
3. Manage surficial and partially buried waste:
 - White goods and other materials unsuitable for compaction will be removed and disposed of off site.
4. Grade, level, and compact the subgrade in preparation for the installation of the laydown area on the southern parcel.
5. Install laydown area on the southern parcel which includes:
 - Installation of a non-woven geotextile separation layer,
 - CCS, and
 - 6 inches of NCDOT ABC or #57 aggregate infill.
6. Grade and compact the subgrade of the northern parcel to achieve the proposed cover system subgrade lines and grades.
7. Install a non-woven geotextile demarcation fabric over compacted waste.
8. Install a 12-inch soil cover system over the northern parcel WDA consisting of imported fill from an approved source with the uppermost 6 inches consisting of topsoil or amended fill to support vegetation establishment.
9. Stabilize the area with climate-appropriate vegetative cover to comply with E&SC permit requirements, the Sensitive Environments Restoration Plan, and NCDEQ PRLF Guidance.
10. Install 6 inches of imported soil over the southern parcel laydown area CCS to complete installation of the engineered WDA cover system.
11. Remove temporary E&SC BMPs.

12. Restore the site in compliance with the E&SC Plan and the Environmental Restoration Plan.
13. Submit Construction Completion Report to NCDEQ PRLF Unit.
14. Maintain the cover systems in accordance with the recorded Declaration of Permanent Land Use Restrictions (DPLUR) for the site properties.

Drawings illustrating the proposed E&SC BMPs, final cover system, and construction sequence are provided in the Erosion and Sediment Control Plan (E&SC Plan) (**Appendix A**). E&SC monitoring will continue until vegetative cover is established and the required restoration and stabilization efforts are approved by state and federal regulatory stakeholders. The site must adhere to the recorded DPLUR, which is a critical component of the remedy to prevent exposure.

4.2 Health and Safety Plan

Terracon will prepare a site-specific Health and Safety Plan (HASP) prior to the commencement of the construction activities to protect workers and the surrounding community from potential hazards. The HASP will outline the procedures, equipment, and protocols necessary to minimize health and safety risks. It will include a description of the project and site conditions, identification of potential hazards (chemical, physical, biological), required personal protective equipment, emergency response procedures, and decontamination protocols. The plan will also define work zones, outline training requirements, and ensure compliance with regulatory standards such as those set by the Occupational Safety and Health Administration.

4.3 Erosion and Sediment Control Plan

An ES&C Plan was prepared in general accordance with the applicable provisions of the North Carolina Sedimentation Pollution Control Act of 1973, Title 15A, Chapter 4 of the NCAC, and the North Carolina Erosion and Sediment Control Planning and Design Manual. The draft E&SC Plan was submitted to the NCDEQ PRLF Unit on February 25, 2025. Following the dRAP public comment period, the draft E&SC Plan will be submitted to the NCDEQ DEMLR to obtain an NCG010000 Construction General Permit (NCG01 Permit). The draft E&SC Plan is included as **Appendix A**.

E&SC measures have been designed to mitigate impacts resulting from a 10-year storm event. These measures include the construction of a gravel construction entrance, silt fencing, channels, check dams, and a sediment trap with porous baffles.

4.4 Sensitive Environmental Restoration Plan

As described in **Section 2.3**, wetlands and other surficial waters are located in the northwestern and southwestern portions of the site. Temporary impacts to sensitive environments will occur primarily in areas where waste will be removed from jurisdictional

wetlands. Following removal of the waste, a Sensitive Environments Restoration Plan will be implemented under the direction of a Professional Wetland Scientist (PWS). Restoration activities will include re-establishing native vegetation, stabilizing disturbed soils, and ensuring hydrologic conditions are maintained to support wetland function. The plan will comply with NCDEQ requirements, including state and federal regulations under Clean Water Act Sections 401 and 404. A summary report documenting restoration activities, monitoring results, and compliance with permit conditions will be prepared by the PWS and submitted to the NCDEQ and the USACE. Additional monitoring may be required by these agencies to confirm successful restoration and long-term stability of sensitive environments.

4.5 Additional Background Soil Investigation

As recommended by the NCDEQ PRLF Guidelines (2025), a minimum of 12 background soil samples are required to establish natural metals concentrations and area-wide anthropogenic background conditions. Background soil samples will be collected and analyzed in accordance with the Field Procedures and Sample Collection Techniques and Laboratory Analytical Parameters specified in Appendices B and D, respectively, of the NCDEQ PRLF Guidelines (2025). Background soil samples will be collected at locations that are not impacted by the landfill and are located away from roadways, railways, parking areas, and other potential sources of contamination. Background soil samples will be collected from a depth interval of 0 to 12 inches below ground surface. Analytical results from this background soil investigation will be used to establish a two-times average background concentration for comparison with the borrow soil source and any associated confirmation sampling.

4.6 Sampling and Analysis of Imported Soils

Soils will be imported from an approved borrow source and amended as necessary to provide the organic content, nutrients, and characteristics required to establish grass cover. Imported amended cover soil will be analyzed for nutrient content, organic content, and pH to determine the appropriate soil additives needed to establish sufficient ground cover. Sample kits and analytical services will be provided by the North Carolina Department of Agriculture & Consumer Services or a similar provider. Analytical data for the imported cover soil will be submitted to and reviewed by an NCDEQ toxicologist to ensure the material meets the definition of beneficial fill prior to importation. If additional soil is required for the site in the future, the Martin Marietta – Fuquay Quarry located in Fuquay, North Carolina, has been identified as a potential borrow source and will be tested and reviewed for suitable use at the site prior to importing any soil.

4.7 On-Site Habitat Assessment

As noted in **Section 2.3**, previous environmental evaluations characterized the site as “Environmentally Sensitive” or “State-Designated Areas for Protection or Maintenance of

Aquatic Life.” Additionally, rare and endangered species may be present within or near the site where suitable habitat exists.

An updated on-site habitat assessment is recommended to rule out the potential presence of endangered species on the property. The assessment will include an updated Information for Planning and Consultation review and a North Carolina Natural Heritage Program report to support coordination with the USFWS regarding any required permitting.

4.8 Monitoring Well Abandonment

All monitoring wells located within the proposed limit of disturbance will be permanently abandoned prior to the initiation of intrusive site activities, in accordance with the North Carolina Well Construction Act (G.S. 87-85 et seq.) and 15A NCAC 02C .0113 (Abandonment of Wells). Prior to abandonment, each well will be sounded to confirm the total depth and ensure the absence of obstructions. Where feasible, casing and screen materials will be removed, provided that removal will not cause or contribute to groundwater contamination; otherwise, the well will be abandoned in place. Monitoring wells constructed in unconsolidated formations will be completely filled from the bottom of the borehole to land surface with an approved grout (neat-cement or bentonite slurry) placed via tremie pipe, while wells completed in consolidated rock will be abandoned using grout and/or approved fill materials in accordance with formation-specific requirements outlined in 15A NCAC 02C .0113. Following grouting, wells will be cut off below ground surface, and the area will be restored to surrounding grade. Abandonment activities will be performed by a North Carolina-certified well contractor, and a Well Record of Abandonment (GW-30 form) will be completed and submitted to NCDEQ within 30 days of abandonment, as required by state regulations and guidance.

4.9 Applicable Permits

An electronic Notice of Intent will be submitted to request a Certificate of Coverage under the NCG01 Permit prior to initiating construction activities. In addition, wetlands at the site are regulated under Section 404 of the Clean Water Act (33 U.S.C. §1344), which require obtaining appropriate permits before any discharge of dredged or fill material into waters of the United States. A 401 Water Quality Certification may also be required from the NCDEQ DWR, as the proposed work will result in temporary impacts to riparian buffer areas. As part of this process, a Determination of No Practical Alternatives and a Buffer Authorization Certificate will be requested to demonstrate that buffer impacts cannot be reasonably avoided and have been minimized to the extent practicable, in accordance with 15A NCAC 02B .0233. This authorization will allow the temporary buffer impacts to occur, subject to permit conditions, with required restoration following completion of the work.

4.10 Site Preparation

Site preparation activities will commence after key E&SC measures have been implemented. The following subsections outline the specific site preparation activities.

4.10.1 Fencing

Silt and safety fences will be placed along the construction entrance, access road, and around the perimeter of the disturbed area to reduce sediment migration off the site. The proposed placement of the silt and safety fence, along with a detail showing proper installation and maintenance requirements, is included in the E&SC Plan (**Appendix A**).

Silt and safety fences will be installed and fully functional prior to the start of construction activities in the affected area. Other BMPs, such as straw wattles or compost filter socks, may be used as alternatives to silt fence where appropriate.

4.10.2 Construction Entrance Road

A construction entrance will be installed prior to the start of remedial activities. It will consist of aggregate designed to minimize tracking of mud onto off-site roadways. The contractor will remove any mud or soil from affected off-site pavement as needed. The proposed construction entrance location and a detail illustrating proper installation and maintenance requirements is provided in the E&SC Plan (**Appendix A**).

4.10.3 Manage Surficial and Partially Buried Waste

Surficial or partially buried waste, including white goods and other materials unsuitable for compaction, will be removed and disposed of offsite.

4.10.4 Staging and Laydown Area

The southern parcel will be cleared and grubbed, as necessary, to prepare it for installation of the laydown and staging area. Waste currently located in the southern parcel and south of the existing wire fence would be compacted and then covered with a 6 oz non-woven geotextile fabric that will serve as a separation layer enhancing structural stability of the CCS. The CCS panels will be expanded to their full dimensions and securely anchored using stakes or rebar. Adjacent panels will be connected using clips, staples, or zip ties. Once the CCS has been fully expanded and secured, 6 inches of NCDOT ABC or #57 aggregate will be added to the system and compacted to serve as the construction laydown and staging area.

4.11 Cover System Installation

Once the southern parcel laydown and staging area has been installed, preparation of the northern parcel will begin. Approximately 1.15 acres of wooded land will require clearing and grubbing prior to grading. White goods and other materials unsuitable for compaction will be removed and disposed of offsite. The subgrade will then be graded to promote

positive drainage and compacted in preparation for the installation of the soil cover. The soil cover system will be installed, starting with the installation of a 6 oz non-woven orange geotextile demarcation fabric. Approximately 12 inches of imported soil from an approved borrow source will then be graded over the demarcation fabric. The uppermost 6 inches of the 12-inch soil layer will consist of topsoil or amended fill to support vegetation.

After the northern parcel soil cover system is installed, the laydown and staging area will be inspected for damages prior to adding the final layer of the cover system. The compacted layer of NCDOT ABC or #57 aggregate will remain in place, and 6 inches of imported soil from an approved borrow source will then be placed on top of the aggregate. This soil layer will consist of topsoil or amended fill to support vegetation. Following remedial implementation, the disturbed area will be stabilized with appropriate vegetative cover to ensure compliance with erosion and sediment control permit.

4.12 Land Grading

The WDA will be graded to promote positive drainage and prevent ponding, while minimizing disturbance and maintaining stable slopes. BMPs will be installed as shown in the E&SC Plan to ensure proper drainage. Where necessary, imported fill will be placed within the WDA to achieve the final remedial design grade. Fill material will be compacted to at least 90 percent of the Standard Proctor maximum dry density to ensure stability. Vegetative soil will be adequately compacted to maintain stability. Final slopes are not expected to exceed a horizontal-to-vertical ratio of 3:1.

4.13 Long-term Communication and Protection

Institutional controls are an integral component of the remedy and will be implemented through a DPLUR recorded concurrently with a Notice Plat at the Harnett County Register of Deeds. The DPLUR will apply to the following parcels:

- 2200 Rawls Church Road (Parcel PIN 0674-09-7389.000); and
- 57 Woodridge Court (Parcel PIN 0674-09-7685.000).

Two Notice Plats—one for each parcel—have been drafted by a licensed North Carolina Professional Land Surveyor in accordance with the NCDEQ PRLF Guidelines for Addressing Pre-Regulatory Landfills and Dumps and are included in **Appendix B**. The preliminary drafted DPLURs are provided in **Appendix C**. The preliminary DPLURs present a full set of the proposed institutional controls for the parcels. A summary of the key restrictions is provided below:

- The WDA shall be used for open space only.
- Development, soil disturbance, excavation, planting, farming, grazing, groundwater or surface water use, or heavy equipment are prohibited without NCDEQ approval.
- Ongoing maintenance, signage, erosion control, and annual compliance certification to NCDEQ are required.
- Restrictions apply to all future owners and cannot be removed or changed without NCDEQ approval.

Additionally, to ensure long-term protection of the remedy and effectively communicate the presence of the WDA to future visitors to the site, flush mount signs will be installed at the completion of the land grading. The signs will be installed around the perimeter of the WDA on a 100-foot spacing or within line of sight, whichever is closer. The signs will read as follows:

NOTICE
SUBSURFACE WASTE
Contact the Property Owner
Regarding Land Use Restrictions
Prior to Disturbing Soil

5.0 Post-Construction Monitoring Plan

Following implementation of the remedy, E&SC monitoring will be completed weekly and after rainfall events exceeding 1 inch within 24 hours, in compliance with the NCG01 Permit. Photographic documentation will be submitted to NCDEQ for six months following remedy completion. Areas exhibiting erosion or inadequate vegetative cover will be corrected by the financially responsible party (i.e., the general contractor).

Temporary E&SC features will be removed upon release from NCG01 Permit requirements by NCDEQ DEMLR. Temporary impacts to sensitive environments will be limited to areas where waste will be removed from jurisdictional wetlands. A Sensitive Environments Restoration Plan, prepared by a PWS, will be implemented after removal of the waste. A summary report will be prepared and submitted to state and federal regulatory stakeholders by the PWS to confirm restoration success. Additional monitoring may be required by stakeholders to ensure compliance.

6.0 Schedule

Task	Duration
Bid Package Preparation and Permitting	3 Months
Subcontractor Solicitation and Selection	6 Weeks
Pre-Construction Meetings and Planning	4 Weeks
RAP Implementation	5-6 Months
Post-Construction E&SC Monitoring	6 Months
Removal of E&SC Features	4 Weeks
Sensitive Environments Restoration	2 Weeks
Complete Closure Report	6 Weeks

The schedule is subject to change based on the selected general contractor's bid schedule and input from state and federal regulatory stakeholders. The anticipated number of adverse weather days was calculated and incorporated into the estimated schedule. Precipitation data from the Erwin Harnett County Airport, NC weather station for the period August 25, 2022, to August 25, 2025, was obtained from the National Weather Service (NOAA, 2025). Daily precipitation totals were compiled and compared to a disruptive threshold of 0.5 inches within a 24-hour period. Based on this analysis, the three-year average number of days with rainfall exceeding 0.5 inches was 25 days, and these adverse weather days have been included in the schedule.

7.0 Budget Estimate

A breakdown of the estimated costs for remedial action construction is presented for the cellular confinement system cover.

Description	Alternative 2: Dual Purpose CCS and Soil Cover
I. Construction	\$1,400,000
II. Oversight	\$270,000
III. Post-Remedy E&SC	\$50,000
IV. Sensitive Environments Restoration	\$40,000
Total	\$ 1,760,000

8.0 Sole Use Statement

This dRAP is solely intended for use by NCDEQ under contract N42621-A, dated January 4, 2022, and in general accordance with the work plan for Task Order 349RA-4 (Draft Remedial Action Plan) dated July 19, 2024, and NCDEQ's Authorization to Proceed dated October 23, 2024.

Use of this document for other purposes is at the sole risk of the user.

CERTIFICATION STATEMENT

"I certify that to the best of my knowledge, after thorough investigation, the information contained in or accompanying this certification is true, accurate, and complete."

Michael B. Dail, PG / Terracon Consultants, Inc.

Name of Environmental Consultant / Company

 4/22/26
Signature of Environmental Consultant Date

I, Dina Longo-Armfield, a Notary Public of said County and State, do hereby certify that _____ did personally appear and sign before me this day, produced proper identification in the form of Michael B. Dail was duly sworn or affirmed, and declared that, he or she is the duly authorized environmental consultant referenced above and that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certification is true and accurate, and he or she then signed this Certification in my presence.

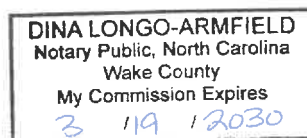
WITNESS my hand and official seal this 22nd day of April, 2026.

(OFFICIAL SEAL)



Notary Public (signature)

My commission expires: 3.19.2030



9.0 References

Clark et al., 2004. Preliminary Bedrock Geologic Map of the Raleigh 30' x 60' Quadrangle, North Carolina, North Carolina Department of Environment and Natural Resources, Division of Land Resources. Clark T.W., Blake, D.E., Stoddard, E.F., Carpenter, III, P.A., Carpenter, R.H., 2004. 2004.

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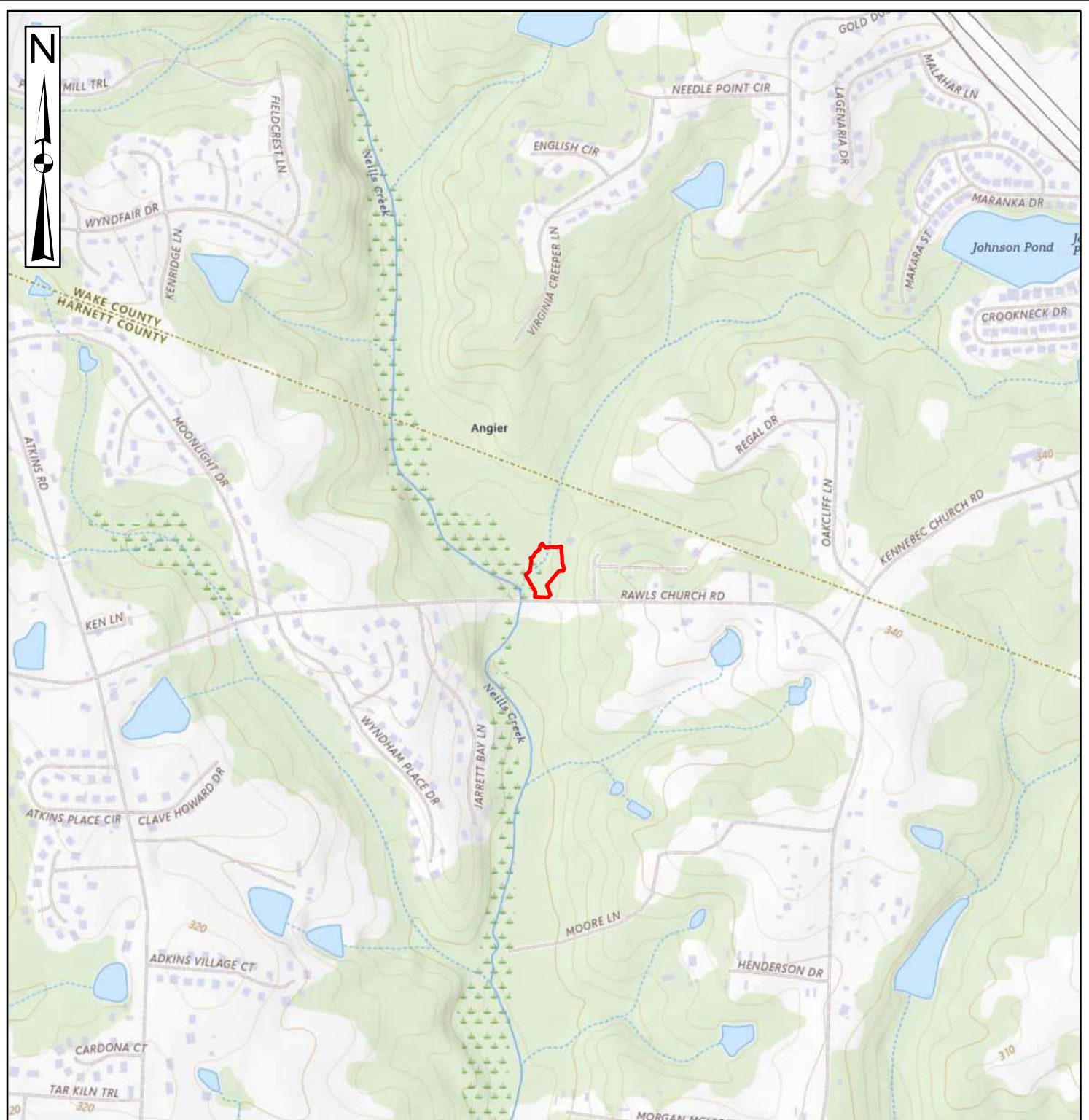
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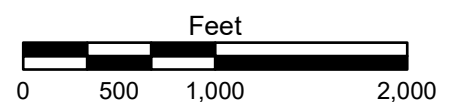
Figures



Legend

Waste Disposal Area

DATA SOURCES:
Fuquay-Varina, NC USGS Topographic Quadrangle



PM:	AS	Project No.	70247315
Drawn By:	MM	Scale:	1 in = 1,000 ft
Checked By:	AA	Filename:	AngierRefuseDump
Approved By:	MD	Date:	October 2025

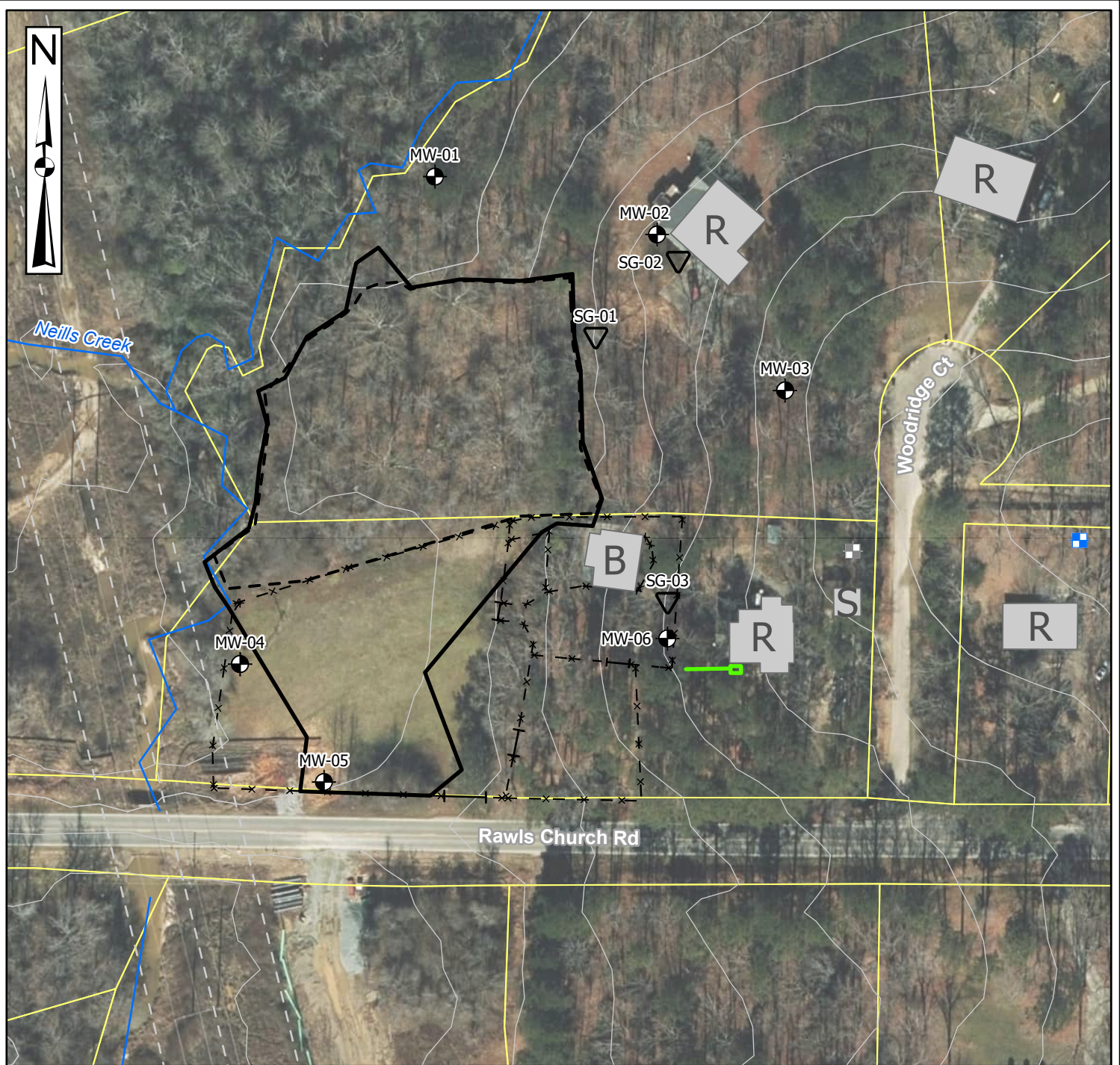


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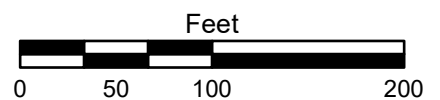
Site Location Map	Figure
Pre-Regulatory Landfill Unit Angier Refuse Dump Site ID No. NONCD0000349 Angier, Harnett County, North Carolina	1



Legend

- Waste Disposal Area
- Partially Buried Surface Waste
- Harnett County Tax Parcels (2025)
- Existing Structures
 - B: Barn
 - R: Residence
 - S: Shed
- Septic System and Drain Pipe
- Harnett County Elevation Contour (feet msl, non-surveyed)
- Fence
- Gate
- Utility Easement/Overhead Transmission Lines
- Approximate Tributaries
- Soil Gas Sampling Point
- + Monitoring Well
- ++ Active Water Supply Well
- +++ Inactive Water Supply Well

DATA SOURCES:
Latest High-Resolution NC Statewide Orthoimagery,
NC OneMap Server; Parcels obtained from NC
OneMap.



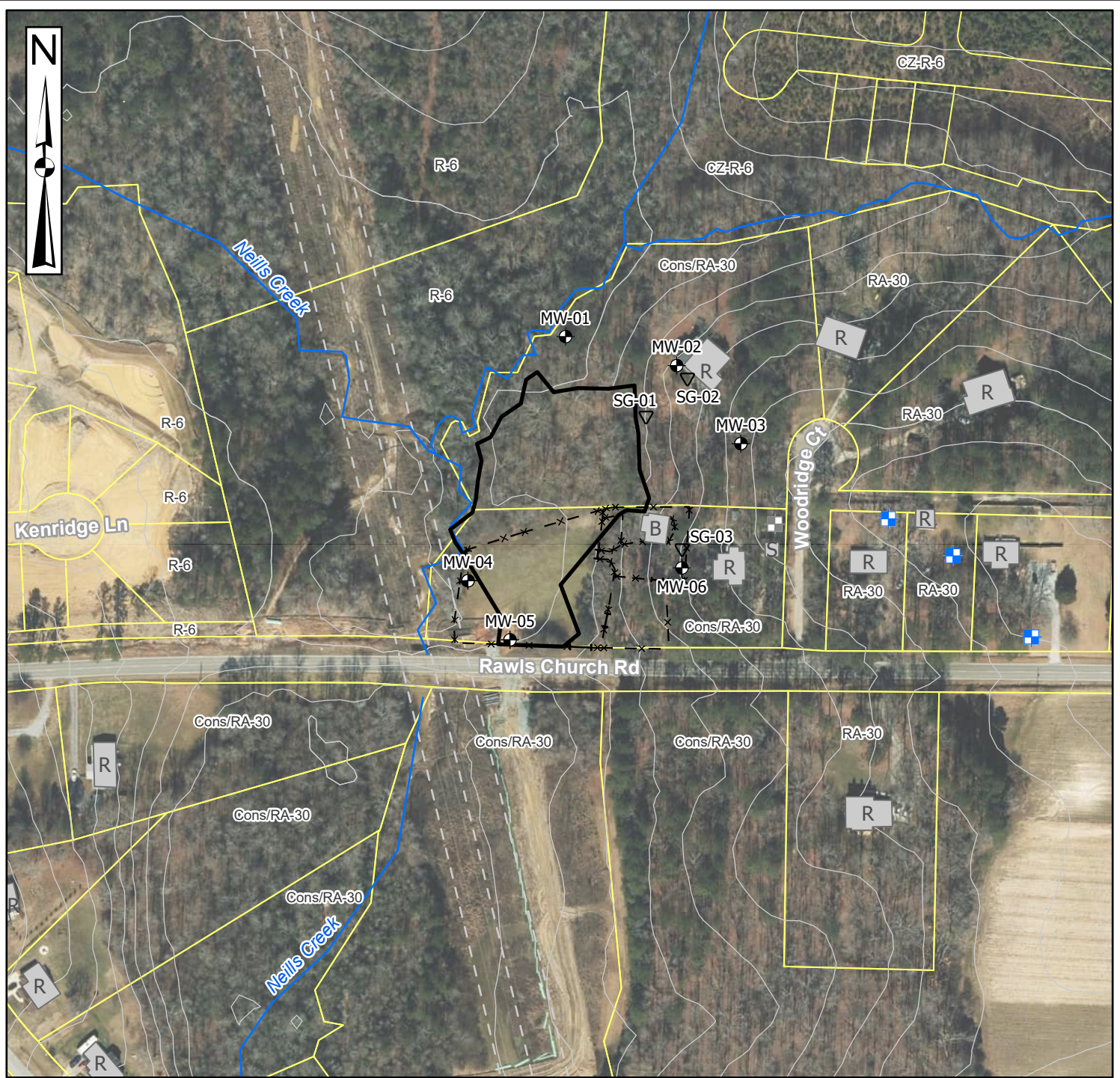
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Checked By:	AA	Filename:	AngierRefuseDump
Approved By:	MD	Date:	October 2025



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Site Layout Map
Pre-Regulatory Landfill Unit Angier Refuse Dump Site ID No. NONCD0000349 Angier, Harnett County, North Carolina

Figure
2



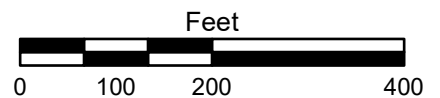
Legend

- Waste Disposal Area
- Harnett County Tax Parcels (2025)
- Existing Structures
 - B: Barn
 - R: Residence
 - S: Shed
- Harnett County Elevation Contour (feet msl, non-surveyed)
- Fence
- Gate
- Utility Easement/Overhead Transmission Lines
- Approximate Tributaries
- Active Water Supply Well
- Inactive Water Supply Well

Zoning

Cons: Conservation
 CZ-R-6: Construction Zoning
 Residential
 R-6: Residential
 RA-30: Residential/Agricultural

DATA SOURCES:
 Latest High-Resolution NC Statewide Orthoimagery,
 NC OneMap Server; Parcels obtained from NC
 OneMap; Harnett County Zoning Map.



PM:	AS	Project No.	70247315
Drawn By:	MM	Scale:	1 in = 200 ft
Checked By:	AA	Filename:	AngierRefuseDump
Approved By:	MD	Date:	October 2025

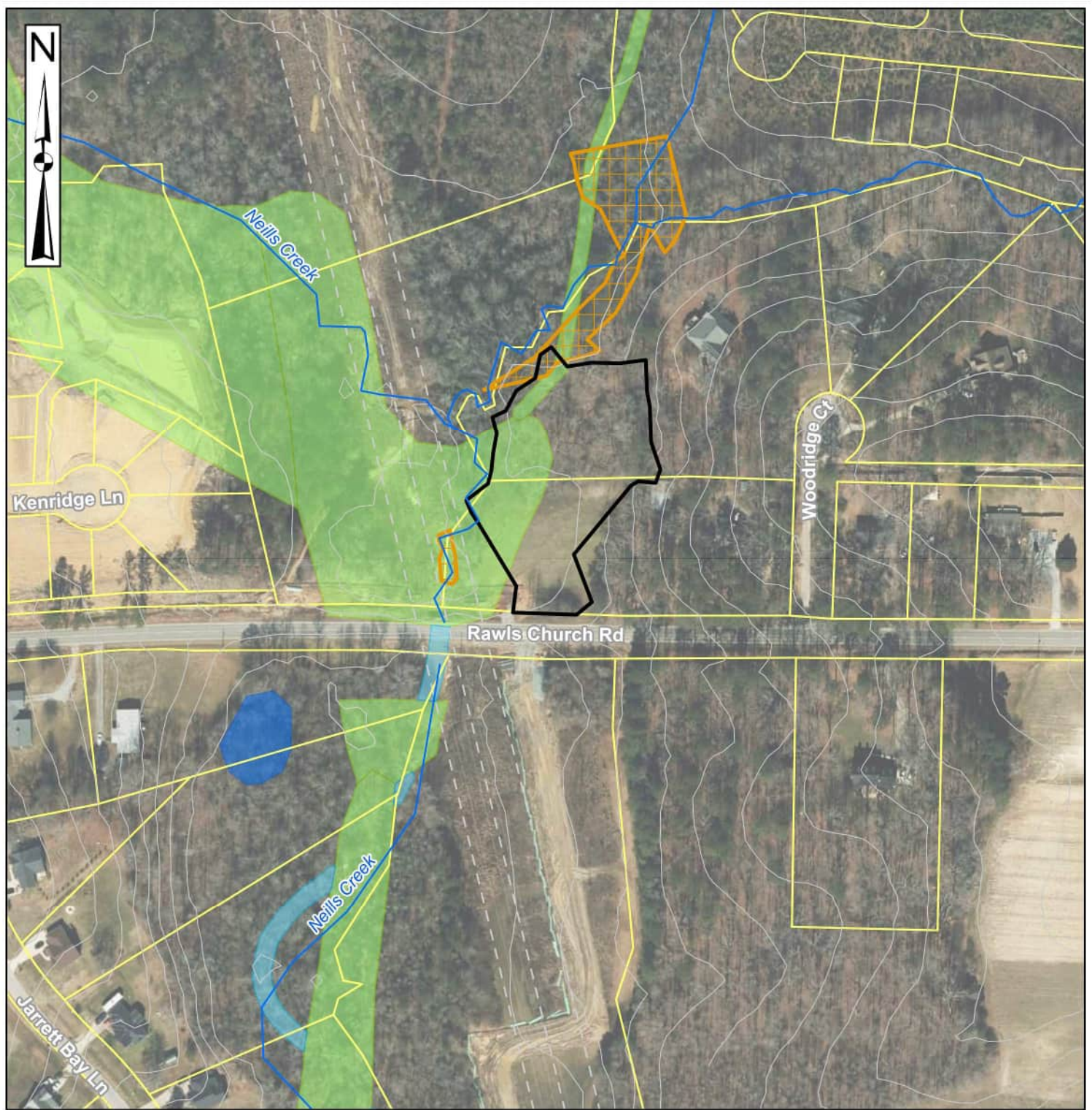


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Site Vicinity Map
Pre-Regulatory Landfill Unit Angier Refuse Dump Site ID No. NONCD0000349 Angier, Harnett County, North Carolina

Figure

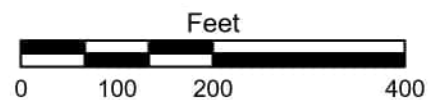
3



Legend

- Waste Disposal Area
- Harnett County Tax Parcels (2025)
- Delineated Wetland
- Harnett County Elevation Contour (feet msl, non-surveyed)
- Utility Easement/Overhead Transmission Lines
- Approximate Tributaries
- Freshwater Pond
- Riverine
- Freshwater Forested/Shrub Wetland

DATA SOURCES:
Latest High-Resolution NC Statewide Orthoimagery,
NC OneMap Server; Parcels obtained from NC
OneMap; NWI Wetlands.

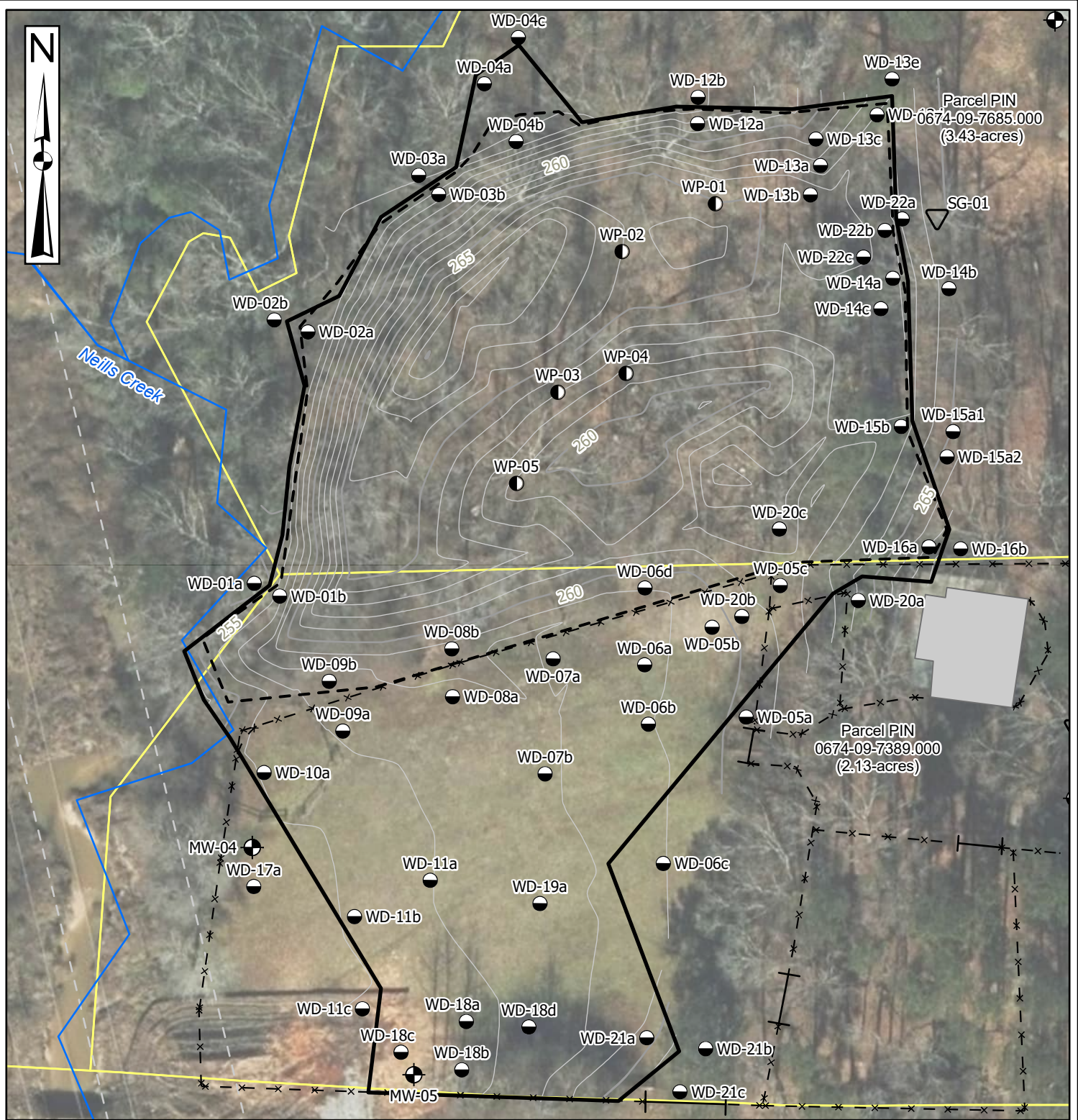


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Drawn By:	MM	Scale:	1 in = 200 ft
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Approved By:	MD	Date:	October 2025



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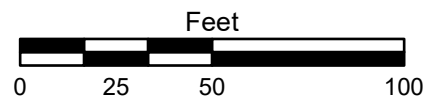
Sensitive Environments Map	Figure
Pre-Regulatory Landfill Unit Angier Refuse Dump Site ID No. NONCD0000349 Angier, Harnett County, North Carolina	4



Legend

- Waste Disposal Area (1.45 acres)
- Harnett County Tax Parcels (2025)
- Existing Structures
- Surveyed Minor Elevation Contour (feet msl)
- Surveyed Major Elevation Contour (feet msl)
- Utility Easement/Overhead Transmission Lines
- Approximate Tributaries
- Waste Pile Boring
- Waste Delineation Boring
- Monitoring Well

DATA SOURCES:
Latest High-Resolution NC Statewide Orthomagey,
NC OneMap Server; Parcels obtained from NC
OneMap.



PM:	AS
Drawn By:	MM
Checked By:	AA
Approved By:	MD
Project No.	70247315
Scale:	1 in = 50 ft
Filename:	AngierRefuseDump
Date:	October 2025



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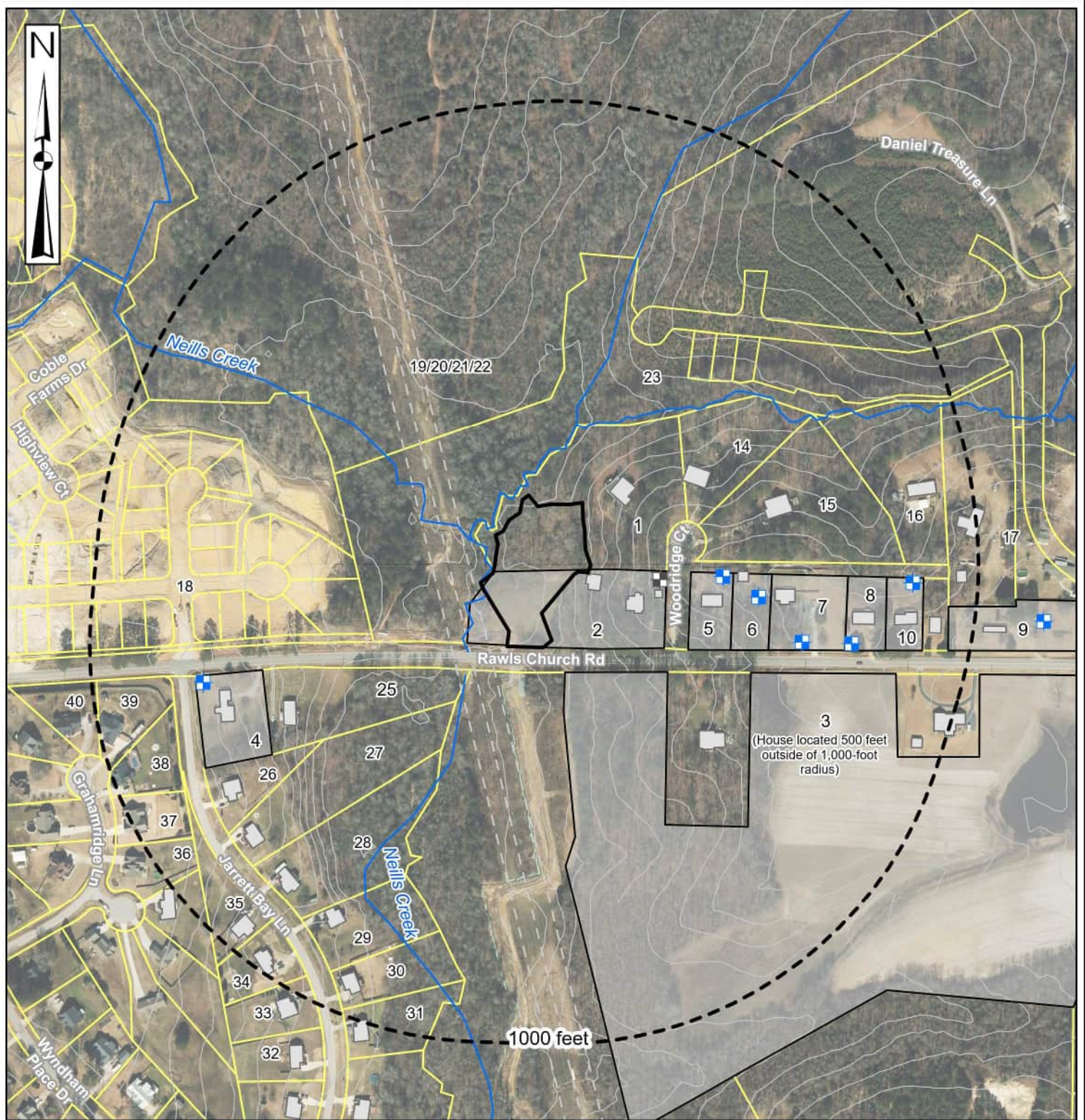
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Phone: (919) 873-2211 terracon.com

Waste Disposal Area Perimeter Delineation

Pre-Regulatory Landfill Unit
Angier Refuse Dump
Site ID No. NONCD0000349
Angier, Harnett County, North Carolina

Figure

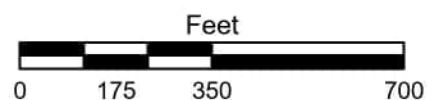
5



Legend

- Waste Disposal Area
- Harnett County Tax Parcels (2025)
- Existing Structures (1-40)
- Harnett County Elevation Contour (feet msl, non-surveyed)
- Utility Easement/Overhead Transmission Lines
- Approximate Tributaries
- Active Water Supply Well
- Inactive Water Supply Well

DATA SOURCES:
Latest High-Resolution NC Statewide Orthoimagery,
NC OneMap Server; Parcels obtained from NC
OneMap.



PM:	AS	Project No.	70247315
Drawn By:	MM	Scale:	1 in = 350 ft
Checked By:	AA	Filename:	AngierRefuseDump
Approved By:	MD	Date:	November 2025



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Water Supply Well Map	Figure
Pre-Regulatory Landfill Unit Angier Refuse Dump Site ID No. NONCD0000349 Angier, Harnett County, North Carolina	6

Tables

Table 1
Water Supply Table
Angier Refuse Dump
Angier, Harnett County, North Carolina
Site ID No. NONCD0000349
Terracon Project No. 70247315

ID	PIN	Address	Owner	Use	Water Account	WSW	Notes:	Distance from WDA	Coordinates	
1	0674-09-7685.000	57 Woodridge Ct Angier	Mennella Anthony J	rural homesite	Yes	No	According to owner interview, his home has never used a well ¹	--	--	--
2	0674-09-7389.000	2200 Rawls Church Rd Fuquay-Varina	Goldstein Irving M	rural homesite	Yes	Yes	WSW Inactive (pump pulled)	145.80	-78.761778	35.53423
3	0674-18-2768.000	1949 Rawls Church Rd Angier	McLean Otha	rural homesite	No	Yes ²	House ~1,500 feet east of the site	--	--	--
4	0664-99-8170.000	2393 Rawls Church Rd Fuquay Varina	Sanderford Brittany Anne Jt W/Ros	rural homesite	No	Yes	WSW observed visually	752.35	-78.76543625	35.533576
5	0674-19-0368.000	2164 Rawls Church Rd Angier	Banks Caudle Barker	rural homesite	No	Yes	WSW observed visually	354.52	-78.76103455	35.534299
6	0674-19-1368.000	Rawls Church Rd	Banks Caudle Barker	undeveloped land	N/A	Yes	WSW observed visually	456.57	-78.76073298	35.534156
7	0674-19-2357.000	2128 Rawls Church Rd Angier	Ogburn Nicholas R	rural homesite	No	Yes	WSW observed visually	593.04	-78.76036646	35.533845
8	0674-19-3387.000	2092 Rawls Church Rd Angier	Day Rickie	rural homesite	No	Yes	WSW observed visually	714.63	-78.75994634	35.533833
9	0674-19-8335.000	2032 Rawls Church Rd Angier	Wood Carolyn	rural homesite	No	Yes	WSW observed visually	1166.11	-78.75831953	35.533984
10	0674-19-5358.000	2070 Rawls Church Rd Angier	Wellons Jeffrey Ray	rural homesite	No	Yes	WSW observed visually	824.66	-78.75942641	35.534252
11	0674-19-6338.000	Rawls Church Rd	Wellons Jeffrey Ray	garage ³	N/A	--		--	--	--
12	0674-19-0043.000	2169 Rawls Church Rd Angier	Lunsford Mark	rural homesite	Yes	No		--	--	--
13	0674-19-8111.000	2051 Rawls Church Rd Angier	McLean Sammy Ray	rural homesite	Yes	No		--	--	--
14	0674-19-0788.000	58 Woodridge Ct Angier	McLeod John Duncan Iv	single family res	Yes	No		--	--	--
15	0674-19-2685.000	54 Woodridge Ct Angier	Wolfe Grace P	rural homesite	Yes	No		--	--	--
16	0674-19-5771.000	42 Woodridge Ct Angier	Clapper Ellen	manufactured home	Yes	No		--	--	--
17	0674-19-7750.000	44 Woodridge Ct Angier	Smith Daniel A	manufactured home	Yes	No		--	--	--
18	0665-90-0278.000	Rawls Church Rd Fuquay-Varina	Coble Marie	undeveloped land	N/A	--		--	--	--
19	0674-09-1673.000	Rawls Church Rd	SHC Holdings Inc	undeveloped land	N/A	--		--	--	--
20	0674-09-3427.000	Rawls Church Rd	SHC Holdings Inc	undeveloped land	N/A	--		--	--	--
21	0674-09-4445.000	Rawls Church Rd	SHC Holdings Inc	undeveloped land	N/A	--		--	--	--
22	0675-01-4064	0 S NC 55 Hwy	SHC Holdings Inc	undeveloped land	N/A	--		--	--	--
23	0675-10-4273	9920 Regal Dr	Daniel, Lynwood Craig Daniel, Cassandra P	undeveloped land	N/A	--		--	--	--
24	0675-10-3670	3500 Daniel Treasure Ln	Lard, Jennifer M	rural homesite	Yes	No		--	--	--
25	0674-09-1188.000	2363 Rawls Church Rd Fuquay Varina	Hoey Leonard	manufactured home	Yes	No		--	--	--
26	0664-98-8985.000	55 Jarrett Bay Ln Fuquay Varina	Crumpler James Robert	single family res	Yes	No		--	--	--
27	0674-08-0996.000	85 Jarrett Bay Ln Fuquay Varina	Siver Michael D	single family res	Yes	No		--	--	--
28	0674-08-1758.000	105 Jarrett Bay Ln Fuquay Varina	Rowe Thomas W	single family res	Yes	No		--	--	--
29	0674-08-1599.000	125 Jarrett Bay Ln Fuquay Varina	Herring Arthur David	single family res	Yes	No		--	--	--
30	0674-08-2467.000	145 Jarrett Bay Ln Fuquay Varina	Worden Kenneth F Jr	single family res	Yes	No		--	--	--
31	0674-08-2353.000	175 Jarrett Bay Ln Fuquay Varina	Hummel David K	single family res	Yes	No		--	--	--
32	0664-98-9366.000	146 Jarrett Bay Ln Fuquay Varina	Donohue Sean P	single family res	Yes	No		--	--	--
33	0664-98-9428.000	124 Jarrett Bay Ln Fuquay Varina	Wiley Alan	single family res	Yes	No		--	--	--

Table 1
Water Supply Table
Angier Refuse Dump
Angier, Harnett County, North Carolina
Site ID No. NONCD0000349
Terracon Project No. 70187662

ID	PIN	Address	Owner	Use	Water Account	WSW	Notes:	Distance from WDA	Coordinates	
34	0664-98-8652.000	104 Jarrett Bay Ln Fuquay Varina	Anderson Jason L	single family res	Yes	No		--	--	--
35	0664-98-7632.000	62 Graham ridge Ln Fuquay Varina	Platte Amelia M	single family res	Yes	No		--	--	--
36	0664-98-6754.000	66 Graham ridge Ln Fuquay Varina	Trotter Meredith P	single family res	Yes	No		--	--	--
37	0664-98-6867.000	86 Graham ridge Ln Fuquay Varina	Rooney John R	single family res	Yes	No		--	--	--
38	0664-98-6959.000	106 Graham ridge Ln Fuquay Varina	Donovan Chad A	single family res	Yes	No		--	--	--
39	0664-99-6102.000	110 Graham ridge Ln Fuquay Varina	Reinert Cheryl K	single family res	Yes	No		--	--	--
40	0664-99-4152.000	114 Graham ridge Ln Fuquay Varina	Cameron Brenda D	single family res	Yes	No		--	--	--

Notes:

Shaded rows indicate WSW identified

WSW - water supply well

1 - Water Supply Well Sampling Report, Prepared by Marshall Miller & Associates, dated 6/20/2011: WSW was identified as previously reported, however the interview with the owner stated that his home has never used a well

2 - property has a residential house with out a municipal water account therefore a WSW is assumed

3 - Structure observed is assumed to be associated neighboring property also owned by Jeffery Ray Wellons with rural homesite and WSW

N/A - not applicable; parcel does not have a mailing address and therefore cannot have a water account or is undeveloped

Table 2
Contaminants of Concern
Angier Refuse Dump
Angier, Harnett County, North Carolina
Site ID No. NONCD0000349
Terracon Project No. 70247315

Contaminants of Concern		Groundwater
Metals	Iron	X
	Manganese	X
Applicable Standard and/or Screening Level:		2L Standard or MCL

Notes:

Contaminants presented in this table exceeded applicable screening standards and background concentrations.

2L Standard: North Carolina Title 15A NCAC 2L Groundwater Quality Standard (April 1, 2013).

MCL: Environmental Protection Agency (EPA) Maximum Contaminant Level.

NCDEQ: North Carolina Department of Environmental Quality.

Table 3
Summary of Proposed Remedial Alternatives
Angier Refuse Dump
Angier, Harnett County, North Carolina
Site ID No. NONCD0000349
Terracon Project No. 70247315

Remedial Alternatives*	Alt 1 (Soil Cover – Entire Site)	Alt 2 (Dual Purpose CCS and Soil Cover)	Alt 3 (Dual Purpose and Slope CCS & Soil Cover)	Alt 4 (CCS – Entire Site)	
Construction Cost (-10%/+25%)					USD
					\$2.25M
Costs Included: - Oversight Labor - - Mob/Demob - Site Preparation - Alternative - Waste Management - Restoration - Surveying	\$1.67M-\$2.32M	\$1.59M-\$2.20M	\$1.60M-\$2.22M	\$1.63M-\$2.27M	\$2.00M
					\$1.75M
					\$1.50M
Costs Excluded: - Design - Permitting - Sub Bid/Selection - Pre-Construction - Post-Construction					\$1.25M
					\$1.00M
Construction Time (~/+2 weeks)					Weeks
					25
Time Included: - E&SC Installation - Clearing/Grubbing - Grading - Waste Management - Alternative - Seeding - Weather Delays	18-20		17-19		20
		16-18		16-18	15
					10
Time Excluded: - Design - Permitting - Sub Bid/Selection - Pre-Construction - Post-Construction					5
					0
Soil Cover:	62,800 feet²	33,450 feet²	41,650 feet²	-	
CCS:	-	20,000 feet²	20,000 feet²	62,800 feet²	
Final WDA:	1.45 acres	1.45 acres	1.45 acres	1.45 acres	

Notes:

Costs and time are based on vendor information, past contractor estimates, cost estimation manuals, and past experience
Actual costs and time will vary depending upon the final design, general contractor bid unit rates, and project/site conditions
Waste Disposal Area (WDA) of existing landfill is approximately 1.45 acres
Estimated total waste in place: Approximately 14,000 cubic yards (yds³)

Appendix A

Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

Angier Refuse Dump

Angier, Harnett County, North Carolina

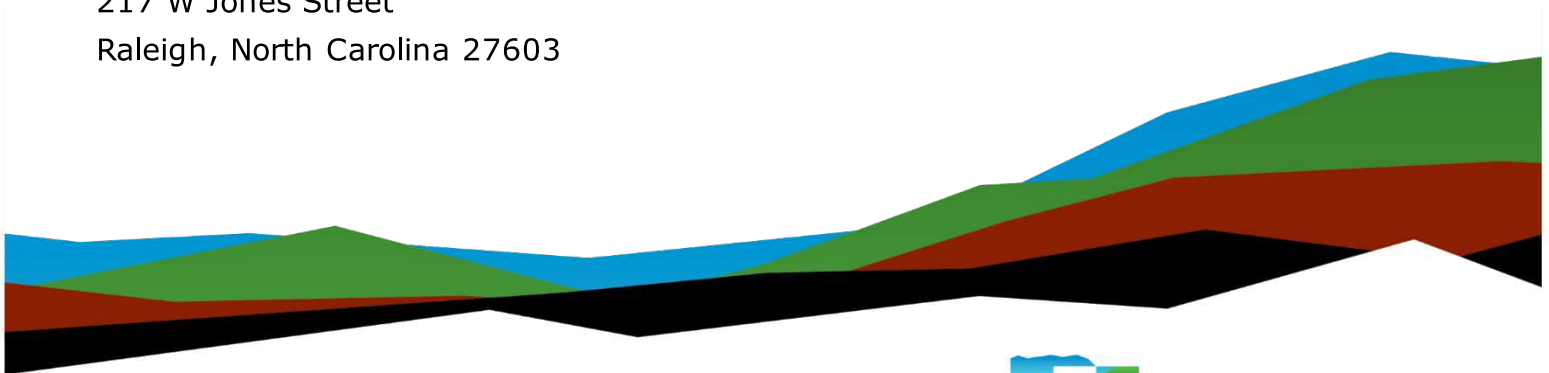
Site ID # NONCD0000349

Task Order # 349RA-05

February 2025 | Terracon Project No. 70247315

Prepared for:

North Carolina Department of
Environment Quality
Division of Waste Management
PRLF Program
217 W Jones Street
Raleigh, North Carolina 27603



Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

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4.2 Silt Fence.....	5
4.3 Channels.....	5
4.4 Check Dams	5
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List of Exhibits

Exhibit 1	Site Location and Vicinity Map
Exhibit 2	Soil Survey Map

List of Appendices

Appendix A	Erosion and Sediment Control Plan Drawings
Appendix B	NPDES Stormwater Discharge Permit for Construction Activities – Ground Coverage Table
Appendix C	Stormwater Calculations
Appendix D	Financial Responsibility/Ownership Form

1.0 Introduction

This Erosion and Sediment Control Plan (E&SC Plan) is for remediation of the inactive Angier Refuse Dump (site) located in Angier, Harnett County, North Carolina. The purpose of this E&SC Plan is to establish clearly which control measures are intended to prevent erosion and off-site sedimentation from the site. This document is intended to comply with the requirements of the Erosion and Sediment Control Planning and Design Manual (Manual) published by the North Carolina Department of Environmental Quality (NCDEQ).

Generally, this document is presented as outlined in the E&SC Plan Preliminary Review Checklist (Revision 1-18-22) and addresses the following items:

- Site Location Information
- General Site Features
- Plans Showing E&SC
- Site Drainage Features
- Calculations
- Vegetative Stabilization Shown on Plans
- Narrative and Construction Sequence
- Documentation

The remediation of the site, as depicted on the Remediation Plan drawings in Appendix A, will include clearing and grubbing, grading, and installing soil cover and geocell cover systems.

2.0 Site Location Information

The site is located off Rawls Church Road in Angier, Harnett County, North Carolina. It is in Neills Creek watershed within the Cape Fear River basin with an Spring Branch, a tributary of Neills Creek bounding the site on west. The site is located on parcels zoned as conservation. The Site Location and Vicinity Map is presented as Exhibits 1.

3.0 General Features

The existing limit of waste covers an approximately 1.5-acre area a portion of which is on an approximately 3.4-acre property owned by Anthony J. Mennella and wife, Carol Mennella, and the other portion on an approximately 2.5 acres property owned by Irving M. Goldstein and wife, Eileen G. Goldstein. The Remediation plan drawings included in Appendix A presents the general site features including:

- Property lines & ownership ID for adjoining properties
- Existing contours
- Proposed contours
- Limits of disturbed area
- Existing building locations
- Planned & existing road locations & elevations, including temporary access roads
- Hydrogeologic features: wetland and its limits, Spring Branch and its buffer zones
- Topsoil or subsoil stockpiling shall occur within the drainage area of the sediment trap

There are no:

- Planned buildings on the site
- Hydrogeologic features: rock outcrops, seeps, springs, lakes, pond, dams, etc.
- Offsite affected areas
- Onsite stone crushing or other processing of material excavated
- Streets and utilities

4.0 Erosion and Sedimentation Control Measures

Erosion and sediment control measures to be implemented are shown on the Remediation Plan drawings included in Appendix A and are described in further detail below. The drawings show locations, construction details and maintenance requirements of temporary and permanent measures to be implemented.

4.1 Construction Entrance

Construction entrances will be installed prior to commencement of the remediation activities. Construction entrance will be composed of large aggregate and will be used to reduce the tracking of mud from the site onto offsite roadways. The contractor will remove mud or soil from impacted offsite road pavement as necessary. Proposed locations of the construction entrance, a detail showing its proper installation, and maintenance requirements are included in the drawings in **Appendix A**.

4.2 Silt Fence

Silt fence will be placed along the construction entrance, access road, and around the perimeter of the disturbed area to reduce the amount of off-site sedimentation. The proposed placement of the silt fence and a detail showing proper installation and maintenance requirements are included on the drawings in **Appendix A**. Silt fences will be installed and functional prior to beginning of construction activities in the affected areas. Other BMPs, such as straw wattle or compost filter socks may be used as alternative to silt fence.

4.3 Channels

Drainage channels lined with Rolled Erosion Control Product (RECP) will be installed as needed to divert runoff away from the disturbed area. Channel locations are shown on the drawings in **Appendix A**. The East Toe Drainage Channel is designed to collect runoff from its drainage area and route it to the temporary sediment trap. The Clean Water Diversion Channel is designed to collect runoff from its drainage area and route it away from the disturbed area. Any additional channels needed shall similarly be designed to collect runoff from their respective drainage areas and route it away from the disturbed areas or appropriate control measure. Additional temporary diversions may be constructed of straw wattle or compost filter socks. The channels also shall have check dams, as needed, to slow the flow of water and minimize sediment from traveling offsite.

4.4 Check Dams

Rock or compost sock check dams will be placed as needed in the channels and at silt fence outlets to decrease the flow rate of water as well as trap sediment subject to

travel off-site. Details on the installation and spacing of the check dams are shown on the drawings in **Appendix A**.

4.5 Sediment Trap

This project will have one temporary sediment trap as shown on the drawings in **Appendix A**. Sizing and the associated calculations for the sediment trap are provided in **Appendix C**. The trap may be removed upon ground stabilization and acceptable vegetation growth at the site.

4.6 Porous Baffles

Porous Baffles shall be installed in the trap to reduce the velocity and turbulence of the water flowing through the measure, and to facilitate the settling of sediment from the water before discharge. Location and installation instructions for the porous baffles are provided on the drawings in **Appendix A**.

4.7 Ground Stabilization

Ground stabilization shall be achieved on any area of the site where land-disturbing activities have temporarily or permanently ceased according to the schedule embedded within the drawings in **Appendix A**, the stabilization guidelines and schedule included in **Appendix B** and as described within Section 7 of this erosion and sediment control plan narrative.

5.0 Site Drainage Features

Temporary drainage features planned for the site include:

- East Toe Drainage Channel,
- Clean Water Diversion Channel, and
- Sediment trap.

Additional temporary diversions may be constructed of straw wattle or compost filter socks.

The temporary drainage features may be removed upon ground stabilization and acceptable vegetation growth at the site.

Delineation of the drainage areas for the temporary drainage features are shown on the drawings.

There are no permanent drainage features planned for the site.

6.0 Stormwater Calculations

Stormwater calculations for the drainage features are presented in Appendix C.

7.0 Vegetative Stabilization

A total of 1.7 acres will be disturbed. The area includes the remediation area, and sediment trap area. Site slopes are designed to be 4H:1V or flatter. Construction will progress in phases such that the entire area is not disturbed all at once and also allow for some areas to be stabilized while work continues in other areas. The entire disturbed area will eventually be stabilized with vegetation.

Perimeter channels and slopes shall be stabilized within 7 calendar days of ceasing land disturbance activities in those areas. All other areas shall be stabilized within 14 calendar days of ceasing land disturbance activities in those areas.

After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

The ground shall be stabilized sufficiently such that rain will not dislodge the soil. One of the techniques in the table below shall be used:

Temporary Stabilization	Permanent Stabilization
- Temporary grass seed covered with straw or other mulches and tackifiers - Hydroseeding - Rolled erosion control products with or without temporary grass seed - Appropriately applied straw or other mulch - Plastic sheeting	- Permanent grass seed covered with straw or other mulches and tackifiers - Geotextile fabric such as permanent soil reinforcement matting - Hydroseeding - Shrubs or other permanent planting covered with mulch - Uniform and evenly distributed ground cover sufficient to restrain erosion - Structural methods such as concrete, asphalt or retaining walls - Rolled erosion control products with grass seed

7.1 Temporary Seeding

Temporary seeding shall be implemented as outlined in the following table:

	Dec. 1 – Apr. 15	Apr. 15 – Aug 15	Aug. 15 – Dec. 30
Seed	Rye Grain (120 lb/acre) Kobe Annual Lespedeza (50 lb/acre)	German Millet (40 lb/acre)	Rye Grain (120 lb/acre)
Lime	2,000 lb/acre ground agricultural limestone		
Fertilizer	1000 lb/acre 10-10-10 fertilizer		
Mulch	4,000 lb/acre straw		
Tracking	Asphalt, netting, or a mulch anchoring tool to anchor straw		
Maintenance	Refertilize if growth is not fully adequate. Reseed, re-fertilize and mulch immediately following erosion or other damage.		

7.2 Permanent Seeding

Permanent seeding shall be implemented as outlined in the following table:

	Aug. 15 – Apr. 15	Apr 15 – Jun. 30
Seed	Rye Grain (40 lb/acre) German Millet (10 lb/acre)	Bermuda Grass (25 lb/acre)
Lime	2,000 lb/acre ground agricultural limestone	
Fertilizer	1000 lb/acre 10-10-10 fertilizer	
Mulch	4,000 lb/acre straw	
Tracking	Asphalt, netting, or a mulch anchoring tool to anchor straw	
Maintenance	Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.	

A variation to the seeding plan above may be used with reference to Tables 6.11.A through 6.11.D from Practice 6.11 of the North Carolina Erosion and Sediment Control Planning and Design Manual.

8.0 Financial Responsibility/Ownership Form

A completed Financial Responsibility/Ownership Form is presented in Appendix D.

9.0 Narrative and Construction Sequence

The following construction sequence shall be implemented throughout construction of the cover system. Technical specifications for the remediation activities are included on the plan drawings in Appendix A.

1.0 E&SC Measures Installation

1.A. Pre-Construction Plans, Meetings, and Construction Access

- 1.A.1. Obtain approval from the NCDEQ for the Remedial Action Plan (RAP) and Erosion and Sediment Control plan. Obtain applicable permits.
- 1.A.2. Schedule and hold a pre-construction meeting with the city of Angier, Terracon, the NCDEQ, and the general contractor.
- 1.A.3. Rawls Road will be used to access the site. Install the construction entrance.

1.B. Install Perimeter Erosion and Sediment Control Measures

- 1.B.1. Install the perimeter silt fence and fence outlets.
- 1.B.2. Install construction access road and staging area pad.

1.C. Install Sediment Trap and Channels

- 1.C.1. Construct the sediment trap prior to initiation of land disturbance activities in the trap's drainage area.
- 1.C.2. Stockpile excess soil. For any stockpiles, place silt fence at the toe of the stockpile slope, ensure that the stockpiled slope does not exceed 3H:1V or a height more than 10 feet, and seed the stockpile if pile is to remain in place longer than 14 days.
- 1.C.3. Seed disturbed areas around sediment trap within 7 days of installation
- 1.C.4. Install channels.
- 1.C.5. Seed channels within 7 days of installation.
- 1.C.6. Maintain erosion control devices throughout the project per the technical specifications on the plan drawings.

2.0 Grading and Cover system Construction

2.A. Prepare Subgrade for Cover system

- 2.A.1. Deliver to the site the materials necessary for construction. Place them in the staging area.
- 2.A.2. For any stockpiles, place silt fence at the toe of the stockpile slope, ensure that the stockpiled slope does not exceed 3H:1V or a height more than 10 feet, and

seed the stockpile if pile is to remain in place longer than 14 days. Unused soil stockpiles remaining at project completion, shall be removed.

- 2.A.3. Clear, grub, fill and grade to achieve proposed cover system subgrade lines and grades. Temporary seed area if not to be worked on within 14 days.

2.B. Install Cover system

- 2.B.1. Install cover system.
- 2.B.2. Temporary seed slopes in accordance with the guidelines shown on Exhibit 4.
- 2.B.3. Final seed the slope in accordance with the guidelines shown on Exhibit 4.

3.0 Post-Stabilization

3.A. Temporary E&SC Features Removal

- 3.A.1. After the construction has been finalized and seeding has stabilized, the sediment trap and temporary channels may be backfilled. Ensure sediment trap is dewatered prior to removal. Any dewatering shall be discharged through dewatering bags.
- 3.A.2. Remove silt fencing and outlets.
- 3.A.3. Seed and mulch disturbed areas.

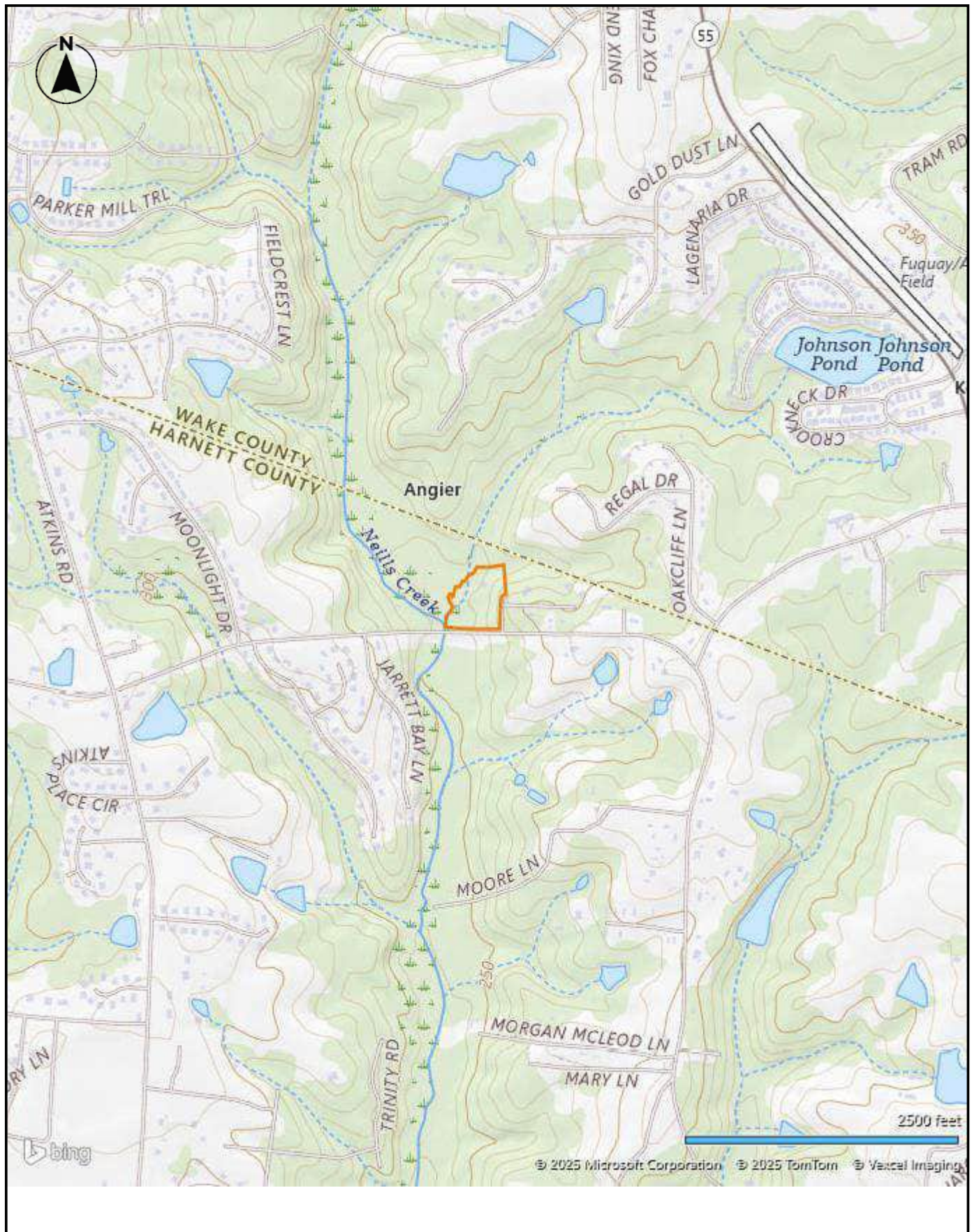
Erosion and Sediment Control Plan

Angier Refuse Dump | Harnett County, North Carolina

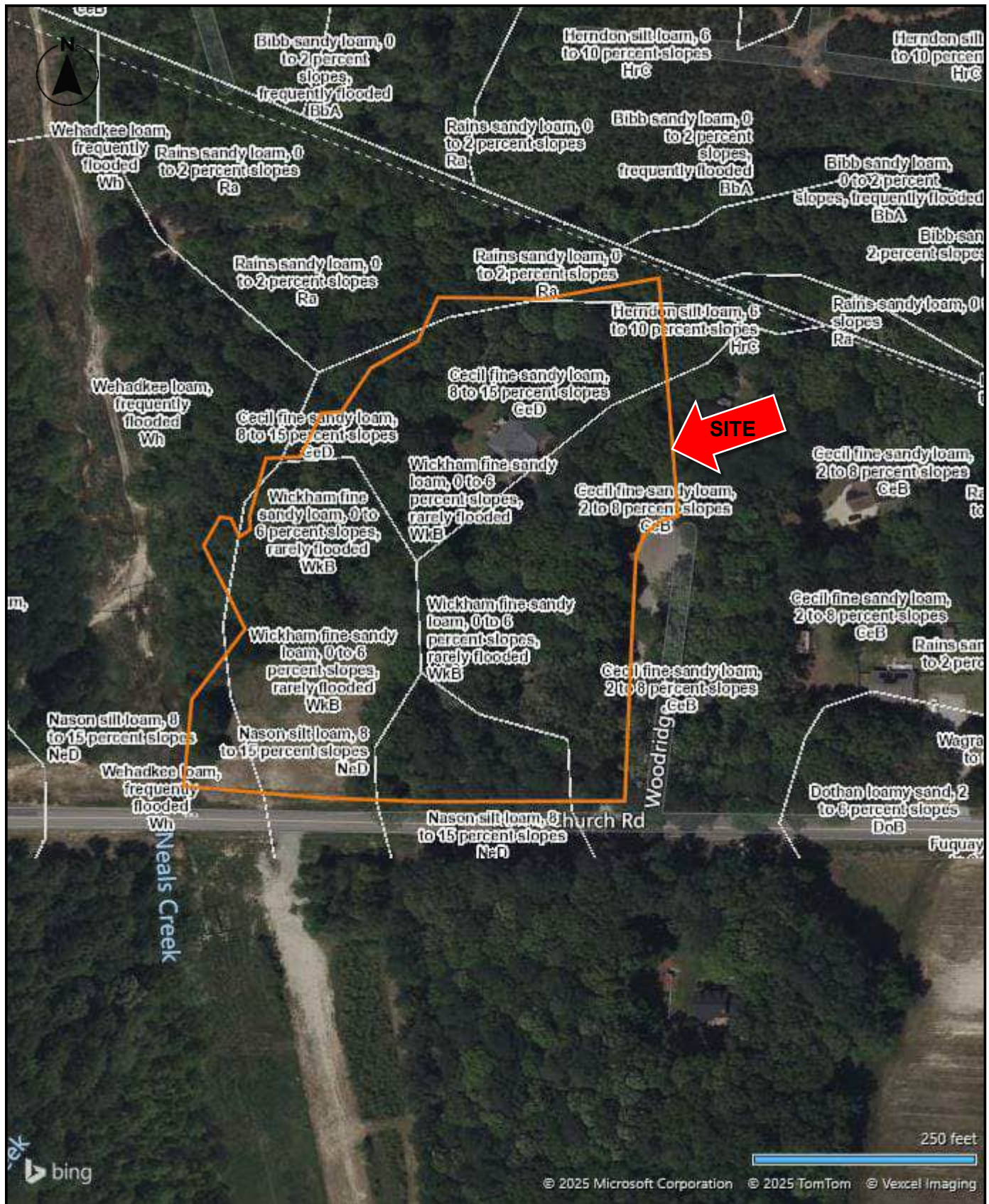
February 25, 2025 | Terracon Project No. 70247315



Exhibits



Project No. 70247315 Scale: AS SHOWN Client: North Carolina Dept Date: 2/7/2025	 3150 Spring Forest Rd Ste 100 Raleigh, NC 27616-2810	SITE LOCATION AND VICINITY MAP NCDEQ PRLF - Angier Refuse Dump 2200 Rawls Church Road Angier, NC	Exhibit 1
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Project No.	70247315
Scale:	AS SHOWN
Client:	North Carolina Dept
Date:	2/7/2025

Terracon
 3150 Spring Forest Rd Ste 100
 Raleigh, NC 27616-2810

SOIL SURVEY MAP
NCDEQ PRLF - Angier Refuse Dump 2200 Rawls Church Road Angier, NC

Exhibit
2

Appendix A Erosion and Sedimentation Control Plan Drawings

2200 RAWLS CHURCH ROAD
ANGIER, HARNETT COUNTY, NORTH CAROLINA



EXHIBIT TITLE:

1	COVER SHEET
2	NOTES
3	NGC01 SELF-INSPECTION, RECORD KEEPING AND REPORTING NOTES
4	GROUND STABILIZATION AND MATERIAL HANDLING NOTES
5	EXISTING SITE CONDITIONS
6	RIPARIAN IMPACTS MAP
7	REMEDIATION PLAN WITH ESC MEASURES
8	CROSS SECTIONS A - C
9	CROSS SECTION D
10	POST CONSTRUCTION STABILIZATION PLAN
11-14	DETAILS
15	TECHNICAL SPECIFICATIONS

EXHIBIT NO.:



ENGINEERING PLANS PREPARED BY:

TERRACON CONSULTANTS, INC.
2401 BRENTWOOD ROAD, SUITE 107
RALEIGH, NC 27604



DRAFT

DESIGNED BY:	BMV
DRAWN BY:	DAB
APPROV. BY:	MSF
SCALE:	as noted
DATE:	2/3/2025
JOB NO.	70247315
ACAD NO.	phase6
SHEET NO.:	1 OF 15

1 OF 15

PROJECT DESCRIPTION

THE WORK DEPICTED AND DESCRIBED IN THESE DRAWINGS SHALL CONSIST OF FURNISHING AND INSTALLING EROSION AND SEDIMENT CONTROL MEASURES AND CLEARING AND GRUBBING TO PREVENT EROSION AND SEDIMENTATION OF THE EARTHWORK SYSTEM IN ACCORDANCE WITH THIS TECHNICAL SCOPE OF WORK AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, AND DIMENSIONS SHOWN ON THESE PLANS.

GENERAL NOTES

- DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER. IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH PROBLEMS. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
- IN THE EVENT OF CONFLICT BETWEEN THE DESIGN, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT WILL GOVERN.
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PUBLIC AND/OR PRIVATE UTILITIES WHICH MAY LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE UTILITIES CONCERNING THE LOCATION, DEPTH, AND CHARACTERISTICS OF SUCH UTILITIES. THE CONTRACTOR SHALL CALL 811 BEFORE YOU DIG. ONCE AN ACTIVE PUBLIC UTILITY LOCATE TICKET IS OPENED FOR THE SITE, IT MUST BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.
- EXCAVATIONS SHALL COMPLY WITH 29 CFR 1926 OSHA CONSTRUCTION INDUSTRY STANDARDS REGARDING EXCAVATIONS, TRENCHING, SHORING AND BRACING. EXCAVATIONS SHALL BE COMPLETED AND MAINTAINED IN A SAFE AND STABLE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
- CONTRACTOR SHALL PREPARE AND SUBMIT TO THE PROJECT MANAGER A SITE HEALTH AND SAFETY PLAN FOLLOWING OSHA REQUIREMENTS FOR HAZARDOUS WASTE MANAGEMENT.
- THE CONSTRUCTION WORKERS SHALL BE OSHA 40-HOUR HAZWOPER TRAINED IF CONDUCTING WORK INVOLVING LAND DISTURBING ACTIVITIES WITHIN ANY DELINEATED WASTE DISPOSAL AREA.
- THE CONSTRUCTION WORKERS SHALL BE TRAINED ON THE IDENTIFICATION OF HAZARDOUS MATERIALS INCLUDING FIBROUS ASBESTOS IF CONDUCTING WORK INVOLVING WASTE DISPOSAL AREA.
- THE CONTRACTOR ACKNOWLEDGES SATISFACTION AS TO THE NATURE AND LOCATION OF THE WORK, THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE BEARING UPON TRANSPORTATION, DISPOSAL, HANDLING, AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRIC POWER, ROADS AND UNCERTAINTIES OF WEATHER, GROUNDWATER TABLE OR SIMILAR PHYSICAL CONDITIONS AT THE SITE, THE CONFORMATION OF SUBSURFACE MATERIALS TO BE ENCOUNTERED, THE PRESENCE AND LOCATION OF OBSTACLES, AND THE CHARACTERISTICS OF THE SOILS TO BE ENCOUNTERED. THE CONTRACTOR AGREES TO ACCEPT THE RISK OF ANY AND ALL SUCH CONDITIONS, INCLUDING ANY WAY AFFECT THE WORK OR THE COST THEREOF, UNDER THIS CONTRACT. ANY FAILURE BY THE CONTRACTOR TO ACQUAINT ITSELF WITH ALL AVAILABLE INFORMATION OR CONDUCT INVESTIGATIONS TO ITS OWN SATISFACTION CONCERNING THESE CONDITIONS WILL NOT RELIEVE IT FROM RESPONSIBILITY FOR ESTIMATING PROPERLY THE DIFFICULTY OR COST OF SUCCESSFULLY PERFORMING THE WORK.

EROSION & SEDIMENT CONTROL NARRATIVE & NOTES

- EROSION AND SEDIMENT CONTROL MEASURES UNLESS OTHERWISE INDICATED, VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONDUCTED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL MEASURES AND SPECIFICATIONS FOR NORTH CAROLINA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING APPROVED BY A VARIANCE. SEE PLANS FOR PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
- STRUCTURAL PRACTICES:
 - SILT FENCE AND STRAW WATLES OR FILTER SOCKS SHALL BE INSTALLED AS SHOWN ON THE PLANS OR NEEDED FOR SEDIMENT CONTROL.
 - SEDIMENT TRAP SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS.
 - SEDIMENT TRAP SHALL BE MAINTAINED AND CLEANED AS SHOWN ON THE PLANS.
 - OUTLET PROTECTION SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS.
 - EROSION CONTROL MATTING SHALL BE INSTALLED AS INDICATED ON THE PLANS.
- SEDIMENT TRAP, PERIMETER CHANNELS, SEDIMENT BARRIERS AND OTHER MEASURES INTERSECTED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPLOUSE AND DISTURBANCE TAKES PLACE.
- CONSTRUCTION SHALL BE SEQUENCED SO THAT GRADING OPERATIONS WILL BEGIN AND END AS SOON AS POSSIBLE. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES.
- GROUND STABILIZATION SHALL BE IMPLEMENTED USING APPROPRIATE TECHNIQUES AND WITHIN THE TIMEFRAMES SPECIFIED ON EXHIBIT 4 AND SPECIFICATIONS ON THIS PLAN SET.
- SEDIMENT TRACKING ON THE PUBLIC ROADWAY IS NOT ALLOWED. IN ACCORDANCE WITH NORTH CAROLINA SEDIMENTATION CONTROL LAW IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO A PUBLIC ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA ON-SITE. STREET WASHING OF SEDIMENTS TO STORM DRAIN SYSTEM IS NOT ALLOWED. STORM DRAINS MUST BE PROTECTED. AT MINIMUM, WITH STRAW WATLES OR SIMILAR BMP, IF STREET WASH WASTEWATER CAN BE CONTROLLED FROM ENTERING STORM DRAINAGE SYSTEM, THEN IT SHALL BE PUMPED BACK ONTO THE SITE, CONTAINED AND DISPOSED OF PROPERLY.
- EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED, DOCUMENTED AND REPORTED IN ACCORDANCE WITH THE SCHEDULE AND REQUIREMENTS ON EXHIBIT 2. NECESSARY REPAIRS MUST BE MADE IMMEDIATELY TO ENSURE EFFECTIVE AND EFFICIENT OPERATION.

CONSTRUCTION SEQUENCE

THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEViate SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENT CONTROL MEASURES WILL NOT BE ALLOWED.

THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH NORTH CAROLINA REGULATIONS, AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.

- PRIOR TO GRADING OR OTHER EARTH DISTURBANCE ON THE SITE, EROSION CONTROLS ARE TO BE INSTALLED.
- INSTALL SILT FENCE/STRAW WATLES/FILTER SOCKS AND SEDIMENT TRAP PRIOR TO CLEARING AND GRUBBING. IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES, CONSTRUCT PROPOSED SEDIMENT CONTROL DEVICES AS SOON AS CLEARING AND GRUBBING OPERATIONS ALLOW. DIVERSIONS SHALL BE SEEDED AND MULCHED IMMEDIATELY. SURFACE WATER SHALL BE DIVERTED AWAY FROM ALL EXCAVATIONS AND THE FACE OF ALL FILLS TO PREVENT FLOODING AND SOFTENING OF THE SUBGRADE OR COMPACTED MATERIALS.
- CLEAR AND GRUB, AND REMOVE TOPSOIL. TOPSOIL STOCKPILE SHALL BE SEEDED AND MULCHED. EXIST BMPs SHALL BE CONSTRUCTED AROUND TOPSOIL STOCKPILES. CLEARING AND GRUBBING SHALL REMOVE ALL BRUSH, TREES, ROOTS, STUMPS, FENCES, SIGNS OR ANY OTHER MATERIAL THAT IS NOT TO BE REUSED FOR THE CONSTRUCTION. NO CLEARING AND GRUBBING DEBRIS SHALL BE DEPOSITED ON-SITE. FOR CLEARING WITHIN LIMIT OF 100' OF EXISTING AND PROPOSED 42" DIAMETER CULVERTS, 24" DIAMETER SHALL BE CONFINED TO A STOCKPILE WITHIN 100' OF EXISTING AND PROPOSED 42" DIAMETER CULVERTS. EXISTING AND PROPOSED 42" DIAMETER CULVERTS SHALL BE REPAIRED AND/OR MULCHED AND MAY BE USED AS SITE BMPs WITH THE REMAINDER BEING PROPERLY DISPOSED OFF-SITE. CLEARING TO BE COMPLETED ONLY AS NEEDED WITHIN THE LOD TO COMPLETE THE PROJECT AS DEPICTED.
- TOPSOIL OUTSIDE OF THE WASTE DISPOSAL AREA SHALL BE STRIPPED AND STOCKPILED WITH APPROPRIATE STABILIZATION TO PREVENT EROSION. TOPSOIL SHALL BE REUSED DURING THE RECLAMATION PROCESS AS NEEDED.
- INSTALL THE COVER SYSTEM IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS ON THIS PLAN SET.
- CULVERT INLET AND OUTLET PROTECTION SHALL BE CONSTRUCTED IMMEDIATELY UPON PLACEMENT OF INLETS AND CULVERTS. INSTALLATION OF MATTING AND/OR RIPRAP TO OCCUR ONCE DITCHES ARE CONSTRUCTED.
- ANY PORTION OF THE SITE THAT HAS BEEN GRADED, INCLUDING, BUT NOT LIMITED TO, ANY STRIPPING, STUMPING, LEVELING, SLOPING OR TRENCHING MUST HAVE APPROPRIATE TEMPORARY OR PERMANENT BMPs INSTALLED PRIOR TO THE END OF EACH WORK DAY.
- GROUND STABILIZATION SHALL BE IMPLEMENTED USING APPROPRIATE TECHNIQUES AND WITHIN THE TIMEFRAMES AND SPECIFICATIONS ON THIS PLAN SET.
- UPON SITE STABILIZATION, EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED AND THE AREAS REPAIRED/STABILIZED IN ACCORDANCE WITH STATE STANDARDS.
- CONTRACTOR, ENGINEER, OWNER'S REPRESENTATIVE, AND NCDOS SHALL CONDUCT FINAL SITE INSPECTION PRIOR TO FINAL PAYMENT.

DESCRIPTION

REV. DATE BY

NOTES

NCDOS PRL - ANGIER REFUSE DUMP REMEDIATION
NORTH CAROLINA DEPT OF ENVIRONMENTAL QUALITY
2200 RAWLS CHURCH ROAD
ANGIER, HARNETT COUNTY
NORTH CAROLINA

Ierracon
Consulting Engineers and Scientists
700 MORRISON ROAD
COLUMBUS, OHIO 43228
PH: (614) 863-3113
FAX: (614) 863-4235

EXHIBIT 2

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
SCALE	AS SHOWN
DATE	12/20/2015
PROJECT NO.	15-000000
SHEET NO.	2 OF 15

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCGO1 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

Site Area Description	Required Ground Stabilization Timeframes	
	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1
		-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones
(e) Areas with slopes flatter than 4:1	14	-10 days for Falls Lake Watershed
		-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones
		-10 days for Falls Lake Watershed unless there is zero slope

GROUND STABILIZATION SPECIFICATION

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/flocculants.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/flocculants and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.

5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Identify leak pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.

2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.

2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

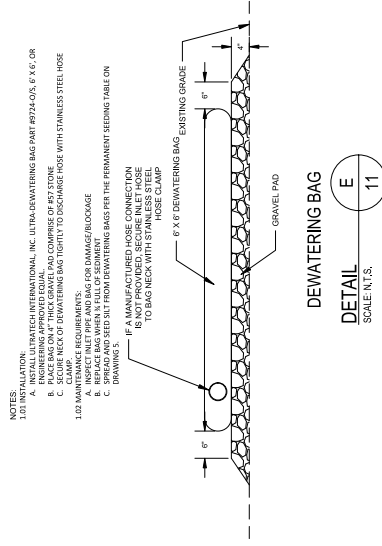
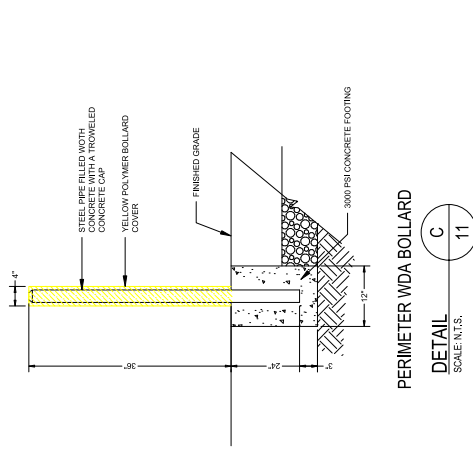
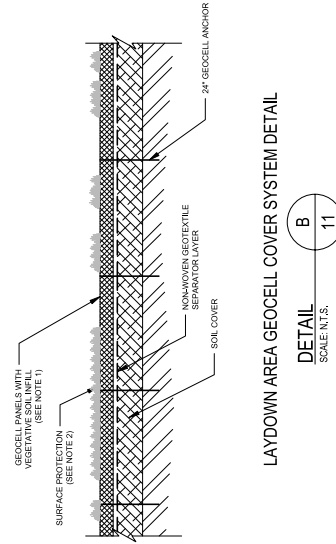
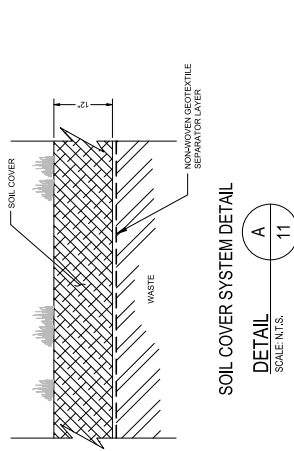
1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.

6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

DESIGNED BY:	BMV
DRAWN BY:	DAB
APPVD. BY:	MSF
SCALE:	as noted
DATE:	2/3/2025
JOB NO.	70247315
ACAD NO.	plmss8
SHEET NO.:	4 OF 15



NOTICE
PRE-REGULATORY LANDFILL
Contact the Property Owner
Regarding Land Use Restrictions
Prior to Disturbing Soil

TYPICAL NOTICE SIGN

DETAIL

SCALE: N.T.S.

D

11

[illegible]

DETAILS

NCDEQ PRLT - ANGLIER REFUSE DUMP REMEDIATION

NORTH CAROLINA DEPT OF ENVIRONMENTAL QUALITY

2200 RAWLS CHURCH ROAD

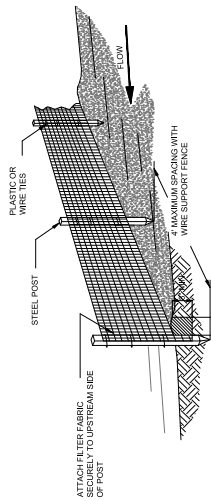
ANGIER, HARNETT COUNTY

NORTH CAROLINA

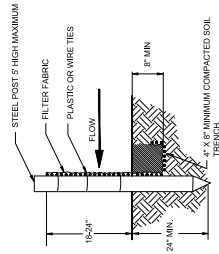
 **Terracon**
Consulting Engineers and Scientists

800 MORRISON ROAD
PH. (614) 883-3113
FAX. (614) 883-0475
COLUMBUS, OHIO 43220

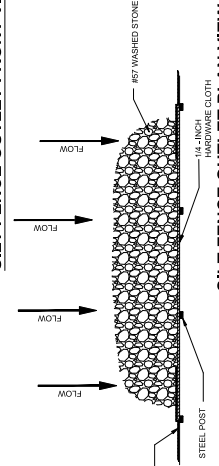
EXHIBIT 11	
DESIGNED BY:	EMV
DRAWN BY:	DAB
APPROV. BY:	MSF
SCALE:	as noted
DATE:	2/3/2025
JOB NO.	70247315
ACAD NO.	plmns6
SHEET NO.:	11 OF 15



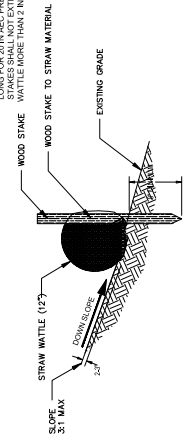
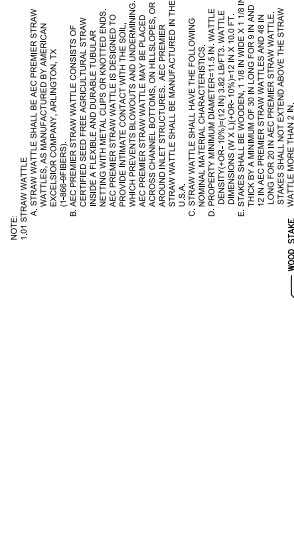
SILT FENCE TYPICAL INSTALLATION
4" MIN



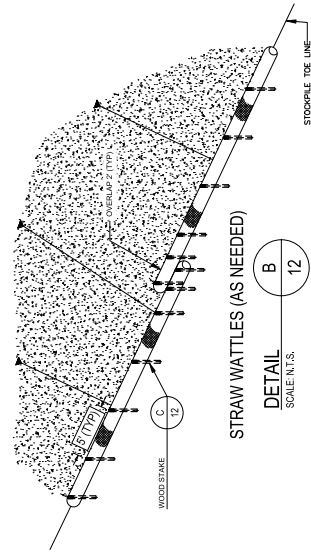
TYPICAL FENCE POST



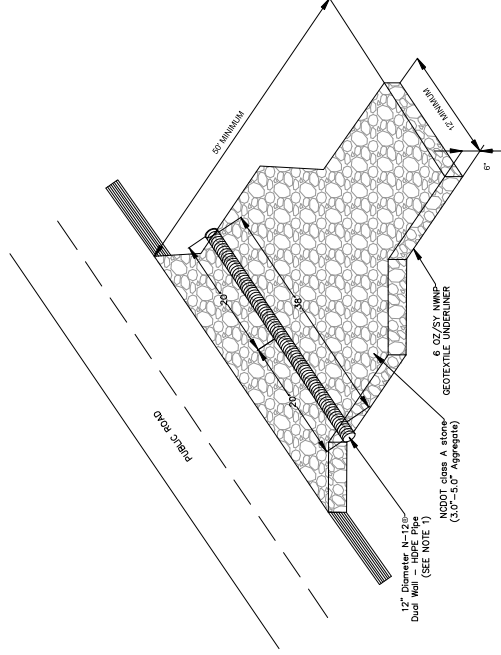
SILT FENCE OUTLET PLAN VIEW



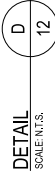
WOOD STAKE



STRAW WATTLES (AS NEEDED)



TYPICAL CONSTRUCTION ENTRANCE AND CONSTRUCTION ROAD



NOTE:
1. CULVERT TO BE ADDED WHERE APPLICABLE.

DESIGNED BY:	BMY
DRAWN BY:	DAB
APPROV. BY:	MSF
SCALE:	as noted
DATE:	2/3/2025
JOB NO.	70247315
ACAD NO.	pkms08
SHEET NO.:	12 OF 15



DETAILS

NCDEQ PRTL - ANGLIER REFUSE DUMP REMEDIATION

NORTH CAROLINA DEPT OF ENVIRONMENTAL QUALITY

2200 RAWLS CHURCH ROAD

ANGIER, HARNETT COUNTY

NORTH CAROLINA

[illegible]

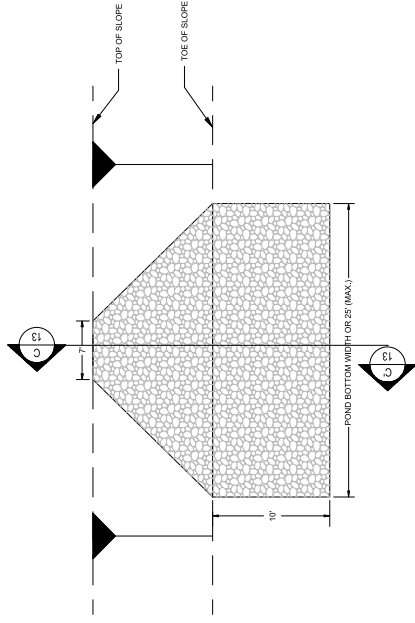
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DESIGNED BY:	BMV
DRAWN BY:	D48
APPROV. BY:	MSF
SCALE:	as noted
DATE:	2/3/2025
JOB NO.	70247315
ACAD NO.	plans#8
SHEET NO.:	13 OF 15



100 MORRISON ROAD
COLUMBUS, OHIO 43230

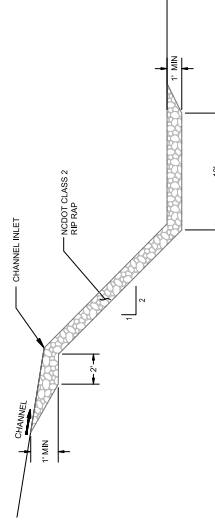
NCDEQ PRJF - ANGER REFUSE DUMP REMEDIATION
NORTH CAROLINA DEPT OF ENVIRONMENTAL QUALITY
2200 RAWLS CHURCH ROAD
ANGER, HARNETT COUNTY
NORTH CAROLINA

DETAILS



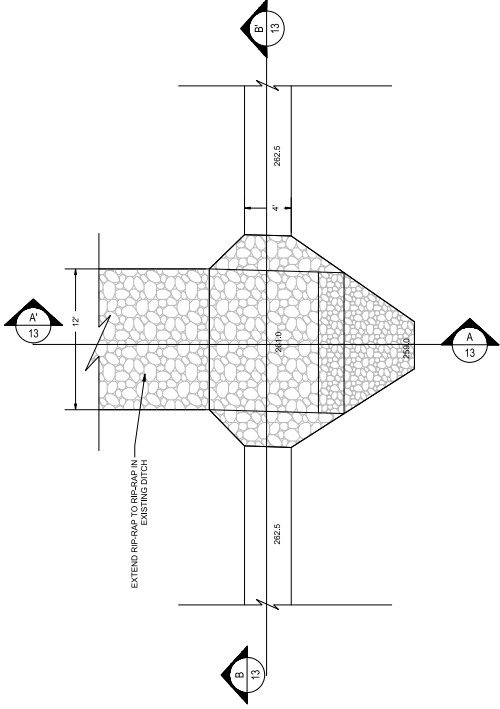
POND INLET RIP-RAP APRON PLAN

DETAIL
SCALE: N.T.S.

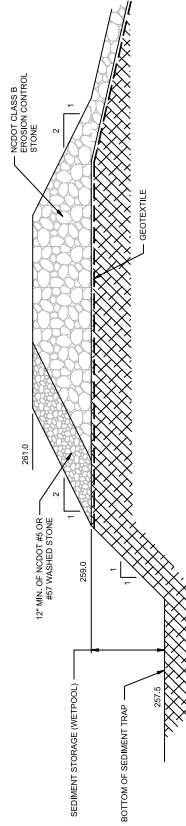


POND INLET RIP-RAP APRON SECTION

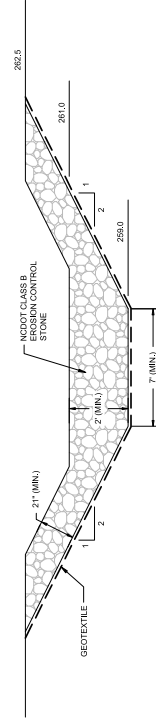
DETAIL
SCALE: N.T.S.



PLAN VIEW



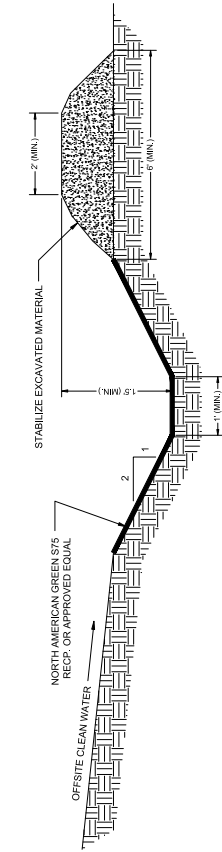
SECTION A-A'



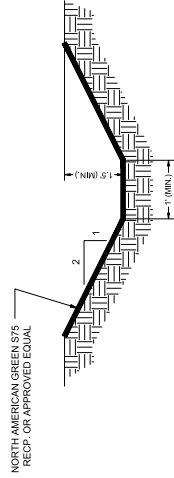
SECTION B-B'

SEDIMENT TRAP STONE SPILLWAY OUTLET

DETAIL
SCALE: N.T.S.



CLEAN WATER DIVERSION CHANNEL DETAIL



EAST TOE DRAINAGE CHANNEL DETAIL

[illegible]

DETAILS

NORTH CAROLINA DEPT OF ENVIRONMENTAL QUALITY
2200 RAWLS CHURCH ROAD
HARRISBURG, HARNETT COUNTY
NORTH CAROLINA

ANGIER, HARNETT COUNTY

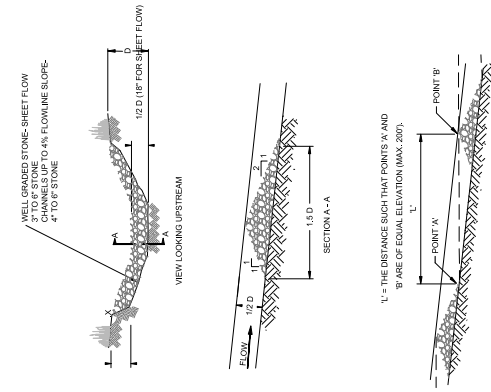


PH. (614) 863-3113
FAX. (614) 863-0475

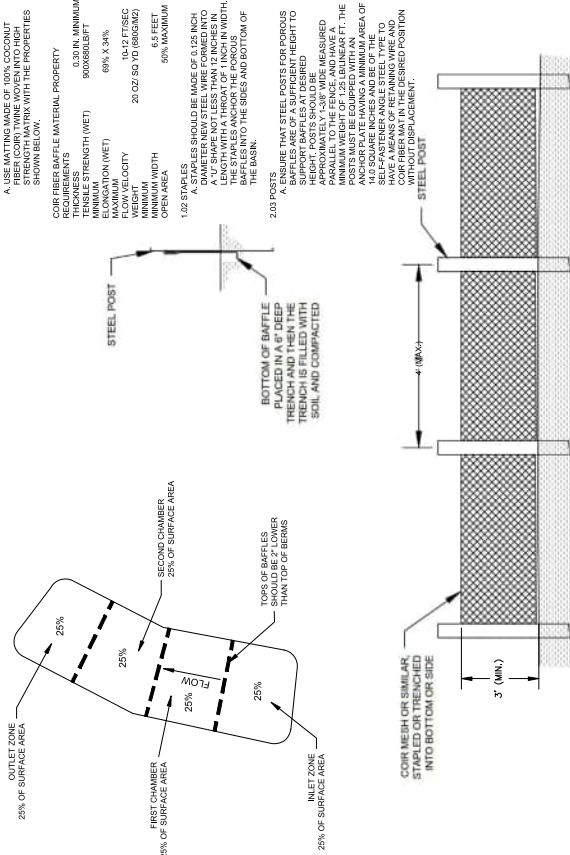
EXHIBIT 14

DESIGNED BY:	BMY
DRAWN BY:	DAB
APP'D. BY:	MSF
SCALE:	as noted
DATE:	2/3/2025
JOB NO.	70247315
ACAD. NO.	planned
SHEET NO.:	14 OF 15

NOTE:
REFER TO EXHIBIT 6 FOR POND LAYOUT AND DIMENSIONS



ROCK CHECK DAM



POROUS BAFFLE

NOTES

REFER TO EXHIBIT 6 FOR POND LAYOUT AND DIMENSIONS.

Appendix B NPDES Stormwater Discharge Permit – Ground Coverage Table



NPDES Stormwater Discharge Permit for Construction Activities



Cover Sheet for NCG010000

Revised August 2, 2011

What is this permit?

This is your **General Stormwater Permit for Construction Activities**, developed to meet federal National Pollutant Discharge Elimination System (NPDES) requirements. It is separate from your Erosion and Sedimentation Control (E&SC) Plan, which has been a North Carolina requirement for over 35 years.

Federal regulations adopted by the U.S. Environmental Protection Agency (EPA) and North Carolina Division of Water Quality (DWQ) require an NPDES permit for your project. The EPA has delegated DWQ authority to administer the NPDES program in North Carolina. Two divisions of the Department of Environment and Natural Resources are responsible for different parts of the federal permitting requirements.

The E&SC plan approved by the Division of Land Resources (or a delegated local program) contains the core erosion control requirements for your project. The NPDES General Permit issued by DWQ contains additional requirements related to a broader range of water quality issues. **These permits are related, but separate. Both contain conditions your project site must meet.**

Are there new requirements in this permit?

This General Permit reflects changes made in the federal regulations effective February 1, 2010, that regulate discharges from construction sites. The federal regulations resulted from litigation decisions that mandated construction activities over a certain size must contain additional specifications to reduce the amount of wastes and sediment loading that reach the nation's waters.

The Division of Water Quality and the Division of Land Resources established the Construction General Permit Technical Advisory Group (CTAG) to guide the development of this NPDES permit. A draft permit was available for public review in May 2011, and the final permit became effective on August 3, 2011.

The most notable change in the new permit is a requirement that ground stabilization, such as wheat straw application, be applied within 14 days from the last land-disturbing activity. For steep slopes, that area must be stabilized within 7 days. Please see page 2 of this document for details.

What does this permit require me to do?

You should read and become familiar with the provisions of this permit. Below is a list of the major requirements, with indications where those differ from the previous Construction General Permit.

EROSION AND SEDIMENT CONTROL PLAN

You must implement the Erosion and Sedimentation Control Plan approved for your project by the Division of Land Resources or by an approved local program. Adherence to that E&SC Plan is an enforceable component of the Stormwater Permit.

Your E&SC plan will identify

areas where the more stringent 7 and 14 day ground stabilization requirements apply. See "New Ground Stabilization Requirements" on page 2.

MONITORING & INSPECTIONS

▶ You must keep a rain gauge on site.

▶ Dedicated demolition and other waste areas and earthen material stockpiles must be located at least 50' from storm drains or streams unless no alternative is feasible (new requirement).

▶ You must inspect all E&SC measures **at least once a week**

and within 24 hours after any storm event greater than a half inch (during a 24-hour period). You must take immediate corrective action for any device failure.

▶ You must inspect all outlets where stormwater runoff leaves your site and evaluate the effect on nearby streams or wetlands. Corrective action must be taken if sediment is deposited off site or into a stream or wetland, or causes a visible increase in turbidity (cloudiness) of any waterbody.

▶ You must keep records of these inspections and any correc-

(continued on reverse side)

Permit Requirements (continued)

tive actions taken.

OPERATION & MAINTENANCE

You must provide the operation and maintenance necessary to maintain optimal performance of stormwater controls. This means **take corrective action** if erosion and sediment control facilities are not operating properly! Operation and maintenance includes, but is not limited to:

- ♦ Regularly cleaning out sedimentation basins.
- ♦ Stabilizing eroded banks or spillway structures.
- ♦ Repairing/clearing out inlets and outlets.
- ♦ Repairing piping, seepage and mechanical damage.
- ♦ Repairing silt fence damage.

REPORTING

Regular inspections are a chance

to check impacts to nearby waters. **If you observe sediment that has deposited in a stream or wetland, you must notify the Division of Water Quality regional office** within 24 hours and provide **written notice within 5 days** (see # 3 on page 6 of the General Permit). Please send a copy of this correspondence to the Division of Land Resources (DLR).

NON-COMPLIANCE & FINES

Take compliance seriously! Projects that violate Stormwater Permit conditions and/or have unauthorized water quality impacts are subject to fines. **Civil penalties of up to \$25,000.00 per day for each violation may be assessed.**

Who inspects me for what?

DWQ coordinates with DLR's

Land Quality Section to ensure compliance with state rules and regulations governing construction activities. That means your project is subject to enforcement by both divisions. In general, Land Quality staff will inspect your site on a regular basis. DWQ staff may also do inspections. The inspections may be routine in nature, or, the result of public complaints.

Do I need to submit a Notice of Intent to have coverage under this permit?

No. Once your E&SC Plan is approved, your site is automatically covered under this permit. You do not need to submit a Notice of Intent for a Certificate of Coverage.

NEW STABILIZATION TIMEFRAMES

Site Area Description	Stabilization	Timeframe Exceptions
 Perimeter dikes, swales, ditches and slopes	7 days	None
 High Quality Water (HQP) Zones	7 days	None
 Slopes steeper than 3:1	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 50' in length.
 All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQT Zones.

Do you need more information?

NC Stormwater Permitting

<http://portal.ncdenr.org/web/wq/ws/su>

NCG01 Permit Information

<http://portal.ncdenr.org/web/wq/ws/su/construction>

Map of Regional Offices

<http://portal.ncdenr.org/web/wq/home>

Still have questions? Call the DWQ Regional Office nearest your project's location:

Asheville Office	(828) 296-4500	Washington Office	(252) 946-6481
Fayetteville Office	(910) 433-3300	Wilmington Office	(910) 796-7215
Mooreville Office	(704) 663-1699	Winston-Salem Office	(336) 771-5000
Raleigh Office	(919) 791-4200	Central Office	(919) 807-6300

Appendix C Stormwater Calculations

Angier Refuse Dump Remediation

Stormwater Calculations

1. Introduction

This section describes and provides supporting calculations for the stormwater drainage features that will be implemented for erosion and sediment control during remediation construction at the Angier Refuse Dump Site. The stormwater drainage features include a sediment trap and various drainage channels that collect and convey runoff from a total of approximately 0.7-acre drainage area to the sediment trap and approximately 0.7 offsite drainage area diverted to the creek (Spring Branch).

The drainage design includes determination of drainage channel, sediment trap and spillway sizes. The design methodology and calculations contained in this section were developed to meet the requirements of the North Carolina Department of Environmental Quality Erosion and sediment Control Practice Standards and Specifications (May 2013). The Remediation Plan drawings in Appendix C of the E&SC Plan show the locations and details of these stormwater drainage features.

The stormwater drainage features are designed in accordance with Practice 6.60 for the Sediment Trap and Practice 6.20, Temporary Diversions for the drainage channels summarized as follows:

Practice 6.60 Sediment Trap

Parameter	Design Criteria
Primary Spillway	Stone Spillway
Maximum Drainage Area (acres)	5 Acres
Minimum Volume (cubic feet)	3600 cubic feet per acre of disturbed area
Minimum Surface Area (square feet)	435 square feet per cfs of Q10 peak inflow
Minimum L/W Ratio	2:1
Minimum Depth (feet)	3.5 feet, 1.5 feet excavated below grade
Maximum Height (feet)	Weir elevation 3.5 feet above grade
Dewatering Mechanism	Stone Spillway
Minimum Dewatering Time	N/A
Baffles Required (units)	3

Practice 6.20, Temporary Diversions

Parameter	Design Criteria
Drainage Area	5 Acres or less
Capacity	Peak runoff from 10-year storm
Velocity	Per Table 8.05a, Permissible velocity for erosion protection
Side Slope	2:1 or flatter
Ridge Top width	2 feet minimum
Ridge Freeboard	0.3 feet minimum

2. Sediment Trap Calculations and Analyses

2.1.1 Runoff and peak discharge calculations

Calculations of runoff, peak discharges and analyses of the sediment trap along with its spillway were performed using Bentley's PondPack software (PondPack).

PondPack is a versatile software program to model site drainage studies. The program can be used to model rainfall and runoff from watersheds to detention and retention facilities, outlet structures, and channels.

Development of the PondPack model requires drainage area, precipitation, runoff curve number and time of concentration and input defining the sediment trap and spillway. Summary of the hydrologic data used as input in the PondPack model is presented in the Following Table 2.

Table 2. Sediment Basin PondPack Model Input Information

	Sediment Trap
Drainage Area (Acres)	0.7
10-year/24-hour Precipitation Depth (inches)	5.3
Curve Number	86

The basin elevation-area volume curve and drainage area used as input in the PondPack were calculated using AutoCAD. The precipitation data was obtained from NOAA Precipitation Frequency Data Server, NOAA Atlas 14 (See attachment D-I).

The SCS hydrologic methods were used in PondPack to determine the 10-year/24-hour runoff volume and peak flow (discharge). The following Table 3 provides the peak discharge of runoff to the sediment trap estimated from the PondPack Model.

Table 3. Peak Discharge Estimate From PondPack Model

Storm Event	Sediment Trap
10-year/24-hour (cfs)	3.9

2.1.4 Sediment Trap Design and Analysis

The water from the sediment trap will discharge through a trapezoidal stone spillway with top of stone at elevation 261 feet and width of 7 feet. From the PondPack analysis, the maximum water surface elevation during the 10-year/24-hour storm is 261.2 feet. The top of sediment trap embankment is at elevation 262.5 feet, providing 1.3 feet of freeboard.

Thus, the emergency spillways will safely discharge flow from the 10-year/24-hour storm event.

The output from the Pondpack model analysis is presented in Appendix D-II.

Analysis of the sediment trap design are presented in the following Table 4.

Table 4. Sediment Trap Design Analysis

Parameter	Design Criteria	Required	Design
Primary Spillway	Stone Spillway		
Maximum Drainage Area (acres)		<5	0.7
Minimum Volume (cubic feet)	3600 cubic feet per acre of disturbed area	2,520	3,964
Minimum Surface Area (square feet)	435 square feet per cfs of Q10 peak inflow	1,697	1,742
Minimum L/W Ratio		2:1	2:1
Minimum Depth (feet)	3.5 feet, 1.5 feet excavated below grade	3.5	3.5
Maximum Height (feet)	Weir elevation 3.5 feet above grade	3.5	3.5
Dewatering Mechanism		Stone Spillway	Stone Spillway
Minimum Dewatering Time		N/A	N/A
Baffles Required (units)		3	3

3 Other Drainage Features

3.1 Runoff and peak discharge calculations

The 10-year/24-hour peak discharges from runoff to the other drainage features (drainage channels) were estimated using their respective sub-drainage areas and the PondPack peak discharge estimates (3.9 cfs/0.7 acres or 5.6 cfs/acre for the Sediment Trap area). The following Table 5 presents the Peak discharge estimates.

Table 5. Peak discharge estimates for Other Drainage Features

Drainage Channels	Drainage Area (Acres)	Q ₁₀ req (cfs)
East Toe Drainage Channel	0.6	3.4
Clearwater Diversion Channel	0.7	3.9

3.2 Other Drainage Channels Design and Analysis

These drainage channels were designed to handle the peak discharge from the 10-year/24-hour storm event in accordance with Practice 6.20.

The following Table 6 presents the drainage channels, their drainage areas, peak discharges, designed cross sections and capacity and velocity calculations.



Table 6. Other Drainage Features Design Calculation

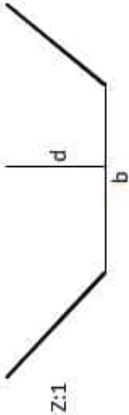
From Manning Eqn,

$$Q = (1.49/n) (A) (R)^{2/3} (S)^{1/2}$$

$$V = Q/A$$

Where:

- Q = discharge (cfs)
- V = average velocity in cross section (ft/s)
- n = Manning's roughness coefficient
- A = cross-sectional area (ft²)
- R = hydraulic radius = A/P (ft)
- P = wetted perimeter (ft)
- S = channel bed slope (ft/ft)



Drainage Feature	Drainage Area	Q ₁₀ = cfs/acre									
		Q ₁₀ req	Z	b	d	A	P	R	S	n	Q > Q ₁₀ req
East Toe Drainage Channel	0.6	3.4	2	1	1.2	4.08	6.37	0.641	0.005	0.039	8.2
Clearwater Diversion Channel	0.7	3.9	2	1	1.2	4.08	6.37	0.641	0.005	0.039	8.2

Notes

- 1. RECP = Rolled Erosion Control Product, such as North American Green S75, see product information in Attachment D-III for n and permissible velocity

ATTACHMENT D-I

Precipitation Data



NOAA Atlas 14, Volume 2, Version 3
Location name: Angier, North Carolina, USA*
Latitude: 35.5346°, Longitude: -78.7626°
Elevation: 261 ft**
* source: ESRI Maps
** source: USGS



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 & aerals](#)

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	0.421 (0.385-0.462)	0.493 (0.451-0.541)	0.568 (0.519-0.622)	0.631 (0.576-0.691)	0.700 (0.636-0.766)	0.752 (0.681-0.822)	0.800 (0.720-0.873)	0.842 (0.754-0.921)	0.893 (0.792-0.975)	0.934 (0.822-1.02)
10-min	0.673 (0.615-0.738)	0.788 (0.721-0.865)	0.909 (0.832-0.996)	1.01 (0.921-1.11)	1.12 (1.01-1.22)	1.20 (1.08-1.31)	1.27 (1.14-1.39)	1.34 (1.20-1.46)	1.41 (1.25-1.54)	1.47 (1.30-1.61)
15-min	0.841 (0.769-0.922)	0.991 (0.906-1.09)	1.15 (1.05-1.26)	1.28 (1.16-1.40)	1.42 (1.28-1.55)	1.52 (1.37-1.66)	1.61 (1.45-1.75)	1.68 (1.51-1.84)	1.78 (1.58-1.94)	1.85 (1.62-2.02)
30-min	1.15 (1.05-1.26)	1.37 (1.25-1.50)	1.63 (1.49-1.79)	1.85 (1.69-2.03)	2.10 (1.90-2.29)	2.28 (2.07-2.50)	2.46 (2.21-2.69)	2.62 (2.35-2.87)	2.83 (2.51-3.09)	2.99 (2.63-3.27)
60-min	1.44 (1.31-1.58)	1.72 (1.57-1.88)	2.10 (1.92-2.30)	2.41 (2.20-2.64)	2.79 (2.54-3.05)	3.10 (2.80-3.38)	3.39 (3.05-3.70)	3.68 (3.29-4.02)	4.06 (3.60-4.43)	4.37 (3.84-4.78)
2-hr	1.69 (1.53-1.87)	2.03 (1.85-2.25)	2.51 (2.28-2.78)	2.92 (2.64-3.23)	3.44 (3.09-3.80)	3.87 (3.46-4.27)	4.30 (3.82-4.74)	4.73 (4.18-5.22)	5.32 (4.65-5.86)	5.81 (5.04-6.41)
3-hr	1.79 (1.63-1.99)	2.15 (1.96-2.39)	2.67 (2.43-2.96)	3.13 (2.84-3.47)	3.73 (3.35-4.12)	4.24 (3.79-4.68)	4.76 (4.22-5.24)	5.30 (4.66-5.84)	6.05 (5.26-6.67)	6.70 (5.76-7.40)
6-hr	2.14 (1.95-2.36)	2.57 (2.35-2.84)	3.19 (2.91-3.52)	3.74 (3.40-4.12)	4.48 (4.04-4.92)	5.10 (4.57-5.60)	5.75 (5.11-6.30)	6.43 (5.66-7.04)	7.38 (6.40-8.08)	8.20 (7.03-9.00)
12-hr	2.52 (2.29-2.78)	3.02 (2.76-3.34)	3.77 (3.43-4.17)	4.45 (4.03-4.92)	5.36 (4.81-5.89)	6.15 (5.48-6.74)	6.97 (6.15-7.64)	7.85 (6.86-8.60)	9.09 (7.81-9.96)	10.2 (8.63-11.2)
24-hr	2.94 (2.72-3.19)	3.56 (3.30-3.86)	4.50 (4.16-4.88)	5.25 (4.84-5.68)	6.27 (5.76-6.79)	7.10 (6.50-7.68)	7.94 (7.26-8.59)	8.82 (8.04-9.55)	10.0 (9.10-10.9)	11.0 (9.94-12.0)
2-day	3.42 (3.16-3.69)	4.12 (3.82-4.45)	5.17 (4.78-5.59)	6.00 (5.53-6.48)	7.14 (6.56-7.71)	8.04 (7.37-8.69)	8.98 (8.20-9.71)	9.95 (9.06-10.8)	11.3 (10.2-12.2)	12.4 (11.1-13.4)
3-day	3.62 (3.36-3.90)	4.36 (4.05-4.70)	5.44 (5.04-5.86)	6.29 (5.82-6.77)	7.46 (6.88-8.03)	8.40 (7.72-9.04)	9.36 (8.57-10.1)	10.4 (9.46-11.2)	11.7 (10.7-12.7)	12.8 (11.6-13.9)
4-day	3.83 (3.56-4.11)	4.60 (4.28-4.94)	5.71 (5.30-6.13)	6.59 (6.11-7.06)	7.79 (7.19-8.36)	8.76 (8.06-9.40)	9.75 (8.94-10.5)	10.8 (9.85-11.6)	12.2 (11.1-13.1)	13.3 (12.1-14.3)
7-day	4.43 (4.12-4.75)	5.29 (4.93-5.68)	6.48 (6.04-6.96)	7.43 (6.90-7.97)	8.73 (8.09-9.36)	9.76 (9.02-10.5)	10.8 (9.97-11.6)	11.9 (10.9-12.8)	13.4 (12.3-14.5)	14.6 (13.3-15.8)
10-day	5.06 (4.74-5.41)	6.04 (5.65-6.45)	7.29 (6.82-7.78)	8.27 (7.71-8.82)	9.59 (8.93-10.2)	10.6 (9.87-11.4)	11.7 (10.8-12.5)	12.8 (11.8-13.7)	14.2 (13.1-15.2)	15.4 (14.1-16.5)
20-day	6.78 (6.35-7.25)	8.02 (7.51-8.58)	9.53 (8.91-10.2)	10.7 (10.0-11.4)	12.3 (11.5-13.1)	13.6 (12.6-14.5)	14.8 (13.7-15.8)	16.1 (14.9-17.2)	17.8 (16.4-19.1)	19.2 (17.6-20.6)
30-day	8.44 (7.92-9.00)	9.95 (9.33-10.6)	11.6 (10.9-12.4)	12.9 (12.1-13.8)	14.6 (13.6-15.6)	15.9 (14.8-17.0)	17.2 (16.0-18.4)	18.5 (17.2-19.8)	20.2 (18.7-21.7)	21.6 (19.9-23.1)
45-day	10.7 (10.2-11.4)	12.6 (11.9-13.4)	14.5 (13.7-15.4)	16.0 (15.0-16.9)	17.8 (16.8-18.9)	19.2 (18.1-20.4)	20.6 (19.4-21.9)	22.0 (20.6-23.3)	23.8 (22.2-25.3)	25.1 (23.4-26.8)
60-day	12.9 (12.2-13.6)	15.1 (14.2-15.9)	17.1 (16.2-18.1)	18.7 (17.7-19.8)	20.7 (19.6-21.9)	22.3 (21.0-23.6)	23.8 (22.3-25.1)	25.2 (23.6-26.7)	27.1 (25.3-28.7)	28.5 (26.6-30.3)

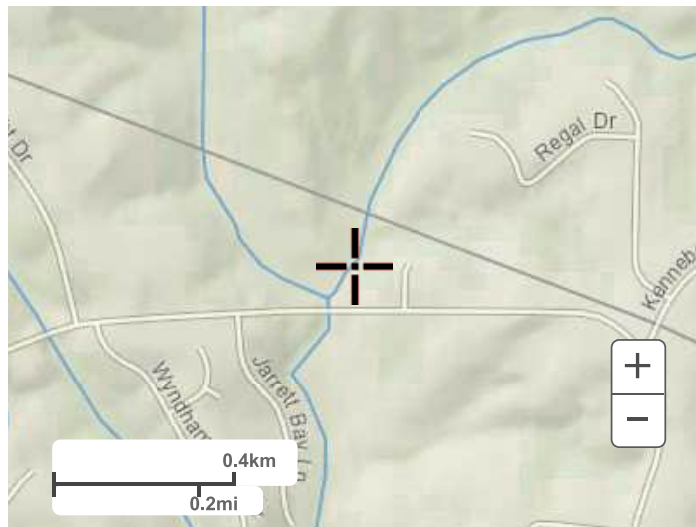
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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



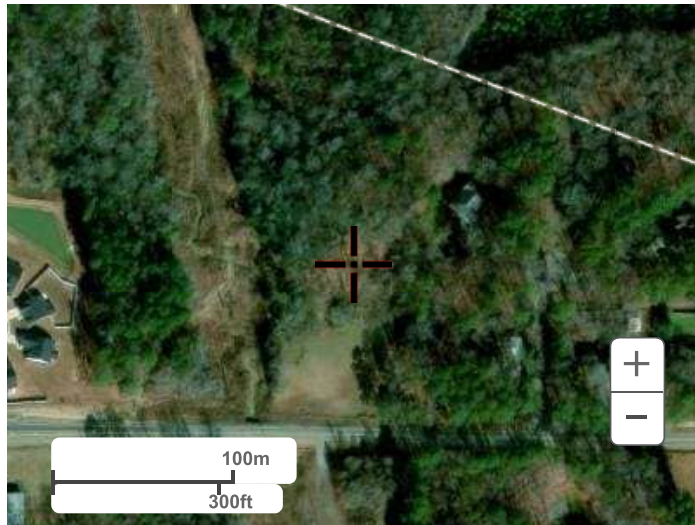
Large scale terrain



Large scale map



Large scale aerial



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[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

ATTACHMENT D-II

PondPack Output

Scenario: 10-Yr Storm

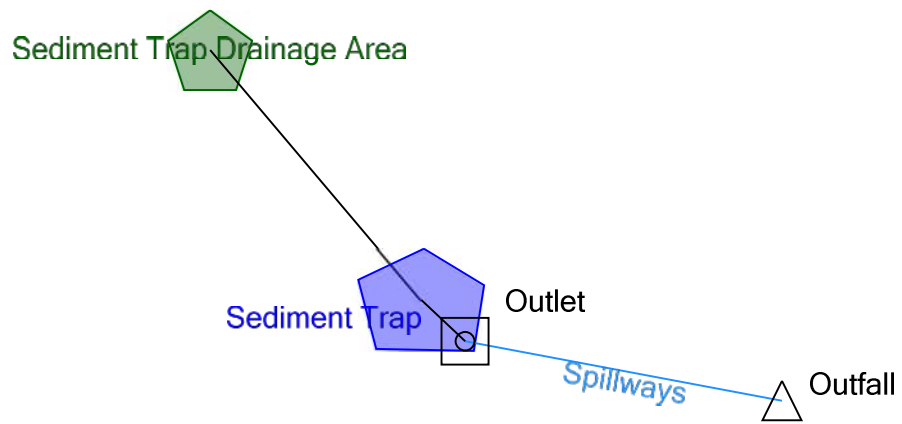


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Sediment Trap

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
Sediment Trap Drainage Area	10-Yr Storm	10	0.216	11.900	3.87

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
Outfall	10-Yr Storm	10	0.216	11.950	3.74

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Sediment Trap (IN)	10-Yr Storm	10	0.216	11.900	3.87	(N/A)	(N/A)
Sediment Trap (OUT)	10-Yr Storm	10	0.216	11.950	3.74	261.23	0.101

Sediment Trap

Subsection: Runoff CN-Area
Label: Sediment Trap Drainage Area
Scenario: 10-Yr Storm

Return Event: 10 years
Storm Event: Angier

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
Newly graded area (pervious only - Newly graded area (pervious only) - Soil B	86.000	0.700	0.0	0.0	86.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.700	(N/A)	(N/A)	86.000

Sediment Trap

Subsection: Unit Hydrograph Summary
 Label: Sediment Trap Drainage Area
 Scenario: 10-Yr Storm

Return Event: 10 years
 Storm Event: Angier

Storm Event	Angier
Return Event	10 years
Duration	35.000 hours
Depth	5.3 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.700 acres
Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.917 hours
Flow (Peak, Computed)	3.99 ft ³ /s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	3.87 ft ³ /s
Drainage Area	
SCS CN (Composite)	86.000
Area (User Defined)	0.700 acres
Maximum Retention (Pervious)	1.6 in
Maximum Retention (Pervious, 20 percent)	0.3 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.7 in
Runoff Volume (Pervious)	0.216 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.216 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Sediment Trap

Subsection: Unit Hydrograph Summary

Label: Sediment Trap Drainage Area

Scenario: 10-Yr Storm

Return Event: 10 years

Storm Event: Angier

SCS Unit Hydrograph Parameters

Unit peak, qp	9.52 ft ³ /s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Sediment Trap

Subsection: Elevation-Area Volume Curve

Label: Sediment Trap

Scenario: 10-Yr Storm

Return Event: 10 years

Storm Event: Angier

Elevation (ft)	Planimeter (ft ²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
257.50	0.0	0.012	0.000	0.000	0.000
258.00	0.0	0.016	0.042	0.007	0.007
259.00	0.0	0.025	0.061	0.020	0.027
260.00	0.0	0.031	0.085	0.028	0.056
261.00	0.0	0.040	0.108	0.036	0.091
262.00	0.0	0.050	0.135	0.045	0.136
262.50	0.0	0.055	0.157	0.026	0.162

Sediment Trap

Subsection: Outlet Input Data

Label: Stone Spillway

Scenario: 10-Yr Storm

Return Event: 10 years

Storm Event: Angier

Requested Pond Water Surface Elevations

Minimum (Headwater)	257.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	262.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Irregular Weir Tailwater Settings	Weir Tailwater	Forward	TW	261.00 (N/A)	262.50 (N/A)

Sediment Trap

Subsection: Outlet Input Data

Label: Stone Spillway

Scenario: 10-Yr Storm

Return Event: 10 years

Storm Event: Angier

Structure ID: Weir

Structure Type: Irregular Weir

Station (ft)	Elevation (ft)
0.00	1.50
3.00	0.00
10.00	0.00
13.00	1.50

Lowest Elevation 261.00 ft

Weir Coefficient 3.00 (ft^{0.5})/s

Structure ID: TW

Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall
----------------	--------------

Convergence Tolerances

Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

Sediment Trap

Subsection: Individual Outlet Curves
 Label: Stone Spillway
 Scenario: 10-Yr Storm

Return Event: 10 years
 Storm Event: Angier

RATING TABLE FOR ONE OUTLET TYPE
 Structure ID = Weir (Irregular Weir)

Upstream ID = (Pond Water Surface)
 Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
257.50	0.00	(N/A)	0.00
258.00	0.00	(N/A)	0.00
258.50	0.00	(N/A)	0.00
259.00	0.00	(N/A)	0.00
259.50	0.00	(N/A)	0.00
260.00	0.00	(N/A)	0.00
260.50	0.00	(N/A)	0.00
261.00	0.00	(N/A)	0.00
261.50	8.17	(N/A)	0.00
262.00	25.24	(N/A)	0.00
262.50	50.27	(N/A)	0.00

Computation Messages

E < Y min=261.00
 E < Y min=261.00
 E < Y min=261.00
 E < Y min=261.00
 E < Y min=261.00
 E < Y min=261.00
 E < Y min=261.00
 E = Y min=261.00
 Max.H=.50;
 Max.Htw=free out;; W(ft)
 =9.00
 Max.H=1.00;
 Max.Htw=free out;; W(ft)
 =11.00
 Max.H=1.50;
 Max.Htw=free out;; W(ft)
 =13.00

Sediment Trap

Subsection: Composite Rating Curve
 Label: Stone Spillway
 Scenario: 10-Yr Storm

Return Event: 10 years
 Storm Event: Angier

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
257.50	0.00	(N/A)	0.00
258.00	0.00	(N/A)	0.00
258.50	0.00	(N/A)	0.00
259.00	0.00	(N/A)	0.00
259.50	0.00	(N/A)	0.00
260.00	0.00	(N/A)	0.00
260.50	0.00	(N/A)	0.00
261.00	0.00	(N/A)	0.00
261.50	8.17	(N/A)	0.00
262.00	25.24	(N/A)	0.00
262.50	50.27	(N/A)	0.00

Contributing Structures

None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Weir
Weir
Weir
Weir

Sediment Trap

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M

Master Network Summary...1

S

Sediment Trap (Elevation-Area Volume Curve, 10 years (10-Yr Storm))...5

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Stone Spillway (Composite Rating Curve, 10 years (10-Yr Storm))...9

Stone Spillway (Individual Outlet Curves, 10 years (10-Yr Storm))...8

Stone Spillway (Outlet Input Data, 10 years (10-Yr Storm))...6, 7

ATTACHMENT D-III

Product Information



Specification Sheet

EroNet™ S75® Erosion Control Blanket

DESCRIPTION

The short-term single net erosion control blanket shall be a machine-produced mat of 100% agricultural straw with a functional longevity of up to 12 months. (NOTE: functional longevity may vary depending upon climatic conditions, soil, geographical location, and elevation). The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top side with a lightweight photodegradable polypropylene netting having an approximate 0.50 x 0.50 in. (1.27 x 1.27 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers with degradable thread. The blanket shall be manufactured with a colored thread stitched along both outer edges (approximately 2-5 inches [5-12.5 cm] from the edge) as an overlap guide for adjacent mats.

The S75 shall meet Type 2.C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17

Material Content

Matrix	100% Straw Fiber	0.5 lbs/sq yd (0.27 kg/sm)
Netting	Top side only, lightweight photodegradable	1.5 lb/1000 sq ft (0.73 kg/100 sm)
Thread	Degradable	

Standard Roll Sizes

Width	6.67 ft (2.03 m)	8.0 ft (2.4 m)	16 ft (4.87 m)
Length	108 ft (32.92 m)	112 ft (34.14 m)	112 ft (34.14 m)
Weight ± 10%	40 lbs (18.14 kg)	50 lbs (22.68 kg)	100 lbs (45.36 kg)
Area	80 sq yd (66.9 sm)	100 sq yd (83.61 sm)	200 sq yd (167.22 sm)



Index Property	Test Method	Typical
Thickness	ASTM D6525	0.28 in. (7 mm)
Resiliency	ECTC Guidelines	78.8%
Water Absorbency	ASTM D1117	301%
Mass/Unit Area	ASTM D6475	9.76 oz/sy (332 g/sm)
Swell	ECTC Guidelines	15%
Smolder Resistance	ECTC Guidelines	Yes
Stiffness	ASTM D1388	6.31 oz-in
Light Penetration	ASTM D6567	6.0%
Tensile Strength - MD	ASTM D6818	122.4 lbs/ft (1.81 kN/m)
Elongation - MD	ASTM D6818	36.1%
Tensile Strength - TD	ASTM D6818	79.2 lbs/ft (1.17 kN/m)
Elongation - TD	ASTM D6818	26.8%
Biomass Improvement	ASTM D7322	301%

Design Permissible Shear Stress

Unvegetated Shear Stress	1.55 psf (74 Pa)
Unvegetated Velocity	5.00 fps (1.52 m/s)

Slope Design Data: C Factors

Slope Gradients (S)

Slope Length (L)	≤ 3:1	3:1 – 2:1	≥ 2:1
≤ 20 ft (6 m)	0.029	N/A	N/A
20-50 ft	0.11	N/A	N/A
≥ 50 ft (15.2 m)	0.19	N/A	N/A

NTPEP Large-Scale Slope Testing
ASTM D6459 - C-factor = 0.012

Roughness Coefficients – Unveg.

Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.055
0.50 – 2.0 ft	0.055-0.021
≥ 2.0 ft (0.60 m)	0.021



Western Green
4609 E. Boonville-New Harmony Rd.
Evansville, IN 47725

nagreen.com
800-772-2040

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Appendix D Financial Responsibility/Ownership Form

**FINANCIAL RESPONSIBILITY/OWNERSHIP FORM
SEDIMENTATION POLLUTION CONTROL ACT**

No person may initiate any land-disturbing activity on one or more acres as covered by the Act before this form and an acceptable erosion and sedimentation control plan have been completed and approved by the Land Quality Section, N.C. Department of Environmental Quality. Submit the completed form to the appropriate Regional Office. (Please type or print and, if the question is not applicable or the e-mail address or phone number is unavailable, place N/A in the blank.)

Part A.

1. Project Name Angier Refuse Dump
2. Location of land-disturbing activity: County Harnett City or Township Angier
Highway/Street Rawls Road Latitude(decimal degrees) 35.5346 Longitude(decimal degrees) -78.7626
3. Approximate date land-disturbing activity will commence: _____
4. Purpose of development (residential, commercial, industrial, institutional, etc.): Closed Landfill
5. Total acreage disturbed or uncovered (including off-site borrow and waste areas): 1.7
6. Amount of fee enclosed: \$ _____. The application fee of \$100.00 per acre (rounded up to the next acre) is assessed without a ceiling amount (Example: 8.10-acre application fee is \$900). Checks should be addressed to NCDEQ.
7. Has an erosion and sediment control plan been filed? Yes ☐ Enclosed ☐ No ☐
8. Person to contact should erosion and sediment control issues arise during land-disturbing activity:
Name Michael Dial E-mail Address michael.dial@terracon.com
Phone: Office # 984-202-4055 Mobile # 919-451-8664
9. Landowner(s) of Record (attach accompanied page to list additional owners):

Name	Phone: Office #	Mobile #
Current Mailing Address	Current Street Address	
City	State	Zip
City	State	Zip
10. Deed Book No. _____ Page No. _____ Provide a copy of the most current deed.

Part B.

1. Company(ies) who are financially responsible for the land-disturbing activity (Provide a comprehensive list of all responsible parties on accompanied page.) *If the company is a sole proprietorship or if the landowner(s) is an individual(s), the name(s) of the owner(s) may be listed as the financially responsible party(ies).*

_____ Company Name	_____ E-mail Address
_____ Current Mailing Address	_____ Current Street Address
_____ City	_____ City
_____ State	_____ State
_____ Zip	_____ Zip
Phone: Office # _____	Mobile # _____

Note: If the Financially Responsible Party is not the owner of the land to be disturbed, include with this form the landowner's signed and dated written consent for the applicant to submit a draft erosion and sedimentation control plan and to conduct the anticipated land disturbing activity.

2. (a) If the Financially Responsible Party is a domestic company registered on the NC Secretary of State business registry, give name and street address of the Registered Agent:

_____ Name of Registered Agent	_____ E-mail Address
_____ Current Mailing Address	_____ Current Street Address
_____ City	_____ City
_____ State	_____ State
_____ Zip	_____ Zip
Phone: Office # _____	Mobile # _____

Name of Individual to Contact (if Registered Agent is a company)

- (b) If the Financially Responsible Party is not a resident of North Carolina, give name and street address of the designated North Carolina agent who is registered on the NC Secretary of State business registry:

_____ Name of Registered Agent	_____ E-mail Address
_____ Current Mailing Address	_____ Current Street Address
_____ City	_____ City
_____ State	_____ State
_____ Zip	_____ Zip
Phone: Office # _____	Mobile # _____

Name of Individual to Contact (if Registered Agent is a company)

(c) If the Financially Responsible Party is engaging in business under an assumed name, give name under which the company is Doing Business As. If the Financially Responsible Party is an individual, General Partnership, or other company not registered and doing business under an assumed name, **attach a copy of the Certificate of Assumed Name.**

Company DBA Name

The above information is true and correct to the best of my knowledge and belief and was provided by me under oath. (This form must be signed by the Financially Responsible Person if an individual(s) or his attorney-in-fact, or if not an individual, by an officer, director, partner, or registered agent with the authority to execute instruments for the Financially Responsible Party). I agree to provide corrected information should there be any change in the information provided herein.

Type or print name

Title or Authority

Signature

Date

I, _____, a Notary Public of the County of _____

State of North Carolina, hereby certify that _____ appeared personally before me this day and being duly sworn acknowledged that the above form was executed by him/her.

Witness my hand and notarial seal, this _____ day of _____, 20_____

Seal

Notary

My commission expires _____

Continued from Items 9 & 10 in Part A of the Financial Responsibility/Ownership Form for multiple owners. Attach copies of this page as needed to list all landowners.

Landowner 2 of Record:

_____ Name			_____ Phone: Office #		_____ Mobile #
_____ Current Mailing Address			_____ Current Street Address		
_____ City	_____ State	_____ Zip	_____ City	_____ State	_____ Zip
Deed Book No. _____ Page No. _____ Provide a copy of the most current deed.					

Landowner 3 of Record:

_____ Name			_____ Phone: Office #		_____ Mobile #
_____ Current Mailing Address			_____ Current Street Address		
_____ City	_____ State	_____ Zip	_____ City	_____ State	_____ Zip
Deed Book No. _____ Page No. _____ Provide a copy of the most current deed.					

Landowner 4 of Record:

_____ Name			_____ Phone: Office #		_____ Mobile #
_____ Current Mailing Address			_____ Current Street Address		
_____ City	_____ State	_____ Zip	_____ City	_____ State	_____ Zip
Deed Book No. _____ Page No. _____ Provide a copy of the most current deed.					

Landowner 5 of Record:

_____ Name			_____ Phone: Office #		_____ Mobile #
_____ Current Mailing Address			_____ Current Street Address		
_____ City	_____ State	_____ Zip	_____ City	_____ State	_____ Zip
Deed Book No. _____ Page No. _____ Provide a copy of the most current deed.					

*Continued from Item 1 in Part B of the Financial Responsibility/Ownership Form for multiple parties.
Attach copies of this page as needed to list all financially responsible parties.*

Company 2 Name

E-mail Address

Current Mailing Address

Current Street Address

City State Zip

City State Zip

Phone: Office # _____

Mobile # _____

Company 3 Name

E-mail Address

Current Mailing Address

Current Street Address

City State Zip

City State Zip

Phone: Office # _____

Mobile # _____

Company 4 Name

E-mail Address

Current Mailing Address

Current Street Address

City State Zip

City State Zip

Phone: Office # _____

Mobile # _____

Company 5 Name

E-mail Address

Current Mailing Address

Current Street Address

City State Zip

City State Zip

Phone: Office # _____

Mobile # _____

Appendix B

Preliminary Notice Plats

WILLIAM F. HUNNEKE
CHIEF, SUPERFUND SECTION
DIVISION OF WASTE MANAGEMENT
_____, COUNTY, NORTH CAROLINA
I, A NOTARY PUBLIC OF SAID COUNTY AND
THAT
APPEARED BEFORE AND SIGN BEFORE ME
_____,
A.D., 2023.

(OFFICIAL SEAL)

 SIGNATURE

OWNER OR OWNER'S REPRESENTATIVE NAME (PRINTED)

OWNER OR OWNER'S REPRESENTATIVE TITLE AND ORGANIZATION

(OFFICIAL SEAL)

- LEGEND
- | | |
|-----|----------------------|
| DB | DEED BOOK |
| IPF | IRON PIPE FOUND |
| IRF | IRON ROD FOUND |
| N/F | NOW OR FORMERLY |
| PG | PAGE |
| PKF | PK NAIL FOUND |
| PP | POWER POLE |
| R/W | RIGHT OF WAY |
| P/L | PROPERTY LINE |
| CSF | COTTON SPINDLE FOUND |
| □ | WELL |
| □ | TELEPHONE PEDestal |
| □ | COMPUTED POINT |
| Y | SOIL LIGHT |
| ▲ | SOD GAS POINT |
| ▲ | MONITOR WELL |
| + | SPOT ELEVATION |

WASTE DEFINITION AREA



CLIENT IS REQUIRED BY STATE LAW TO
CONTACT 811 PRIOR TO ANY EXCAVATION
WORK BEING PERFORMED ON THIS SITE



1730 Varsity Drive Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
NC FIRM # F-1222

Internet Site: <http://www.mckimcreed.com>

DATE:

NOTICE OF ENVIRONMENTAL CONTAMINATION
OF

OF
A PORTION OF THIS SITE:
ANGIER REEFUSE DUMP

ID# NONC0000349

ANTHONY J. MENNELLA AND WIFE, CAROL MENNELLA

DATE: 6-22-23

NORTH CAROLINA

PROJECT # : 4102-0016

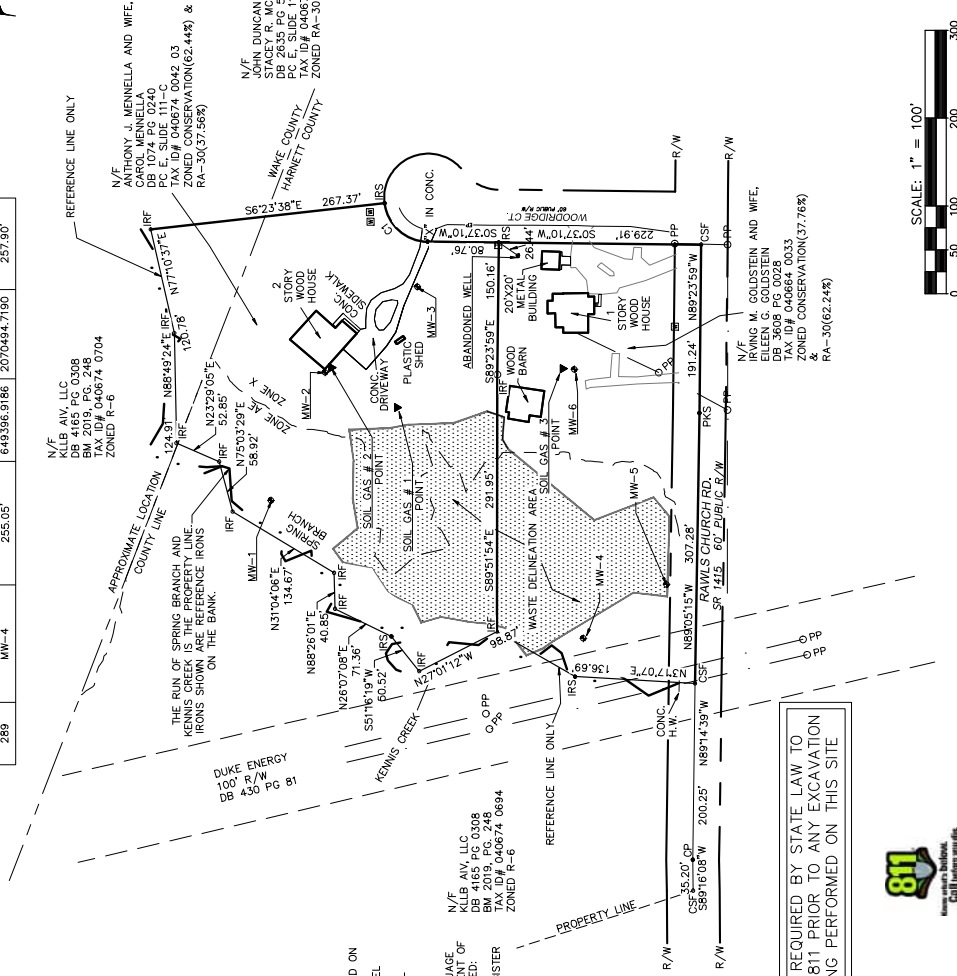
PROJECT #	: 410.
PROJ SYMB	: P11

PROJ. SVTR : KLL
DRAWN BY : SB
FIELD BK. :

DWG. # :

Curve #	Radius	Length	Tangent	Chord Bearing	Ch. Length	Delta
C1	50.00'	71.67'	43.56'	S41°40'54"W	65.69'	082°07'29"

Point #	Row Description	Monitor Well Data Table			
		Ground Elevation	Northing	Easting	Top of Pipe
124	MW-3	285.15'	649585.2732	2070894.0170	284.65'
338	MW-3	256.68'	649302.3019	2070555.8920	258.93'
410	MW-6	276.27'	649407.0301	2070800.2220	275.82'
157	MW-2	270.84'	648990.2725	2070796.7870	272.39'
221	MW-1	257.40'	649751.7034	2070651.4210	261.03'
289	MW-4	255.05'	649396.9186	2070494.7190	257.90'



SCALE: 1" = 100'

1. ALL DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET, (UNLESS OTHERWISE STATED)
2. ALL BEARINGS ARE BASED ON THE 1983 NORTH CAROLINA STATE PLAT MAP.
3. THERE ARE NO BURIAL GROUNDS OR CEMETERIES VISIBLE.
4. THERE ARE NO NGCS MONUMENTS WITHIN 200' OF SURVEYED LOCATION.
5. A PORTION OF THIS SURVEY SHOWN LIES WITHIN FLOOD ZONE A-E, FLOOD ZONE A-E 1-PERCENT-ANNUAL-CHANCE FLOOD PLAIN, AND ARE DETERMINED FOR THE FLS BY INSURED METHODS OF FLOOD ZONE X, FLOOD ZONE X IS FLOOD INSURANCE RATE ZONE THAT CORRESPONDS TO AREAS OUTSIDE THE 0.2% ANNUAL FLOOD RISK, FLOOD ZONE X IS NOT A FLOOD HAZARD ZONE ACCORDING TO FLOOD INSURANCE RATE MAP ANNUAL ETC. 37200697400K WITH AN EFFECTIVE DATE OF 10/03/2006.
6. THESE PROPERTIES LIE WITHIN THE CAPE FEAR RIVER SUBURBAN AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY, NO STATEMENT IS MADE AS TO THE EXISTENCE OR NON-EXISTENCE OF UNDERGROUND UTILITIES OR FINDINGS THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT.
7. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE SURVEY, THE ACCURACY OF THIS SURVEY IS NOT GUARANTEED. IT MAY BE DISCLOSED WITH AN ACCURATE TITLE REPORT.
8. ONE FOOT CONTROLLING INTERVALS SHOWN.
9. THE CONCRETE AT THE BASE OF THE METERS.
10. THE CONCRETE AT THE BASE OF THE METERS.

TO ANGER

WOODBRIDGE CT.

WAYNE CO.
HARRIETT CO.

SITE

RAMBLE CHURCH RD.

JARRETT BAY LN.

VICINITY MAP
(NOT TO SCALE)

L. Robin L. Dree, certify that this project was completed under my direct and responsible charge from an actual survey made under my supervision; that this ground was surveyed and reduced in accordance with the rules to meet Federal Geographic Data Committee Standards; that this survey was performed to meet the requirements for a topographic/planimetric survey to the accuracy of Class II, and that the original data was obtained on 10/21/1993; that the survey was completed on 6/05/2012; that contours shown as dashed lines may not meet the stated standards; and all coordinates are based on NAD 83 NAD83(2011) and all elevations are based on NAVD83. This project was completed under my supervision from information shown in Deed Books referenced on map and Map Books referenced on map; that all lines not actually surveyed applied to the map and were not surveyed; that the horizontal accuracy of the map is 1:10,000; that the precision as calculated is better than 1:10,000; that the area computed by coordinate method is 10,000; that the area computed by coordinate method; The GPS survey data was used to generate the section and the following information was

CLASS OF SURVEY: A
POSITIONAL ACCURACY: 0.03° (HORIZONTAL) AND 0.06° (VERTICAL)
TYPE OF GPS FIELD PROCEDURES: WRS TO ESTABLISH CONTROL
DATES OF THE SURVEY: 10/27/2019
DATUM/EPOCH: NAD 83/2011
PUBLISHED/FIXED CONTROL USE: FIXED CONTROL
GEOD MODEL: GEOD 12B
INSTRUMENT MODEL (PORT): 999R80827
ANTENNA MODEL (PORT): 999R80827
TYPE AND MODEL OF GPS RECEIVER USED: TRIMBLE R8
ALL PROPERTY CORNERS WERE LOCATED USING
CONVENTIONAL SURVEY METHODS.

Witness my original signature, registration number, and seal this the _____ day of _____ A. D. 2023.

Robin L. Lee
Professional I and Survivor
L-3759

I, _____, PLS L-3759
CERTIFY THAT THE SURVEY IS OF AN
EXISTING PARCEL OR PARCELS OF LAND
AND DOES NOT CREATE A NEW STREET OR
CHANGE AN EXISTING STREET; AND THAT
THE SURVEY IS OF AN EXISTING BUILDING
OR OTHER STRUCTURE, OR NATURAL FEATURE,
SUCH AS A WATERCOURSE; OR AN AS-BUILT
OR A PROPOSED EASEMENT FOR A PUBLIC
UTILITY AS DEFINED IN G.S. 62-3.

1. ALL DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET, (UNLESS OTHERWISE STATED)
2. ALL BEARINGS ARE BASED ON THE 1983 NORTH CAROLINA STATE PLAT MAP.
3. THERE ARE NO BURIAL GROUNDS OR CEMETERIES VISIBLE.
4. THERE ARE NO NGCS MONUMENTS WITHIN 200' OF SURVEYED LOCATION.
5. PORTION OF THIS SURVEY SHOWN LIES WITHIN FLOOD ZONE A-E. FLOOD ZONE A-E 1-PERCENT-ANNUAL-CHANCE FLOOD PLAIN AREAS THAT DETERMINED FOR THE FLS BY DESAILED METHODS OF THE FLOOD ZONE X FLOOD ZONE X IS FLOOD INSURANCE RATE ZONE THAT CORRESPONDS TO AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD ZONE. FLOOD ZONE X IS NOT AN ANNUAL ETC. ACCORDING TO FLOOD INSURANCE RATE MAP.
6. 3720067400K WITH AN EFFECTIVE DATE OF 10/03/2006. THESE PROPERTIES LIE WITHIN THE CAPE FEAR RIVER FLOOD PLAIN.
7. SURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY. NO GUARANTEE IS MADE AS TO THE EXISTENCE OR NON-EXISTENCE OF UNDERGROUND UTILITIES OR CONDITIONS THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT.
8. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE SEARCH. THE SURVEYOR HAS NO KNOWLEDGE OF ANY CLAIMS THAT MAY BE DISCLOSED WITH AN ACCURATE TITLE REPORT.
9. ONE FOOT CONTOUR INTERVALS SHOWN.
10. THE CONCRETE AT THE BASE OF THE METERS.

Appendix C

Preliminary DPLURs

DECLARATION OF PERPETUAL LAND USE RESTRICTIONS

For Property Owned by: Anthony J. Mennella

The real property which is the subject of this Declaration of Perpetual Land Use Restrictions (“Declaration”) is contaminated with hazardous substances, and is part of an INACTIVE HAZARDOUS SUBSTANCE OR WASTE DISPOSAL SITE (“the Site”) as defined by North Carolina’s Inactive Hazardous Sites Response Act of 1987, which consists of Section 130A-310 through Section 130A-310.19 of the North Carolina General Statutes (“N.C.G.S.”). This Declaration is part of a Remedial Action Plan for the Site that has been approved by the Secretary of the North Carolina Department of Environmental Quality, Division of Waste Management, Superfund Section or its successor in function, or his/her delegate, as authorized by N.C.G.S. Section 130A-310.3(f). The North Carolina Department of Environmental Quality shall hereafter be referred to as “DEQ”. Hereafter, the Division of Waste Management, Superfund Section shall be referred to as “Superfund Section”.

Anthony J. Mennella, Angier, North Carolina is the owner in fee simple of the property (“the Property”), which is located at 57 Woodridge Court in the County of Harnett, City of Angier, State of North Carolina, and is the real property legally described in Deed Book 4189, Page 1657 in the Office of the Register of Deeds for Harnett County. The Property is also shown on a Notice of Environmental Contamination, in the form of a survey plat (“Notice Plat”), which has been recorded prior to the recordation of this Declaration in Map Book ____ Page ____ in the Office of the Register of Deeds for Harnett County.

For the purpose of protecting public health and the environment, Anthony J. Mennella hereby declares that all of the Property shall be held, sold and conveyed subject to the following perpetual land use restrictions, which shall run with the land; shall be binding on all parties having any right, title or interest in the Property or any part thereof, their heirs, successors and assigns; and shall, as provided in N.C.G.S. Section 130A-310.3(f), be enforceable without regard to lack of privity of estate or contract, lack of benefit to particular land, or lack of any property interest in particular land. These restrictions shall continue in perpetuity and cannot be amended or canceled unless and until the Harnett County Register of Deeds receives and records the written concurrence of the Secretary of DEQ or its successor in function, or his/her delegate. If any provision of this Declaration is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

PERPETUAL LAND USE RESTRICTIONS

The following restrictions shall apply to the entire Property or Waste Disposal Area:

1. The Waste Disposal Area shown on the Notice Plat shall be used for open space only. “Open space” for purposes of this restriction means an undeveloped area where the sole human use shall be non-dermal recreational activities such as hiking, running, hunting, fishing and bird watching. All other uses at the Property are prohibited, except as approved in writing by the Superfund Section or its successor in function.
2. The Waste Disposal Area shown on the Notice Plat shall not be used for the following:
 - a) Horseback riding
 - b) Bicycle riding
 - c) Motorized vehicle or motorbike riding
 - d) Farming
 - e) Gardening
 - f) Grazing of livestock
 - g) Timber production
 - h) Kennel or private animal pens
 - i) Mining, extraction of coal, oil, gas or any other minerals or non-mineral substances
 - j) Storage of any bulk materials
3. No surface or subsurface native or fill earthen materials may be removed from the Waste Disposal Area shown on the Notice Plat without prior written approval by the Superfund Section or its successor in function.
4. No above- or below-ground construction or improvements (including, but not limited to, utilities, roads, sidewalks, landscaping, asphalt, concrete, other impervious materials, temporary and permanent structures) and no alteration or disturbance of the existing soil and contours, other than erosion control measures, are allowed in the Waste Disposal Area shown on the Notice Plat without prior written approval by the Superfund Section or its successor in function.
5. No new trees or shrubs may be planted in the Waste Disposal Area shown on the Notice Plat.
6. The Waste Disposal Area shown on the Notice Plat shall not be accessed by any mobile heavy equipment including, but not limited to, cranes, tractors, and excavators without prior written approval by the Superfund Section or its successor in function.
7. Surface water shall not be used on the Property for any purpose without prior written approval by the Superfund Section or its successor in function
8. No activities that would cause the exposure, removal, or use of groundwater, including but not limited to, installation of water supply wells, fountains, ponds, lakes, swimming

pools or other features that use groundwater, or construction or excavation activities that would encounter or expose groundwater may occur on the Property without prior approval of the Superfund Section or its successor in function.

9. The Property Owner shall conduct and comply with the following maintenance activities:
 - A. No woody vegetation shall be allowed to grow on the Waste Disposal Area shown on the Notice Plat.
 - B. All grassed areas shall be properly maintained to ensure that a healthy vegetative cover is always present. Mowing or brush hogging of the Waste Disposal Area shown on the Notice Plat should be conducted twice a year.
 - C. A soil cover of a thickness of 12 inches shall be maintained over the geotextile erosional marker, if applicable, covering the Waste Disposal Area shown on the Notice Plat. Erosion of the soil cover shall be repaired promptly upon discovery.
 - D. Signs indicating the presence of contamination and restricting [disturbance of soil *and/or* access] shall be located at each corner and along the perimeter of the Waste Disposal Area. The front of each sign shall face away from the [Property *or* Waste Disposal Area]. Each sign shall be located at a maximum distance of 100 feet apart and in a manner such they are easily visible along the perimeter of the Waste Disposal Area at all times. The signs shall state the following using similar font with a minimum of one-half (0.5) inch font size:

NOTICE SUBSURFACE WASTE Contact the Property Owner Regarding Land Use Restrictions Prior to Disturbing Soil

10. No person conducting environmental assessment or remediation at the Site or involved in determining compliance with applicable land use restrictions at the Property, at the direction of, or pursuant to a permit or order issued by the Superfund Section or its successor in function may be denied access to the Property for the purpose of conducting such activities.
11. Each person who owns any portion of the Property shall cause the instrument of any sale, lease, grant, or other transfer of any interest in the Property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this Declaration. The failure to include such provision shall not affect the validity or applicability of any land use restriction in this Declaration.

12. Each person who owns any portion of the Property shall submit a letter, in January of each year on or before January 31st, to the Superfund Section or its successor in function, confirming the following:
- a) This Declaration is still recorded in the Office of the Harnett County Register of Deeds.
 - b) Activities and conditions at the Property remain in compliance with the land use restrictions herein.
 - c) The Property has not been subdivided since the last letter report submitted to the Superfund Section.
 - d) Erosion of the cover system has not occurred.
 - e) Signs are in good condition and remain in original location.

REPRESENTATIONS AND WARRANTIES

The Declarant hereby represents and warrants to the DEQ that the Declarant is the sole owner of the Property holding fee simple title to the Property free, clear and unencumbered except for utilities (including manhole covers, sewer, and water), easements, rights of way, conditions, covenants, and other matters recorded in the Harnett County Registry; that Declarant has the power and authority to enter into this Declaration, to grant the rights and interests herein provided; that this Declaration will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which Declarant is a party or by which Declarant may be bound or affected.

ENFORCEMENT

Adherence to the above land use restrictions is necessary to protect public health and the environment. The restrictions are an integral part of the remedy for the contamination at the Site and shall be enforceable without regard to lack of privity of estate or contract, lack of benefit to particular land, or lack of any property interest in particular land. These land use restrictions shall be enforced by any owner, operator, or other party responsible for any part of the Site. The above land use restrictions may also be enforced by the Superfund Section through the remedies provided in N.C.G.S. Chapter 130A, Article 1, Part 2 or by means of a civil action, and may also be enforced by any unit of local government having jurisdiction over any part of the Site. Any attempt to cancel this Declaration without the approval of the Superfund Section or its successor in function shall constitute noncompliance with the Remedial Action Plan approved by the Superfund Section for the Site and shall be subject to enforcement by the Superfund Section to the full extent of the law. Failure by any party required or authorized to enforce any of the above restrictions shall in no event be deemed a waiver of the right to do so thereafter as to the same violation or as to one occurring prior or subsequent thereto.

FUTURE SALES, LEASES, CONVEYANCES AND TRANSFERS

When any portion of the Property is sold, leased, conveyed or transferred, pursuant to N.C.G.S. Section 130A-310.8(e) the deed or other instrument of transfer shall contain in the description section, in no smaller type than that used in the body of the deed or instrument, a statement that the real property being sold, leased, conveyed, or transferred has been used as a

hazardous substance or waste disposal site and a reference by book and page to the recordation of the Notice of Environmental Contamination referenced in this Declaration.

OWNER SIGNATURE

IN WITNESS WHEREOF, I execute these presents on this ____ day of _____,
20____.

Signatory's name typed or printed: _____

Signature: _____

STATE OF NORTH CAROLINA
COUNTY OF _____

I, _____, a Notary Public, do hereby certify that
_____ personally appeared before me this day,
produced proper identification in the form of _____, and declared that he *or*
she is acting on behalf of, **Anthony J. Mennella** and that by authority duly given and proven by the
power of attorney attached hereto, and as the act of, **Anthony J. Mennella** he *or* she has signed this
Declaration.

WITNESS my hand and official seal this ____ day of _____, 20____.

Notary Public

My Commission expires: _____

[SEAL]

APPROVAL AND CERTIFICATION OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

The foregoing Declaration of Perpetual Land Use Restrictions is hereby approved and certified.

By: _____

William F. Hunneke, Chief
Superfund Section
Division of Waste Management
North Carolina Department of Environmental Quality

STATE OF NORTH CAROLINA
COUNTY OF _____

I, _____, a Notary Public, do hereby certify that
_____ personally appeared before me this day,
produced proper identification in the form of _____, and signed this
Declaration.

WITNESS my hand and official seal this ____ day of _____, 20____.

Notary Public

My Commission expires: _____

[SEAL]

REGISTER OF DEEDS CERTIFICATION

The foregoing Declaration of Perpetual Land Use Restrictions is certified to be duly recorded at the date and time, and the Book and Page, shown on the first page hereof.

Register of Deeds for Harnett County

By: _____

Signature

Type or print name and title

DECLARATION OF PERPETUAL LAND USE RESTRICTIONS

For Property Owned by: Eileen G. Goldstein and Irving M. Goldstein

The real property which is the subject of this Declaration of Perpetual Land Use Restrictions (“Declaration”) is contaminated with hazardous substances, and is part of an INACTIVE HAZARDOUS SUBSTANCE OR WASTE DISPOSAL SITE (“the Site”) as defined by North Carolina's Inactive Hazardous Sites Response Act of 1987, which consists of Section 130A-310 through Section 130A-310.19 of the North Carolina General Statutes (“N.C.G.S.”). This Declaration is part of a Remedial Action Plan for the Site that has been approved by the Secretary of the North Carolina Department of Environmental Quality, Division of Waste Management, Superfund Section or its successor in function, or his/her delegate, as authorized by N.C.G.S. Section 130A-310.3(f). The North Carolina Department of Environmental Quality shall hereafter be referred to as “DEQ”. Hereafter, the Division of Waste Management, Superfund Section shall be referred to as “Superfund Section”.

Eileen G. Goldstein and Irving M. Goldstein, Angier, North Carolina is the owner in fee simple of the property (“the Property”), which is located at 2200 Rawls Church Road in the County of Harnett, City of Angier, State of North Carolina, and is the real property legally described in Deed Book 4293, Page 673 in the Office of the Register of Deeds for Harnett County. The Property is also shown on a Notice of Environmental Contamination, in the form of a survey plat (“Notice Plat”), which has been recorded prior to the recordation of this Declaration in Map Book ____ Page ____ in the Office of the Register of Deeds for Harnett County.

For the purpose of protecting public health and the environment, Eileen G. Goldstein and Irving M. Goldstein hereby declares that all of the Property shall be held, sold and conveyed subject to the following perpetual land use restrictions, which shall run with the land; shall be binding on all parties having any right, title or interest in the Property or any part thereof, their heirs, successors and assigns; and shall, as provided in N.C.G.S. Section 130A-310.3(f), be enforceable without regard to lack of privity of estate or contract, lack of benefit to particular land, or lack of any property interest in particular land. These restrictions shall continue in perpetuity and cannot be amended or canceled unless and until the Harnett County Register of Deeds receives and records the written concurrence of the Secretary of DEQ or its successor in function, or his/her delegate. If any provision of this Declaration is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

The following restrictions shall apply to the entire Property or Waste Disposal Area:

1. The Waste Disposal Area shown on the Notice Plat shall be used for open space only. "Open space" for purposes of this restriction means an undeveloped area where the sole human use shall be non-dermal recreational activities such as hiking, running, hunting, fishing and bird watching. All other uses at the Property are prohibited, except as approved in writing by the Superfund Section or its successor in function.
2. The Waste Disposal Area shown on the Notice Plat shall not be used for the following:
 - a) Horseback riding
 - b) Bicycle riding
 - c) Motorized vehicle or motorbike riding
 - d) Farming
 - e) Gardening
 - f) Grazing of livestock
 - g) Timber production
 - h) Kennel or private animal pens
 - i) Mining, extraction of coal, oil, gas or any other minerals or non-mineral substances
 - j) Storage of any bulk materials
3. No surface or subsurface native or fill earthen materials may be removed from the Waste Disposal Area shown on the Notice Plat without prior written approval by the Superfund Section or its successor in function.
4. No above- or below-ground construction or improvements (including, but not limited to, utilities, roads, sidewalks, landscaping, asphalt, concrete, other impervious materials, temporary and permanent structures) and no alteration or disturbance of the existing soil and contours, other than erosion control measures, are allowed in the Waste Disposal Area shown on the Notice Plat without prior written approval by the Superfund Section or its successor in function.
5. No new trees or shrubs may be planted in the Waste Disposal Area shown on the Notice Plat.
6. The Waste Disposal Area shown on the Notice Plat shall not be accessed by any mobile heavy equipment including, but not limited to, cranes, tractors, and excavators without prior written approval by the Superfund Section or its successor in function.
7. Surface water shall not be used on the Property for any purpose without prior written approval by the Superfund Section or its successor in function.
8. No activities that would cause the exposure, removal, or use of groundwater, including but not limited to, installation of water supply wells, fountains, ponds, lakes, swimming pools or other features that use groundwater, or construction or excavation activities that would encounter or expose groundwater may occur on the Property without prior

approval of the Superfund Section or its successor in function.

9. The Property Owner shall conduct and comply with the following maintenance activities:
 - A. No woody vegetation shall be allowed to grow on the Waste Disposal Area shown on the Notice Plat.
 - B. All grassed areas shall be properly maintained to ensure that a healthy vegetative cover is always present. Mowing or brush hogging of the Waste Disposal Area shown on the Notice Plat should be conducted twice a year.
 - C. A soil cover of a thickness of 12 inches shall be maintained over the geotextile erosional marker, if applicable, covering the Waste Disposal Area shown on the Notice Plat. Erosion of the soil cover shall be repaired promptly upon discovery.
 - D. Signs indicating the presence of contamination and restricting [disturbance of soil *and/or* access] shall be located at each corner and along the perimeter of fencing surrounding the [Property *or* Waste Disposal Area]. The front of each sign shall face away from the [Property *or* Waste Disposal Area]. Each sign shall be located at a maximum distance of 100 feet apart and in a manner such they are easily visible along the perimeter of the [Property *or* Waste Disposal Area] at all times. The signs shall state the following using similar font with a minimum of one-half (0.5) inch font size:

NOTICE
SUBSURFACE WASTE
Contact the Property Owner
Regarding Land Use Restrictions
Prior to Disturbing Soil

10. No person conducting environmental assessment or remediation at the Site or involved in determining compliance with applicable land use restrictions at the Property, at the direction of, or pursuant to a permit or order issued by the Superfund Section or its successor in function may be denied access to the Property for the purpose of conducting such activities.
11. Each person who owns any portion of the Property shall cause the instrument of any sale, lease, grant, or other transfer of any interest in the Property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this Declaration. The failure to include such provision shall not affect the validity or applicability of any land use restriction in this Declaration.
12. Each person who owns any portion of the Property shall submit a letter, in January of each year on or before January 31st, to the Superfund Section or its successor in function, confirming the following:

- a) This Declaration is still recorded in the Office of the Harnett County Register of Deeds.
- b) Activities and conditions at the Property remain in compliance with the land use restrictions herein.
- c) The Property has not been subdivided since the last letter report submitted to the Superfund Section.
- d) Erosion of the cover system has not occurred.
- e) Signs are in good condition and remain in original location.

REPRESENTATIONS AND WARRANTIES

The Declarant hereby represents and warrants to the DEQ that the Declarant is the sole owner of the Property holding fee simple title to the Property free, clear and unencumbered except for utilities (including manhole covers, sewer, and water), easements, rights of way, conditions, covenants, and other matters recorded in the Harnett County Registry; that Declarant has the power and authority to enter into this Declaration, to grant the rights and interests herein provided; that this Declaration will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which Declarant is a party or by which Declarant may be bound or affected.

ENFORCEMENT

Adherence to the above land use restrictions is necessary to protect public health and the environment. The restrictions are an integral part of the remedy for the contamination at the Site and shall be enforceable without regard to lack of privity of estate or contract, lack of benefit to particular land, or lack of any property interest in particular land. These land use restrictions shall be enforced by any owner, operator, or other party responsible for any part of the Site. The above land use restrictions may also be enforced by the Superfund Section through the remedies provided in N.C.G.S. Chapter 130A, Article 1, Part 2 or by means of a civil action, and may also be enforced by any unit of local government having jurisdiction over any part of the Site. Any attempt to cancel this Declaration without the approval of the Superfund Section or its successor in function shall constitute noncompliance with the Remedial Action Plan approved by the Superfund Section for the Site and shall be subject to enforcement by the Superfund Section to the full extent of the law. Failure by any party required or authorized to enforce any of the above restrictions shall in no event be deemed a waiver of the right to do so thereafter as to the same violation or as to one occurring prior or subsequent thereto.

FUTURE SALES, LEASES, CONVEYANCES AND TRANSFERS

When any portion of the Property is sold, leased, conveyed or transferred, pursuant to N.C.G.S. Section 130A-310.8(e) the deed or other instrument of transfer shall contain in the description section, in no smaller type than that used in the body of the deed or instrument, a statement that the real property being sold, leased, conveyed, or transferred has been used as a hazardous substance or waste disposal site and a reference by book and page to the recordation of the Notice of Environmental Contamination referenced in this Declaration.

OWNER SIGNATURE

IN WITNESS WHEREOF, I execute these presents on this ____ day of _____,
20____.

Signatory's name typed or printed: _____

Signature:_____

STATE OF NORTH CAROLINA
COUNTY OF _____

I, _____, a Notary Public, do hereby certify that
_____ personally appeared before me this day,
produced proper identification in the form of _____, and signed this
Declaration.

WITNESS my hand and official seal this ____ day of _____, 20____.

Notary Public

My Commission expires: _____

[SEAL]

APPROVAL AND CERTIFICATION OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

The foregoing Declaration of Perpetual Land Use Restrictions is hereby approved and certified.

By: _____

William F. Hunneke, Chief
Superfund Section
Division of Waste Management
North Carolina Department of Environmental Quality

STATE OF NORTH CAROLINA
COUNTY OF _____

I, _____, a Notary Public, do hereby certify that
_____ personally appeared before me this day,
produced proper identification in the form of _____, and signed this
Declaration.

WITNESS my hand and official seal this ____ day of _____, 20____.

Notary Public

My Commission expires: _____

[SEAL]

REGISTER OF DEEDS CERTIFICATION

The foregoing Declaration of Perpetual Land Use Restrictions is certified to be duly recorded at the date and time, and the Book and Page, shown on the first page hereof.

Register of Deeds for Harnett County

By: _____

Signature

Type or print name and title