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October 19, 2022

TO: All Prospective Bidders
FROM: Trent Ensley, Procurement Manager
SUBJECT: **ADDENDUM NO. 1**
PWC2223018 – Big Rockfish Creek Out Fall – Contract 2

1. The Specifications and Bid Documents are hereby modified or clarified per the attached documents.
2. The foregoing changes or clarifications shall be incorporated in the original Bid Documents and a signed copy of this Addendum No. 1 shall accompany the bid to acknowledge the bidder's receipt and familiarity with the changes and/or clarifications.

TE:tke

Acknowledgement:

Company_____



By_____

Date_____

**ADDENDUM 1 AND ADDITIONAL PROJECT SPECIFICATIONS
BIG ROCKFISH CREEK SANITARY SEWER OUTFALL CONTRACT 2**

**FAYETTEVILLE PUBLIC WORKS COMMISSION
FAYETTEVILLE, NORTH CAROLINA**

LICENSED NORTH CAROLINA REGISTERED ENGINEERS

ADDENDUM 1	ENGINEER OF RECORD
<p>ITEM 1 THROUGH 10 AND ITEM 16 (ITEM 6 applicable only to PART A and PART B)</p>	
<p>ITEM 6 (applicable only to PART C) ITEM 11 THROUGH 15</p> <p>ADDITIONAL PROJECT SPECIFICATIONS AND TECHNICAL DOCUMENTS</p> <ul style="list-style-type: none"> • 01000-1 Special Provisions BRCO Wells • 01025-1 Measurement and Payment General Updated (Well Relocation) • Well Abandonment and Relocation Plans • Appendix E • Appendix F 	 <p align="center">Oct 17 2022 6:34 PM</p>

ADDENDUM NO. 1

October 19, 2022

**FAYETTEVILLE PUBLIC WORKS COMMISSION
BIG ROCKFISH SANITARY SEWER OUTFALL
AND LIFT STATION ELIMINATION OUTFALL-
CONTRACT 2
DIVISION OF WATER INFRASTRUCTURE
PROJECT NO. CS-370434-15&16**

NOTICE TO CONTRACTORS:

This Addendum shall become a part of the Contract Documents for the above project.

Each Contractor shall be responsible for notifying their subcontractors of the contents of this Addendum.

Receipt for all Addenda must be acknowledged in the Contract Documents that are submitted with the bid.

Modified or newly issued specifications contained in this Addendum shall supersede and shall take precedence over any conflicting information in the original specifications.

LIST OF ATTACHMENTS:

1. Attachment 1 – Small Disadvantaged Business Enterprise Program for Construction, Procurement and Professional Services
2. Attachment 2 – SDBE Special Conditions Bid Language Formal/Informal Bid Documents
3. Attachment 3 – Revised Bid Proposal
4. Attachment 4 – Section E: Well Abandonments/Relocations Requirements and Technical Specifications
5. Attachment 5 – Figure 1-Easement Status Map
6. Attachment 6 – Appendix E: Well Abandonments/Relocations Approvals
7. Attachment 7 – Appendix F: Well Abandonment Guidelines and Records; and Well Construction Standards
8. Attachment 8 – Pre-Bid Meeting Minutes

Item 1: The bid opening date has been changed from Thursday, October 27, 2022 at 2:00 P.M. to **Tuesday, November 8, 2022 at 2:00 P.M.** All questions are due on or before 5:00 P.M., Tuesday, October 25, 2022.

Item 2: Pursuant to the mandatory Pre-Bid meeting attendance requirement as set forth in the Invitation to Bids and Special Provision-Performance and Delivery, eligible prime bidders include:

- Billy Bill Grading Company, Inc.
- Moorhead Construction, Inc.
- Moffat Pipe, Inc.

- Oscar Renda Contracting Inc.
- Park Construction of North Carolina, Inc.
- Sanford Contractors Inc.
- T. A. Loving Company
- Terrahawk Civil Contractors

Item 3: The contract duration has been revised from 570 days to **670 days** for final completion from Notice to Proceed. The contract duration has been adjusted to account for the inclusion of the well abandonments and relocations.

Item 4: Replace Paragraph R, Item 2 “Disadvantaged Business Enterprise Program” in Section 00100 – Instruction to Bidders with the revised section:

2. “SMALL LOCAL SUPPLIER (SLS) PROGRAM / SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

PWC is committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County. PWC requires Bidders to report efforts to utilize Small Disadvantaged Business Enterprises (SDBEs) and Historically Underutilized Businesses (HUBs) for specific projects and encourages all Bidders to report all such efforts for SDBEs, HUBs, and small, local businesses regardless of the requirements of a specific project. Bidders should document any good-faith efforts and utilization in the SDBE forms provided within the Contract Documents.

NCDOT Disadvantaged Business Enterprise (DBE) and Historically NC DOA Underutilized Business firms with current certifications are acceptable for listing in the bidder’s submittal of SDBE participation and will be considered to meet any necessary contract goal. Firms that are certified through NCDOT are listed at the “Vendor Directory” which can be accessed through the following:
<https://www.ebs.nc.gov/VendorDirectory/default.html> Firms that are certified through NC DOA are listed at the “HUB Vendor Search” which can be accessed through the following
<https://www.doa.state.nc.us/HUB/searchhub.htm>

Bidder shall submit, with their Proposal, the SDBE documentation required in the Contract Documents. It is strongly recommended that the Bidder attend the Pre-Bid Conference, as important information will be reviewed.

SMALL LOCAL SUPPLIER (SLS) PROGRAM

PWC is committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County. PWC encourages Bidders to solicit SDBEs, HUBs, and small, local businesses and report any efforts to do so. Bidders should report such good-faith efforts and any subcontractor, vendor, or supplier utilization in the forms provided within this bid package. “

Item 5: The local Small Disadvantaged Business Enterprise Program for Construction, Procurement and Professional Services (Reference Attachment 1) and SDBE Special Conditions Bid Language Formal/Informal Bid Documents (Reference Attachment 2) shall become a part of the Section A Project Specifics (Bid Documents). The local Small Disadvantaged Business Enterprise (SDBE) and Small Local Supplier (SLS) programs have no defined or required goal and no mandatory requirement. It is a completely good faith effort. DWI's MBE/WBE (DBE) requirement has a stated goal but no mandatory requirement either. **All forms for the local SDBE and SLS programs and DWI's MBE/WBE (DBE) must be completed for a responsive bid.**

Item 6: Replace the existing Bid Proposal with the attached Bid Proposal in Attachment 3. Bidders are instructed to discard all previous versions of the Bid Proposal. Revisions include the Part A Base Bid and inclusion of Part C Well Abandonments/Relocations to complete the Base Bid and Alternate Base Bid. Unit price items listed under Part C Well Abandonments/Relocations are defined in the additional Method and Measurement section as contained in Attachment 4 (Section E).

Item 7: Remove Article 4.14 COVID-19 in its entirety from Section 00700 – General Conditions.

Item 8: **Insert the following special condition into Section 01000 Special Conditions:**

Item 9: **Hold Harmless for NCDOT STIP U2519BA/BB**

For installation of the portion of the Pear Tree Estates Lift Station Elimination Outfall (Sheet C36A), NCDOT has been indemnified and held harmless from any claims, damages, or delays arising from this work that could impact NCDOT's construction of I-295. If any such damages or delays are caused, PWC is responsible for providing adequate compensation. Also, PWC is responsible for scheduling work during a time in which it does not affect NCDOT's contractor's construction activities.

From the time of Notice to Proceed to the completion of Big Rockfish Creek Sanitary Sewer Outfall (BRCO) Contract 2, this Hold Harmless responsibility is transferred from PWC to the Contractor awarded with the contract of BRCO Contract 2. The awarded Contractor is responsible for providing adequate compensation for any claims, damages, or delays arising from the BRCO Contract 2 work, and the Contractor is responsible for scheduling work during a time in which it does not affect NCDOT's contractor's construction activities.

Item 10: The location of Owner Furnished Pipe is PWC Cross Creek Water Reclamation Facility (601 N Eastern Blvd Fayetteville, NC). This location shall be used to define the delivery cost for Payment Item 6 in Section 01025 Measurement and Payment.

Item 11: W.K. Dickson & Co., Inc. is the engineering firm of record (NC License No. F-0374) for the Well Abandonments/Relocations. All noted items and applicable documents and attachments included in this addendum for the Well Abandonments/Relocations are the design and engineering responsibility of W.K. Dickson & Co., Inc. The affixed engineering seal of the engineer of record (Albert M. Huckaby) contained in this addendum encompasses these items.

Item 12: Include Section E to the Project Manual. Section E- Well Abandonments/Relocations Requirements and Technical Specifications (Reference Attachment 4) shall become binding provisions of this contract. Specific sections include:

1. 01000-1 Special Provisions BRCO Well Relocations
2. 01025-1 Measurement and Payment General Updated Well Relocations
3. Well Abandonment & Relocation Plans

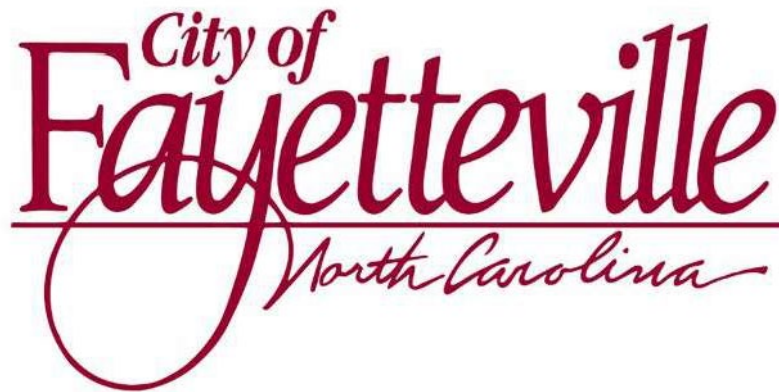
Item 13: Include Figure 1-Easement Status Map (Reference Attachment 5) into Appendix C- Easement Control Worksheet and Special Provisions.

Item 14: Include Appendix E-Well Abandonments/Relocations Approvals (Reference Attachment 6) as part of the appendices. The approvals and permit requirements shall become binding provisions of this contract.

Item 15: Include Appendix F- Well Abandonment Guidelines and Records; and Well Construction Standards (Reference Attachment 7) as part of the appendices.

Item 16: Attached in Attachment 8 are the Minutes from the Pre-Bid Meeting held on Tuesday, October 11, 2022. The participants and attendees of the mandatory Pre-Bid are included in the Minutes. **Only those firms that attended the Pre-Bid are allowed to bid as Prime Contractor.**

ATTACHMENT 1



CITY OF FAYETTEVILLE

**SMALL DISADVANTAGED BUSINESS
ENTERPRISE PROGRAM
FOR
CONSTRUCTION, PROCUREMENT, AND
PROFESSIONAL SERVICES**

**FAYETTEVILLE CITY COUNCIL
433 HAY STREET
FAYETTEVILLE, NORTH CAROLINA 28301**

SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

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SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

I. Applicability.

(a) This program shall apply to all construction and repair work involving the expenditure of City funds, regardless of the sources of other funds, in the amounts set forth in G.S. 143-129 and G.S. 143-131; this program shall also apply to the procurement of architectural, engineering and surveying services as outlined in G.S. 143-64.31. This program shall not apply to contracts established by the State or any agency of the State.

(b) If any section, subsection, clause or provision of this chapter, including those groups found to be presumptively socially disadvantaged, is held to be invalid by a court of competent jurisdiction, the remainder of the chapter shall not be affected by such invalidity.

II. Definitions.

As used in this part, the following terms shall have the following meanings:

Affiliation - One firm controls or has the power to control the other, or a third party or parties controls or has the power to control both, or an identity of interests exists between such firms. In determining whether firms are Affiliates, the City shall consider all appropriate factors, including common ownership, common management, and contractual relationships. Affiliates must be considered together in determining whether a firm is a Small Business Enterprise.

Bidder/Participant - Any person, firm, partnership, corporation, limited liability company, association or joint venture seeking to be awarded a public contract or subcontract.

Brokering - Filling orders by purchasing or receiving supplies from a third party supplier rather than out of existing inventory, and providing no Commercially Useful Function other than acting as a conduit between a supplier and a customer.

City - The awarding authority for contracts awarded by the City of Fayetteville and the City of Fayetteville Public Works Commission.

City's Marketplace - The geographic and procurement areas in which the City contracts on an annual basis.

Commercially Useful Function - Responsibility for the execution of a distinct element of the work of the contract which is carried out by actually performing, managing, and supervising the work involved, or fulfilling responsibilities as a joint venture.

Contract - A mutually binding legal relationship or any modification thereof obligating the seller to furnish equipment or services and obligating the buyer to pay for them, not including leases or emergency procurements.

Doing Business - Having a physical location from which to engage in for profit activities in the scope(s) of expertise of the firm.

Economically Disadvantaged - An individual whose Personal Net Worth is less than the amount identified in 49 CFR Part 26

Equipment - Materials, supplies, commodities and apparatuses.

Expertise - Demonstrated skills, knowledge, or ability to perform in the field of endeavor in which certification is sought by the firm as defined by normal industry practices, including licensure where required.

Good Faith Efforts - Actions undertaken by a Bidder/Participant to achieve a SDBE goal which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the Program's requirements.

Joint Venture - An association of two or more persons, or any combination of types of business enterprises and persons numbering two or more, proposing to perform a single for profit business enterprise, in which each joint venture partner contributes property, capital, efforts, skill and knowledge, and in which the SDBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture is commensurate with its ownership interest. Joint ventures must have an agreement in writing specifying the terms and conditions of the relationships between the partners and their relationship and responsibility to the contract.

Managers - The City Manager.

Manufacturer - A firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

Personal Net Worth - The net value of the assets of an individual after total liabilities are deducted. An individual's Personal Net Worth does not include the individual's ownership interest in an applicant or the individual's equity in his or her primary place of residence. An individual's Personal Net Worth includes only his or her share of assets held jointly with the individual's spouse.

Program - The SDBE Program.

Project Specific Goal - The Goal established for a particular project or contract based upon the availability of SDBEs in the scopes of work of the Contract.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a Regular Dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A firm may be a Regular Dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the firm both owns and operates distribution equipment for the products. Any supplementing of a Regular Dealer's distribution equipment shall be by a long-term lease agreement and not on an *ad hoc* or contract-by-contract basis. Packagers, manufacture representatives, or other persons who arrange or expedite transactions are not Regular Dealers.

Schedule of Participation - The list of SDBEs that the Bidder/Participant commits will be utilized, their scopes of the work, and dollar value or the percentage of the project they will perform.

Socially Disadvantaged - An individual who has been subjected to racial or ethnic prejudice or cultural bias within American society because of his or her identity as a member of a group and without regard to individual qualities. Social disadvantage must stem from circumstances beyond the individual's control. A Socially Disadvantaged individual must be a citizen or lawfully admitted permanent resident of the United States who is either:

- (a) A person whose lifelong cultural and social affiliation is with one of the following groups, which are rebuttably presumed to be Socially Disadvantaged:
 - (i) Blacks/African - Americans (persons having origins in any of the Black racial groups of Africa);
 - (ii) Hispanic - Americans (persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race);

- (iii) Native - Americans (persons having origins in the original groups of North America);
 - (iv) Asian - Americans (persons having origins in any of the original groups of the Far East, Southeast Asia, the islands of the Pacific or the Indian Subcontinent);
 - (v) Women; or
- (b) Any socially disadvantaged individual as defined by 15 U.S.C. 637.

Small Disadvantaged Business Enterprise (SDBE) - Means a business, including a sole proprietorship, partnership, corporation, limited liability company, joint venture or any other business or professional entity:

- (a) Which is at least 51 percent owned by one or more Socially and Economically Disadvantaged individuals, or in the case of a publicly owned business, at least 51 percent of all classes of the stock of which is owned by one or more Socially and Economically Disadvantaged individuals;
- (b) Whose management, policies, major decisions and daily business operations are independently managed and controlled by one or more such Socially and Economically Disadvantaged individuals;
- (c) Which is a Small Business Enterprise as defined by 13 CFR Part 121;
- (d) Which is Doing Business in the City's Marketplace; and
- (e) Which is certified as a SDBE by the City of Fayetteville.

SDBE Program Coordinator - The person designated by the Managers to administer the Program.

III. SDBE Program Administration.

The Coordinator shall administer the SDBE Program, which duties shall include:

- (a) Formulating, proposing, and implementing rules and regulations for the further development, implementation, and monitoring of the Program.
- (b) Informing SDBEs of City contracting opportunities through outreach activities.
- (c) Providing information and assistance to SDBEs relating to City procurement practices and procedures, and bid specifications, requirements, and prerequisites.
- (d) Certifying businesses as SDBEs, maintaining certification records, and ensuring that all City departments have current certification listings.
- (e) Establishing Project Specific Goals.
- (f) Evaluating Bidder/Participant's achievement of Project Specific Goals or Good Faith Efforts to meet Project Specific Goals.
- (g) Working with City departments to monitor Contracts to ensure prompt payments to SDBEs, compliance with Project Specific Goals and commitments and the Program's operations and objectives.
- (h) Receiving, reviewing, and acting upon complaints and suggestions concerning the Program.

- (i) Collecting data to evaluate the Program.
- (j) Monitoring the Program and reporting to the Managers, the Mayor and the City Council on the administration and operations of the Program.

IV. Race- and Gender-Neutral Measures to Ensure Equal Opportunities for All Bidders/Participants.

The City shall develop and use measures to facilitate the participation of all firms in City contracting activities. These measures shall include, but are not limited to:

- (a) Arranging solicitation times for the presentations of bidding opportunities, which includes quantities, specifications and delivery schedules so as to facilitate the participation of interested firms.
- (b) Dividing requests for bids or proposals into work elements to facilitate the participation of small firms.
- (c) Providing timely information on specific contracting opportunities, contracting procedures, and bid preparation.
- (d) Holding pre-bid conferences, where appropriate, to explain the projects.
- (e) Enforcing prompt payment requirements and procedures, including requiring by contract that prime contractors promptly pay subcontractors.
- (f) Reviewing bonding and insurance requirements to eliminate unnecessary barriers to contracting with the City.
- (g) Maintaining information on all firms bidding on City prime contracts and subcontracts.

V. SDBE Program Eligibility.

- (a) Only businesses that meet the criteria of SDBEs may participate in the Program.
- (b) The City shall apply the certification criteria and procedures of 49 CFR Part 26 to applicants for participation in the Program.
- (c) The City shall certify the eligibility of joint ventures involving SDBEs and non-SDBEs.
- (d) In lieu of conducting its own certifications, the Coordinator may accept formal certifications by other entities as meeting the requirements of the Program, if the eligibility standards of such entities are comparable to those of the City. Certification decisions, including decertification and graduation determinations, by those other entities shall be accepted by the City in its discretion.
- (e) It is the responsibility of the SDBE to notify the Coordinator of any change in its circumstances affecting its continued eligibility for the Program. Failure to do so may result in the firm's decertification.
- (f) A SDBE may be decertified if it submitted inaccurate, false, or incomplete information to the City or failed to comply with requirements of a contract with the City or with the requirements of the Program.
- (g) A third party may challenge the eligibility of a certified firm:
 - (1) The challenge shall be made in writing under oath and shall include all information relied upon by the challenging party.

- (2) The Coordinator shall provide an opportunity to the parties for an informal hearing. The parties may appear and provide documentation or other evidence and be represented by counsel.
 - (3) The Coordinator shall render a written decision within 15 days of the hearing.
 - (4) If the Coordinator determines that the firm is not eligible, it may appeal the determination to the Manager in writing within 7 days of receipt of the written decision. The challenging party shall have no right of appeal from the Coordinator's determination.
 - (5) The Manager shall issue a written decision within 15 days of receipt of the appeal. The Manager's determination shall be final.
- (h) A firm that has been decertified may not reapply for certification for one year from the effective date of its decertification.

VI. SDBE Goal Setting.

The Coordinator shall establish a Project Specific Goal for appropriate Contracts based on normal industry practice as determined in consultation with the appropriate Department, the availability of SDBEs to perform the functions of the Contracts and the City's utilization of SDBEs to date.

VII. Counting Participation of SDBEs.

(a) The entire amount of that portion of a construction Contract that is performed by the SDBE's own forces shall be counted, including the cost of equipment obtained by the SDBE for the work of the Contract, and equipment purchased or leased by the SDBE (except equipment the SDBE subcontractor or Joint Venture partner purchases or leases from the prime contractor or its Affiliate).

(b) The entire amount of fees or commissions charged by a SDBE for providing a *bona fide* service, such as professional, technical, consultant or managerial services, or for providing bonds or insurance specifically required for the performance of the Contract, shall be counted, provided the fee is reasonable and not excessive as compared with fees customarily charged for similar services.

(c) When a SDBE performs as a participant in a Joint Venture, only the portion of the total dollar value of the Contract equal to the distinct, clearly defined portion of the work of the Joint Venture's Contract that the SDBE performs with its own forces and for which it is separately at risk shall be counted.

(d) Only expenditures to a SDBE that is performing a Commercially Useful Function shall be counted. To determine whether a firm is performing a Commercially Useful Function, the City will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and other relevant factors. To perform a Commercially Useful Function, the SDBE must be responsible, with respect to equipment used on the Contract, for negotiating price, determining quality and quantity, ordering the material, installing (where applicable) and paying for the material itself. A SDBE does not perform a Commercially Useful Function if its role is limited to that of an extra participant in the Contract through which funds are passed in order to obtain the appearance of SDBE participation. If a SDBE subcontracts a greater portion of the work of a Contract than would be expected on the basis of normal industry practice, it is presumed not to perform a Commercially Useful Function. When a SDBE is presumed not to be performing a Commercially Useful Function, the SDBE may present evidence to rebut this presumption.

(e) One hundred percent of the cost of the materials or supplies obtained from a SDBE Manufacturer or Regular Dealer shall be counted. One hundred percent of the fees or transportation charges for the delivery of materials or supplies required on a job site shall be counted only if the payment of such fees is a customary industry

practice and are commensurate with fees customarily charged for similar services. The cost of the materials and supplies shall not be counted.

(f) If a firm is decertified during performance of a Contract, the dollar value of work performed under a Contract with that firm after it has been decertified shall not be counted.

(g) In determining achievement of a Project Specific Goal, the participation of a SDBE shall not be counted until that amount has been paid to the SDBE.

VIII. Procurement of Architectural, Engineering and Surveying Services (G.S. 143-64.31)

(a) The City shall use good faith efforts to notify minority firms of the opportunity to submit qualifications for architectural, engineering, surveying and construction management at risk services.

IX. Informal Construction and Repair Work (G.S. 143-131)

(a) The City shall solicit minority participation for construction and repair projects in the amount of five thousand dollars (\$5,000) or more, but less than three hundred thousand dollars (\$300,000). The City shall maintain a record of contractors solicited and shall document efforts to recruit minority business participation in these contracts.

X. Formal Construction and Repair Work (G.S. 143-129)

(a) For all solicitations, the Bidder/Participant shall submit a Schedule of Participation detailing all subcontractors from which the Bidder/Participant solicited bids or quotations, and if a Project Specific Goal has been established, its achievement of the Goal or its Good Faith Efforts to do so. The list of SDBEs provided by the City to a Bidder/Participant establishes the minimum universe from which a Bidder/Participant must solicit SDBEs. The Schedule of Participation shall be due at the time set out in the solicitation documents.

(b) Any agreement between a Bidder/Participant and a SDBE in which the Bidder/Participant requires that the SDBE not provide subcontracting quotations to other bidders/proposers is prohibited.

(c) SDBEs shall respond to relevant requests for quotations.

(d) Where the Bidder/Participant cannot achieve the Project Specific Goal, the Coordinator will determine whether the Bidder/Participant has made Good Faith Efforts. At a minimum, the Bidder/Participant must engage in the following Good Faith Efforts that total at least 50 points for the bid or proposal to be responsive.

(1) Contacting SDBEs from the list provided by the City at least ten days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. The Bidder/Participant shall provide interested SDBEs with timely, adequate information about the plans, specifications, and requirements of the Contract to allow SDBEs to respond to the solicitation. The Bidder/Participant must follow up initial solicitations with interested SDBEs. 10 points.

(2) Providing or making the construction plans, specifications, and requirements available for review by SDBEs at least ten days before the bid or proposals are due. 10 points.

(3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation. 15 points.

(4) Working with SDBE, minority, women, trade, community or contractor organizations identified by the City in the bid documents that provide assistance in recruitment of SDBEs. 10 points.

(5) Attending any prebid meetings scheduled by the City. 10 points.

- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. 20 points.
- (7) Negotiating in good faith with interested SDBEs and not rejecting them as unqualified without sound reasons based on their capabilities. Evidence of such negotiation includes the names, addresses, and telephone numbers of SDBEs that were contacted; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and why agreements could not be reached with SDBEs. The Bidder/Participant may not reject SDBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection of a SDBE based on price or lack of qualifications must be documented in writing. 15 points.
- (8) Providing assistance to an otherwise qualified SDBE in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting SDBEs in obtaining the same unit pricing with the bidder's suppliers in order to help minority SDBEs to establish credit. 25 points.
- (9) Negotiating joint venture and partnership arrangements with SDBEs to increase opportunities for SDBE participation. 20 points.
- (10) Providing quick pay agreements and policies to enable SDBEs to meet cash-flow demands. 20 points.

(e) In determining whether a Bidder/Participant has made Good Faith Efforts, the performance of other bidders/proposers in meeting the Project Specific Goal may be considered. For example, when the apparent successful Bidder/Participant fails to meet the Project Specific Goal but others meet it, it may be reasonably questioned whether, with additional reasonable efforts, the apparent successful Bidder/Participant could have met the Goal. Similarly, if the apparent successful Bidder/Participant fails to meet the Goal, but meets or exceeds the average SDBE participation obtained by other bidders/proposers, this may be evidence that the apparent successful Bidder/Participant made Good Faith Efforts.

(f) The Coordinator shall timely review the Schedule of Participation prior to award, including the scope of work and the letters of intent from SDBEs. The Coordinator may request clarification in writing of items listed in the Schedule of Participation, provided such clarification shall not include the opportunity to augment listed SDBE participation or Good Faith Efforts.

(g) The Schedule of Participation and supporting documents shall be reviewed by a Bid Selection Committee, composed of the operating departments, Purchasing Department, Coordinator and other representatives as appropriate. If the Bid Selection Committee initially determines the bid to be responsive, it shall recommend award of the Contract to the Managers. If the Bid Selection Committee determines the bid to be non-responsive, it shall confer with the City Attorney prior to recommending the rejection of the bid.

(h) A Bidder/Participant found to be non-responsive may appeal this determination pursuant to the City's bid protest procedures.

XI. Contract Performance Compliance Procedures.

(a) Upon award of a Contract by the City that includes a Project Specific Goal, the Goal becomes a covenant of performance by the Bidder/Participant in favor of the City.

(b) The Bidder/Participant shall provide a listing of all subcontractors to be used in the performance of the Contract, and subcontractor payment information to the City with each request for payment submitted to the City. The Coordinator and the operating department shall monitor subcontractor participation during the course of the Contract and shall have reasonable access to all Contract-related documentation held by the Bidder/Participant. The Bidder/Participant shall submit reports at such times and in such formats as requested by the City.

- (c) The Bidder/Participant shall cooperate with the City in studies and surveys related to the Program.
- (d) The Bidder/Participant cannot make changes to the Schedule of Participation or substitute subcontractors named in the Schedule of Participation without the prior written approval of the Coordinator. Unauthorized changes or substitutions shall be a violation of this program, and may constitute grounds for rejection of the bid or proposal or cause termination of the executed Contract for breach, the withholding of payment and/or subject the Bidder/Participant to Contract penalties or other sanctions.
- (1) All requests for changes or substitutions of the subcontractors named in the Schedule of Participation shall be made to the Coordinator in writing, and shall clearly and fully set forth the basis for the request. A Bidder/Participant shall not substitute a subcontractor or perform the work designated for a subcontractor with its own forces unless and until the Coordinator approves such substitution in writing.
- (2) The facts supporting the request must not have been known nor reasonably should have been known by either party prior to the submission of the Schedule of Participation. Bid shopping is prohibited.
- (3) Substitutions of the subcontractor shall be permitted only on the following basis:
- (i) Unavailability after receipt of reasonable notice to proceed.
 - (ii) Failure of performance.
 - (iii) Financial incapacity.
 - (iv) Refusal by the subcontractor to honor the bid or proposal price.
 - (v) Mistake of fact or law about the elements of the scope of work of a solicitation where agreement upon a reasonable price cannot be reached.
 - (vi) Failure of the subcontractor to meet insurance, licensing, or bonding requirements; or
 - (vii) The subcontractor's withdrawal of its bid or proposal.
- (4) Where the Bidder/Participant has established the basis for the substitution to the satisfaction of the Coordinator, the Bidder/Participant shall make Good Faith Efforts to fulfill the Schedule of Participation if the Project Specific Goals will not otherwise be met. The Bidder/Participant may seek the assistance of the SDBE Office in obtaining a new SDBE subcontractor. If the Project Specific Goal cannot be reached and Good Faith Efforts have been made, the Bidder/Participant may substitute with a non-SDBE.
- (e) If a Bidder/Participant plans to hire a subcontractor on any scope of work that was not previously disclosed in the Schedule of Participation, the Bidder/Participant shall obtain the approval of the Coordinator to modify the Schedule of Participation and must make Good Faith Efforts to ensure that SDBEs have a fair opportunity to bid on the new scope of work.
- (f) The SDBE Compliance Committee, comprised of the Coordinator as the Chair and a representative from the Purchasing Department or any requested representative, shall be responsible for evaluating and reviewing issues and concerns concerning the Program, including whether a Bidder has complied with the Good Faith Efforts.
- (g) If the Bidder/Participant is found to be in noncompliance with the Program or the Contract and fails to correct such noncompliance within ten working days after written notification, the City will withhold 5

percent of the amount of completed work on all monthly payments until the Bidder/Participant has come into compliance.

XII. Protest Procedure.

A Bidder/Participant may protest a decision regarding the implementation of the Program, including the determination that it has not made Good Faith Efforts, by filing a written grievance with supporting evidence with the Coordinator. The Coordinator shall provide a written response within ten working days of receipt of the grievance. The Bidder/Participant may appeal the Coordinator's determination in writing within ten working days of receipt to the Purchasing Director. The Director shall refer the grievance to the SDBE Compliance Committee, which shall hold a hearing and issue a written recommendation within ten working days. The Manager, upon receipt of the SDBE Compliance Committee's recommendation, shall make a final determination within ten working days.

XIII. Dispute Resolution.

Notwithstanding the protest procedures outlined above, mediation shall be required for all parties involved in a dispute under this program prior to initiating litigation concerning the dispute. The procedures for mediation shall be those adopted by City Council Resolution #2002-066 which is incorporated herein by reference as if fully set forth herein.

XIV. Penalties.

(a) Providing false or misleading information to the City in connection with an application for or challenge to certification, recertification or decertification as a SDBE, submission of a bid, responses to requests for qualifications or proposals, Good Faith Efforts documentation, post-award compliance, or other actions in violation of this program may render any bid award or contract void. A contract that is void under this section may continue in effect until an alternative can be arranged when immediate termination would result in harm to the public health or welfare.

(b) A Bidder/Participant is subject to withholding of payments under the Contract, termination of the Contract for breach, Contract penalties, decertification as a SDBE, or being barred or deemed non-responsive in future City solicitations and Contracts for up to two years, if it is found to have:

- (1) Provided false or misleading information in connection with the submission of a bid or proposal or documentation of Good Faith Efforts, post-award compliance, or other Program operations.
- (2) Failed in bad faith to fulfill the Project Specific Goal, thereby materially breaching the Contract.
- (4) Repeatedly failed to comply in good faith with substantive provisions of this program.

(c) The City reserves the right to pursue all remedies available in law or in equity for violations of this program.

XV. Program Review.

(a) The Managers, the Mayor, and the City Council shall receive an annual report from the Coordinator detailing the City's performance under the Program.

(b) The Managers, the Mayor, and the City Council will review this report, including the City's progress towards eliminating discrimination in its contracting activities and marketplace, and revise the Program as necessary to meet legal and Program requirements.

(c) If the Managers, the Mayor, and the City Council find that the objectives of the Program have been achieved, the City Council shall sunset the Program.

**CITY OF FAYETTEVILLE AND FAYETTEVILLE PUBLIC
WORKS COMMISSION'S SDBE/HUB COMPLIANCE PROVISIONS**

APPLICATION:

The requirements of the City of Fayetteville's Small Disadvantaged Business Program (the "SDBE Program") for participation specific contracts are hereby made part of the Contract Documents. Copies of the Program may be obtained from:

Fayetteville Public Works Commission
Procurement Department/Trent Ensley
P.O. Box 1089 Fayetteville, North Carolina 28302
Phone (910) 223-4333 Fax (910) 483-1429
e-mail: trent.ensley@faypwc.com

NCDOT DBE Directory: www.ebs.nc.gov/VendorDirectory
HUB Directory <https://ncadmin.nc.gov/businesses/hub>

SDBE Compliance Requirements

1. The Bidder shall provide, with the bid, the documents set forth below, properly executed. Returning executed copies indicates and establishes that the Bidder understands and agrees to any incorporated SDBE contract provisions.
2. All Bidders must provide with their Bid Proposal Form a properly completed and executed copy of the Identification of SDBE/HUB Participation Form
3. All Bidders must provide with their Bid Proposal Form a properly completed and executed copy of **either** Affidavit A – Listing of Good-Faith Efforts **OR** Affidavit B – Intent to Self-Perform with Own Workforce.
4. Upon being identified as the apparent lowest responsive, responsible Bidder, a Bidder shall, within seven (7) calendar days provide a properly completed and executed copy of **either** Affidavit C – Percentage of SDBE/HUB Participation **OR** Affidavit D – Good-Faith Efforts.

All written statements, certifications, or intentions made by the Bidder shall become a part of the agreement between the Contractor and the City of Fayetteville for performance of this contract.

SUBCONTRACTOR PAYMENT REQUIREMENTS:

North Carolina General Statutes 143-134.1 (N.C.G.S.) states that the percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the City of Fayetteville to the prime contractor. Failure to comply with this provision shall be considered a breach of the contract, and the contract may be terminated in accordance with the termination provisions of the contract.

The Contractor shall provide an itemized statement of payments to each SDBE subcontractor before final payment is processed.

The Contractor shall provide an itemized statement of payments to each NON-SDBE subcontractor before final payment is processed.

Contractor

Signature

_____, _____
Printed Name Title

Date

Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid

Affidavit A: Listing of the Good Faith Efforts

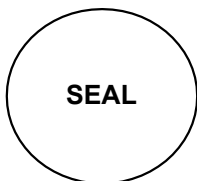
Affidavit of _____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:
(A value of 50 points or greater achieves "good faith efforts")

- (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. Value = Ten (10) points.
- (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due. Value = Ten (10) points.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation. Value = Fifteen (15) points.
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses. Value = Ten (10) points.
- (5) Attending any pre-bid meetings scheduled by the public owner. Value = Ten (10) points.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. Value = Twenty (20) points.
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing. Value = Fifteen (15) points.
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. Value = Twenty-five (25) points.
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible. Value = Twenty (20) points.
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. Value = Twenty (20) points.

In accordance with NCGS 143-128.2(d) the undersigned will enter into a formal agreement with the firms listed in the Identification of Small Disadvantaged Business Participation schedule conditional upon execution of a contract with the Owner. Failure to abide by any applicable statutory provision may constitute a breach of the contract. The undersigned hereby certifies that he or she has read the terms of the small disadvantaged business commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

Attach to Bid Attach to Bid Attach to Bid Attach to Bid Attach to Bid

Affidavit B: Intent to Perform Contract with Own Workforce:

Affidavit of _____
(Name of Bidder)

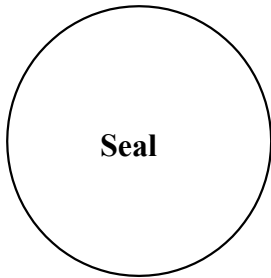
I hereby certify that it is our intent to perform 100% of the work required for the _____
_____ contract (Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements of the work** on this project with his/her own current workforces; and will complete all elements of this project **without** the use of subcontractors, material suppliers, or providers of professional services.

The Bidder agrees to provide any additional information or documentation requested by the Owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____



Signature: _____

Title: _____

State of North Carolina, County of _____
Subscribed and sworn to before me this ____ day of ____ 2022
Notary Public _____
My commission expires _____

Affidavit C: Percentage of SDBE/HUB Participation

Affidavit of _____ I do certify that on the
 (Name of Company)

\$

(Project Number)

(Dollar Amount of Total Bid)

I will expend a minimum of ___% of the total dollar amount of the contract with small disadvantaged business enterprises. SDBE's will be employed as subcontractors, vendors, or providers of professional services. Such work will be subcontracted to the following firms listed below.

Name, Address and Phone No.	*SDBE HUB Category	Description	Dollar Value	% of Contract

*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

*HUB Statewide Uniform Certification (SWUC)

Pursuant to NCGS 143-128.2(d), the undersigned will enter into a formal agreement with small disadvantaged business enterprises for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date: _____

Name of Authorized Officer: _____

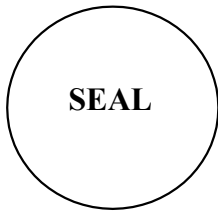
Signature: _____

Title: _____

State of North Carolina, County of _____ Subscribed and sworn to
before me this ____ day of ____ 20

Notary Public _____

My commission expires _____



THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL

Affidavit D: Good Faith Efforts

If Owner determines using reasonable discretion that Affidavit C is insufficient, Bidder agrees to provide the following information regarding any good-faith efforts.

Name, Address and Phone No.	*SDBE/HUB Category	Description	Dollar Value

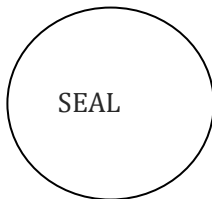
*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A), Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

*HUB Statewide Uniform Certification (SWUC)

Bidder may be requested to provide documentation of the Bidder's good-faith efforts. Examples of documentation may include the following:

- A. Copies of solicitations for quotes to small disadvantaged business firms. Each solicitation may include a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a small disadvantaged business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to small disadvantaged businesses, community or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster.
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for small disadvantaged businesses.
- H. Letter detailing reasons for rejection of a small disadvantaged business due to lack of qualification.
- I. Letter documenting proposed assistance offered to small disadvantaged businesses in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive Bidder.



Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

State of North Carolina, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

Identification of Small Disadvantaged/Local Business Participation

I, _____
 (Name of Bidder)

do hereby certify that on this project, we will use the following small disadvantaged / local business enterprises as construction subcontractors, vendors, suppliers, or providers of professional services.

Firm Name, Address, and Phone No.	Description	SDBE*/HUB**/Local*** Category	Dollar Value

*SDBE categories: Black-African Americans (B), Hispanic-Americans (H), Asian- Americans (A),Native-Americans (I), Women (F), Socially/Economically Disadvantaged (D)

**HUB Statewide Uniform Certification (SWUC)

***Local: Fayetteville Metropolitan Statistical Area (MSA) comprising of Cumberland County, Hoke County, and Harnett County. PWC is requesting this information for reporting purposes only, and use of local entities will not be considered for compliance with the requirements of the SDBE Program.

The total value of small disadvantaged/local business contracting will be \$ _____

FAYETTEVILLE PUBLIC WORKS COMMISSION
Small Local Supplier Subcontractor Disclosure Form

Contractor: _____

Address & Phone: _____

Project: _____

Name: _____

Pay Application #: _____ Period: _____

Please complete the below form by providing the necessary information for the estimated payment to be made to each subcontractor, vendor, or supplier for the work associated with the identified pay application. This form must be fully completed and attached to each pay application.

Firm Name, Address, and Contact Information	Estimated Payment Amount	Type of Work/Commodity (Include NAICS Code)

Signature

_____, _____
Printed Name Title

Date

ATTACHMENT 2

**SDBE SPECIAL CONDITIONS BID LANGUAGE
FORMAL/INFORMAL BID DOCUMENTS**

For all Formal & Informal bid packages. Please use the following bid language, and insert the entire SDBDE packet that is dated: 9/26/2022

SMALL LOCAL SUPPLIER (SLS) PROGRAM / SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

PWC is committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County. PWC requires Bidders to report efforts to utilize Small Disadvantaged Business Enterprises (SDBEs) and Historically Underutilized Businesses (HUBs) for specific projects and encourages all Bidders to report all such efforts for SDBEs, HUBs, and small, local businesses regardless of the requirements of a specific project. Bidders should document any good-faith efforts and utilization in the SDBE forms provided within the Contract Documents and found at: (link).

NCDOT Disadvantaged Business Enterprise (DBE) and Historically NC DOA Underutilized Business firms with current certifications are acceptable for listing in the bidder's submittal of SDBE participation and will be considered to meet any necessary contract goal. Firms that are certified through NCDOT are listed at the "Vendor Directory" which can be accessed through the following: <https://www.ebs.nc.gov/VendorDirectory/default.html> Firms that are certified through NC DOA are listed at the "HUB Vendor Search" which can be accessed through the following <https://www.doa.state.nc.us/HUB/searchhub.htm>

Bidder shall submit, with their Proposal, the SDBE documentation required in the Contract Documents. It is strongly recommended that the Bidder attend the Pre-Bid Conference, as important information will be reviewed.

SMALL LOCAL SUPPLIER (SLS) PROGRAM

PWC is committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County. PWC encourages Bidders to solicit SDBEs, HUBs, and small, local businesses and report any efforts to do so. Bidders should report such good-faith efforts and any subcontractor, vendor, or supplier utilization in the forms provided within this bid package.

ALL OTHER RFP BID LANGUAGE

For all other RFP bid languages, use the following language and insert **only** the Identification form, and the Pay application form from the SDBE packet (dated 9/26/2022) in the bid packet.

SMALL LOCAL SUPPLIER (SLS) PROGRAM

PWC is committed to promoting the utilization of small, local businesses in the Fayetteville Metropolitan Statistical Area (MSA) by increasing opportunities for those businesses to participate in PWC procurements. The MSA consists of Cumberland County, Hoke County, and Harnett County. PWC encourages Bidders to solicit SDBEs, HUBs, and small, local businesses and report any efforts to do so. Bidders should report such good-faith efforts and any subcontractor, vendor, or supplier utilization in the forms provided within this bid package.

ATTACHMENT 3

00300 – BID PROPOSAL

***** TO BE SUBMITTED WITH BID PACKAGE ***** TECHNICAL EVALUATION CRITERIA FORM PROJECT DOCUMENTATION		
(1) Permanent Name of Business:		
(2) Permanent address:		
(3) Length of Time in Business:		
(4) Has the organization operated under any other name?		
(5) State the names and/or companies financially interested in the proposal:		
(6) Within the last five (5) years, has any officer or principal of the organization ever been an officer or principal of another organization when it failed to complete a construction contract? If yes, list name(s), and responsibility.		
SEWER MAIN EXPERIENCE		
(1) List not less than three (3) completed large diameter outfall projects of similar size, scope, nature, and cost, to include the dates of such projects. Please provide all requested information for each listed project. Each project should be from separate references. List only those projects completed as Prime Contractor.		
Project 1A:	Cost:	
Location:	Dates:	Size:
Scope:	Client:	Phone:
Project 1B:	Cost:	
Location:	Dates:	Size:
Scope:	Client:	Phone:
Project 1C:	Cost:	

Location:	Dates:	Size:
Scope:	Client:	Phone:
(2) A listing of three (3) large diameter sewer outfall projects of similar size, scope and cost. (Provide reference information as stated in #1.)		
Project 2A:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
Project 2B:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
Project 2C:		Cost:
Location:	Dates:	Size:
Scope:	Client:	Phone:
(3) List any subcontracting experience on large diameter sewer outfall projects with specifics to the type of work performed for this project. Please provide all requested information.		
Project:		Cost:
Location:	Dates:	Size:
Work Performed:		
Project:		Cost:

Location:	Dates:	Size:
Work Performed:		
Project:	Cost:	
Location:	Dates:	Size:
Work Performed:		
(4) List of projects in progress. Please provide all requested information.		
Project:	Cost:	
Owner:		
Percentage Complete:	Scheduled Completion Date:	
Project:	Cost:	
Owner:		
Percentage Complete:	Scheduled Completion Date:	
Project:	Cost:	
Owner:		
Percentage Complete:	Scheduled Completion Date:	
Project:	Cost:	
Owner:		
Percentage Complete:	Scheduled Completion Date:	
Project:	Cost:	

Owner:	
Percentage Complete:	Scheduled Completion Date:
Project:	
Project:	Cost:
Owner:	
Percentage Complete:	Scheduled Completion Date:
PROJECT PERSONNEL AND EXPERIENCE	
(1) The number of crews qualified and available to perform the work stated in this proposal:	
(2) The names of Bidder superintendents and crew leaders/foreman who are qualified and available to perform the work stated in this proposal:	Superintendents:
	Crew leaders/foreman:
ADDITIONAL ITEMS	
The following items shall be submitted as attachments:	
(1) Affidavit stating any OSHA violations occurring within the past three (3) years.	
(2) A statement provided by the Surety Company stating the Bidder's bonding limit and a statement of the amount of work currently under bond.	
(3) A statement listing any judgments, claims, arbitration proceedings, or suits pending or outstanding against organization or its officers.	
(4) A statement listing any filed lawsuits, judgments, claims, arbitration proceedings, or suits pending with regard to construction contracts within the last five (5) years.	
(5) The resumes or brief summary of key personnel of the organization. Identify the person that will be primarily responsible for the project.	
(6) List of equipment that is available for use on the subject project.	
<p>The Owner may conduct such investigations/verifications as deemed necessary to establish the responsibility, qualification and financial ability of the Bidder. Should the Owner adjudge that the apparent low bidder is not the lowest responsive, responsible bidder by virtue of the above information furnished, said apparent low bidder will be so notified and its bid security shall be returned to it without prejudice. Failure or refusal to furnish any items of information requested by the Owner shall be considered as non-responsive and therefore, basis for rejection of the bid.</p>	
Submitted By:	Date:
Printed Name:	Title:

BID PROPSAL

PROJECT IDENTIFICATION: BIG ROCKFISH CREEK SANITARY SEWER OUTFALL

CONTRACT IDENTIFICATION & NUMBER:

Bid Request: Big Rockfish Creek Sanitary Sewer Outfall and Camden Glenn Lift Station Elimination Outfall
Contract 2
CS370434-15/16

THIS BID IS SUBMITTED TO:

Fayetteville Public Works Commission
Attn: Tanya Hazlett, Procurement Advisor
PWC Administration Building
955 Old Wilmington Road
Fayetteville, North Carolina 28301

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into a Contract with OWNER in the form included in the Contract Documents to perform and furnish all Work specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including, without limitation, those dealing with the disposition of payment and performance bonds, and insurance certificates. This bid will remain open for one hundred twenty (120) days after the day of Bid opening. BIDDER will sign the Contract and submit the Contract Security and other documents required by the Contract Documents within ten (10) days after the date of receipt of the Notice of Award by the BIDDER.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Contract, that:
 - a. BIDDER has examined copies of all the Contract Documents and addenda, receipt of which is acknowledged on the bid summary page.
 - b. BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules, and regulations) and the conditions affecting cost, progress of performance of the work and has made such independent investigations as BIDDER deems necessary.
 - c. BIDDER acknowledges that OWNER and DESIGN ENGINEER does not assume responsibility for the accuracy of dimensions or completeness of information and data shown or indicated in the Bidding Documents with respect to existing facilities.
 - d. BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site of the Work (except underground facilities) and all drawings of physical conditions in or relating to existing surface or subsurface structures, pipelines, and utilities at or contiguous to the site are provided within these Contract Documents. Geotechnical Reports and other information regarding subsurface conditions are identified in the attached appendices and detailed in Article 4 of the General Conditions. BIDDER acknowledges that the OWNER and DESIGN ENGINEER does not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to underground facilities at or contiguous to the site of Work. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations investigations, explorations, tests, studies, and data that are necessary to identify and understand conditions (surface, subsurface, and underground facilities) at or contiguous to the site of Work or otherwise which may affect cost, progress, performance, or furnishing the Work or which relate to any aspect of means, methods, techniques, sequences, and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. BIDDER waives all rights to claim that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the proper submission of

the Bid for the performance and furnishing of the Work in accordance with the Contract Time, Contract Price, and other terms and conditions of the Contract Documents.

e. BIDDER hereby certifies that, if awarded the Contract for construction of the Project, it will take all possible actions to minimize costs to the OWNER which are related to any disruptions in any part of the Work resulting from unforeseeable conditions which may be encountered and work changes or additions which may be made.

f. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, exploration, tests, studies, and data with the Contract Documents.

g. BIDDER has given OWNER written notice of all conflicts, errors, ambiguities, or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by OWNER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

h. By bidding in response to this invitation, the BIDDER represents that in the preparation and submission of this Bid, said BIDDER did not, either directly or indirectly, enter into any combination or arrangement with any person, firm or corporation or enter into any agreement, participate in any collusion, or otherwise take any action in the restraint of free, competitive bidding in violation of the Sherman Act (15 U.S.C. Section 1).

i. Bid form must be completed in blue or black ink or by typewriter. The Bid price of each item on the form must be stated in both words and numerals. In case of a conflict, words shall take precedence. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the correct multiplication of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

j. BIDDER understands that the award of contract will be made on the basis of the total Bid amount which will be determined as the sum of the unit price and lump sum Bid Items.

k. BIDDER understands that quantities are estimated and are not guaranteed; they are solely for comparing Bids and establishing the total Bid amount. The Contract Price will be modified by Change Order, and final payment will be based on the quantities of work actually furnished and installed by the successful BIDDER.

l. BIDDER shall complete the Work for the prices indicated on the following pages.

m. BIDDER shall complete the material price form as contained in Section 0300 to establish material price for PVC and DIP pipe materials and steel encasement as time of Bid and include authenticity of these prices with dated quote from the supplier. Failure to complete this form and furnish the supplementary bid documents may result in an unresponsive bid.

The BIDDER has received, acknowledged, and used the following addenda in completing the Bid. (Initial and Date as appropriate).

Addendum No. 1 _____ Dated _____

Addendum No. 2 _____ Dated _____

Addendum No. 3 _____ Dated _____

Addendum No. 4 _____ Dated _____

FAYETTEVILLE PUBLIC WORKS COMMISSION
BIG ROCKFISH CREEK OUTFALL CONTRACT 2

BASE BID, PART A - Big Rockfish Creek Sanitary Sewer Outfall (Station from Sta. 116+89 to Sta. 264+64)						
Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
SITE PREPARATION & ALLOWANCES						
1	1	Mobilization (less than or equal to 3% of Part A Bid) @_____ lump sum	LS	1	\$	\$
2	2	Traffic Control & Traffic Control Plan @_____ lump sum	LS	1	\$	\$
3	3	Allowance for "Third Party" Vibration Monitoring @_____ lump sum	LS	1	\$ 50,000.00	\$ 50,000.00
SANITARY SEWER MAIN INSTALLATION						
4	7	Furnish and Install PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (Open Trench) 18-inch Sanitary Sewer				
4-a		8' - <10' Depth @_____ per linear foot	LF	141	\$	\$
4-b		10' - <12' Depth @_____ per linear foot	LF	140	\$	\$
4-c		12' - <14' Depth @_____ per linear foot	LF	130	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
4-d		14' - <16' Depth @ _____ per linear foot	LF	303	\$	\$
4-e		16' - <18' Depth @ _____ per linear foot	LF	529	\$	\$
4-f		18' - <20' Depth @ _____ per linear foot	LF	186	\$	\$
4-g		20' - <22' Depth @ _____ per linear foot	LF	40	\$	\$
5	5	Install "Owner Furnished" PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (Open Trench, Excluding Cost of Pipe)				
		24-inch Sanitary Sewer				
5-a		8' - <10' Depth @ _____ per linear foot	LF	233	\$	\$
5-b		10' - <12' Depth @ _____ per linear foot	LF	679	\$	\$
5-c		12' - <14' Depth @ _____ per linear foot	LF	773	\$	\$
5-d		14' - <16' Depth @ _____ per linear foot	LF	609	\$	\$
5-e		16' - <18' Depth @ _____ per linear foot	LF	352	\$	\$
5-f		18' - <20' Depth @ _____ per linear foot	LF	427	\$	\$

Item No.	Spec. Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
5-g		20' - <22' Depth @_____per linear foot	LF	166	\$	\$
5-h		22' - <24' Depth @_____per linear foot	LF	30	\$	\$
6	N/A	Furnish PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (For Open Trench)				
6-a		24-inch Sanitary Sewer, New (Cost of Pipe Only) @_____per linear foot	LF	847	\$	\$
6-b	6	24-inch Sanitary Sewer, Transport Owner Furnished Pipe from Owner Storage Yard to Project Site @_____per linear foot	LF	2,422	\$	\$
7	8	Furnish and Install C900 PVC DR-18 Sewer Pipe (Open Trench)				
		18-inch Sanitary Sewer				
7-a		0' - <8' Feet Depth @_____per linear foot	LF	213	\$	\$
7-b		8' - <10' Depth @_____per linear foot	LF	323	\$	\$
7-c		10' - <12' Depth @_____per linear foot	LF	586	\$	\$
7-d		12' - <14' Depth @_____per linear foot	LF	272	\$	\$
7-e		14' - <16' Depth @_____per linear foot	LF	325	\$	\$

Item No.	Spec. Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
7-f		16' - <18' Depth @_____per linear foot	LF	91	\$	\$
8	8	Furnish and Install C900 PVC DR-18 Sewer Pipe (Open Trench) 24-inch Sanitary Sewer				
8-a		10' - <12' Depth @_____per linear foot	LF	193	\$	\$
8-b		12' - <14' Depth @_____per linear foot	LF	2,162	\$	\$
8-c		14' - <16' Depth @_____per linear foot	LF	380	\$	\$
8-d		16' - <18' Depth @_____per linear foot	LF	190	\$	\$
8-e		18' - <20' Depth @_____per linear foot	LF	151	\$	\$
8-f		20' - <22' Depth @_____per linear foot	LF	734	\$	\$
8-g		22' - <24' Depth @_____per linear foot	LF	205	\$	\$
8-h		24' - <26' Depth @_____per linear foot	LF	25	\$	\$

Item No.	Spec. Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
9	9	Furnish and Install Epoxy-Lined Class 250 Ductile Iron Sewer Pipe (Open Trench)				
		18-inch DIP Sanitary Sewer				
9-a		0' - <8' Depth @ _____ per linear foot	LF	121	\$	\$
9-b		8' - <10' Depth @ _____ per linear foot	LF	120	\$	\$
9-c		10' - <12' Depth @ _____ per linear foot	LF	33	\$	\$
9-d		12' - <14' Depth @ _____ per linear foot	LF	44	\$	\$
9-e		14' - <16' Depth @ _____ per linear foot	LF	17	\$	\$
10	9	Furnish and Install Epoxy-Lined Class 250 Ductile Iron Sewer Pipe (Open Trench)				
		24-inch DIP Sanitary Sewer				
10-a		0' - <8' Depth @ _____ per linear foot	LF	93	\$	\$
10-b		8' - <10' Depth @ _____ per linear foot	LF	187	\$	\$
10-c		14' - <16' Depth @ _____ per linear foot	LF	54	\$	\$
10-d		16' - <18' Depth @ _____ per linear foot	LF	96	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
11	10	Furnish and Install Class 250 Restrained Joint Epoxy-Lined Ductile Iron Sewer Pipe (Open Trench)				
		24-inch DIP Sanitary Sewer				
11-a		12' - <14' Depth @_____per linear foot	LF	731	\$	\$
11-b		14' - <16' Depth @_____per linear foot	LF	702	\$	\$
11-c		16' - <18' Depth @_____per linear foot	LF	678	\$	\$
11-d		18' - <20' Depth @_____per linear foot	LF	364	\$	\$
11-e		20' - <22' Depth @_____per linear foot	LF	252	\$	\$
11-f		22' - <24' Depth @_____per linear foot	LF	91	\$	\$
12	11	Furnish Steel Encasement Pipe installed by Guaranteed Encased Trenchless Crossing with RJ Epoxy lined DIP Class 250 Sanitary Sewer Carrier Pipe				
12-a		54-inch Steel Encasement Pipe installed by Guaranteed Trenchless Crossing with 24-inch Sanitary Sewer Carrier Pipe @_____per linear foot	LF	626	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
13	13	Furnish and Install Sewer Service Lateral				
13-a		PVC Sewer Service Lateral, 6-inch Diameter @_____per each	EA	2	\$	\$
SANITARY SEWER MANHOLES						
14	15	Furnish and Install Precast Concrete Manhole				
		Furnish and Install 4' Dia. Precast Concrete Manhole, Non-Traffic, CamLock Ring and Cover				
14-a		8' - <10' Feet Depth @_____each	EA	3	\$	\$
14-b		12' - <14' Depth @_____each	EA	2	\$	\$
14-c		14' - <16' Depth @_____each	EA	4	\$	\$
14-d		16' - <18' Depth @_____each	EA	5	\$	\$
15	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Non-Traffic, CamLock Ring and Cover				
15-a		10' - <12' Depth @_____each	EA	1	\$	\$
15-b		12' - <14' Depth @_____each	EA	4	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
15-c		14' - <16' Depth @_____ each	EA	1	\$	\$
15-d		16' - <18' Depth @_____ each	EA	1	\$	\$
15-e		18' - <20' Depth @_____ each	EA	1	\$	\$
15-f		20' - <22' Depth @_____ each	EA	2	\$	\$
15-g		22' - <24' Depth @_____ each	EA	1	\$	\$
15-h		24' - <26' Depth @_____ each	EA	1	\$	\$
16	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Traffic, Standard Ring and Cover				
16-a		8' - <10' Depth @_____ each	EA	4	\$	\$
16-b		10' - <12' Depth @_____ each	EA	5	\$	\$
16-c		12' - <14' Depth @_____ each	EA	9	\$	\$
16-d		14' - <16' Depth @_____ each	EA	4	\$	\$
16-e		16' - <18' Depth @_____ each	EA	7	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
16-f		20' - <22' Depth @_____each	EA	1	\$	\$
16-g		22' - <24' Depth @_____each	EA	2	\$	\$
17	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Traffic, CamLock Ring and Cover				
17-a		10' - <12' Depth @_____each	EA	1	\$	\$
17-b		12' - <14' Depth @_____each	EA	2	\$	\$
17-c		14' - <16' Depth @_____each	EA	2	\$	\$
17-d		16' - <18' Depth @_____each	EA	2	\$	\$
17-e		20' - <22' Depth @_____each	EA	1	\$	\$
18	17	Furnish and Install Standard Manhole Vents @_____each	EA	9	\$	\$
19	18	Connect To Existing Manhole				
19-a		24-inch Diameter (Approx. Stat. 116+90, SSMH 45) @_____each	EA	1	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
20	16	Furnish and Install Inside Drop				
20-a		Interior Drop Structure for Sewer Service Lateral, 6-inch Diameter @ _____ per vertical foot	VF	10	\$	\$
21	20	Furnish and Install Anti-Microbial Admixture, Cementitious Base Coating and Polymeric Lining				
21-a		4-foot Inside Diameter @ _____ per vertical foot	VF	22	\$	\$
21-b		5-foot Inside Diameter @ _____ per vertical foot	VF	285	\$	\$
22	19	Furnish and Install Manhole Insert Odor Control @ _____ each	EA	3	\$	\$
EROSION AND SEDIMENTATION CONTROL						
23	21	Furnish and Install Erosion and Sedimentation Control Devices @ _____ lump sum	LS	1	\$	\$
24	22	Furnish and Install Anti-Seepage Collars				
24-a		Compacted Clay on 18" C900 PVC @ _____ each		10	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
24-b		Compacted Clay or Placed Concrete on 18" DIP @_____ each		1	\$	\$
24-c		Compacted Clay on 24" C900 PVC @_____ each		19	\$	\$
25	23	Convert Temporary Construction Entrance to Permanent Access @_____ each	EA	3	\$	\$
26	24	Furnish and Install Temporary Stream Crossing				
26-a		Stream S7 @_____ each	EA	1	\$	\$
26-b		Stream S8 @_____ each	EA	1	\$	\$
26-c		Stream S10 @_____ each	EA	1	\$	\$
27	25	Furnish and Install Temporary Wetland Crossing				
27-a		Wetland 1/A @_____ each	EA	1	\$	\$
27-b		Wetland 2 @_____ each	EA	1	\$	\$
27-c		Wetland 18 @_____ each	EA	1	\$	\$
27-d		Wetland 26 @_____ each	EA	1	\$	\$
27-e		Wetland 27 @_____ each	EA	1	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
27-f		Wetland 28 @_____each	EA	1	\$	\$
27-g		Wetland 29 @_____each	EA	1	\$	\$
27-h		Wetland B @_____each	EA	1	\$	\$
27-i		Wetland C @_____each	EA	1	\$	\$
28	26	Sod Grass Installation @_____per square foot	SF	450,430	\$	\$
29	27	Permanent Seeding				
29-a		Non-wetland Areas @_____per square foot	SF	112,608	\$	\$
29-b		Wetland Areas @_____per square foot	SF	151,905	\$	\$
INCIDENTALS, DEMOLITION AND RESTORATION						
34	29	Reconstruct NCDOT Maintained Residential Street (NOA)				
34-a		Lakeview Drive @_____per square yard	SY	4,400	\$	\$
34-b		Lake Farm Road @_____per square yard	SY	1,250	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
34-c		Mariner's Landing Drive @_____per square yard	SY	6,250	\$	\$
35	30	Mill and Overlay @_____per square yard	SY	1,155	\$	\$
36	32	Dirt Road Repair @_____per square yard	SY	1,195	\$	\$
39	33	Removal and Replacement of Concrete @_____per square yard	SY	915	\$	\$
40	31	Gravel Driveway Repair @_____per square yard	SY	287	\$	\$
41	38	Removal and Replacement Drainage Pipe				
41-a		15-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	560	\$	\$
41-b		18-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	48	\$	\$
41-c		24-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	144	\$	\$
41-d		48-inch Diameter Corrugated Plastic Pipe @_____per linear foot	LF	52	\$	\$
42	34	Undercut Pipe Trench And Replacement with No. 57 or 67 Stone for Pipe Foundation @_____per cubic yard	CY	1,000	\$	\$

Item No.	Spec. 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
43	35	Removal of Unsuitable Material Excavation and Backfill with Select Material @ _____ per cubic yard	CY	27,000	\$	\$
44	36	Rock Excavation and Replacement with Select Backfill @ _____ per cubic yard	CY	150	\$	\$
45	37	Maintenance Stone (No Overage Allowed) @ _____ per square yard	SY	11,930	\$	\$
46	45	Replacement of Existing Water Service Connection (AQUA) @ _____ each	EA	22	\$	\$
47	39	Hydrostatic Pressure Testing of New 24-inch Sewer Pipe at Aerial Pipes, Pipes Near Private Wells and Pipes Crossing Wetlands @ _____ per linear foot	LF	7,017	\$	\$
48	39	Hydrostatic Pressure Testing of New 18-inch Sewer Pipe at Aerial Pipes, Pipes Near Private Wells and Pipes Crossing Wetlands @ _____ per linear foot	LF	2,101	\$	\$
Subtotal-Part A, Base Bid						\$

ALTERNATE BID, PART A - Big Rockfish Creek Sanitary Sewer Outfall (Station from Sta. 116+89 to Sta. 264+64)						
Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
SITE PREPARATION & ALLOWANCES						
1	1	Mobilization (less than or equal to 3% of Part A Bid) @ _____ lump sum	LS	1	\$	\$
2	2	Traffic Control & Traffic Control Plan @ _____ lump sum	LS	1	\$	\$
3	3	Allowance for "Third Party" Vibration Monitoring @ _____ lump sum	LS	1	\$50,000.00	\$50,000.00
SANITARY SEWER MAIN INSTALLATION						
4	7	Furnish and Install PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (Open Trench)				
		18-inch Sanitary Sewer				
4-a		8' - <10' Depth @ _____ per linear foot	LF	141	\$	\$
4-b		10' - <12' Depth @ _____ per linear foot	LF	140	\$	\$
4-c		12' - <14' Depth @ _____ per linear foot	LF	130	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
4-d		14' - <16' Depth @_____per linear foot	LF	303	\$	\$
4-e		16' - <18' Depth @_____per linear foot	LF	529	\$	\$
4-f		18' - <20' Depth @_____per linear foot	LF	186	\$	\$
4-g		20' - <22' Depth @_____per linear foot	LF	40	\$	\$
5	5	Install "Owner Furnished" PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (Open Trench, Excluding Cost of Pipe)				
		24-inch Sanitary Sewer				
5-a		8' - <10' Depth @_____per linear foot	LF	233	\$	\$
5-b		10' - <12' Depth @_____per linear foot	LF	679	\$	\$
5-c		12' - <14' Depth @_____per linear foot	LF	773	\$	\$
5-d		14' - <16' Depth @_____per linear foot	LF	609	\$	\$
5-e		16' - <18' Depth @_____per linear foot	LF	318	\$	\$
5-f		18' - <20' Depth @_____per linear foot	LF	340	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
5-g		20' - <22' Depth @ _____ per linear foot	LF	71	\$	\$
5-h		22' - <24' Depth @ _____ per linear foot	LF	-	\$	\$
6	N/A	Furnish PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (For Open Trench)				
6-a		24-inch Sanitary Sewer, New (Cost of Pipe Only) @ _____ per linear foot	LF	601	\$	\$
6-b	6	24-inch Sanitary Sewer, Transport Owner Furnished Pipe from Owner Storage Yard to Project Site @ _____ per linear foot	LF	2,422	\$	\$
7	8	Furnish and Install C900 PVC DR-18 Sewer Pipe (Open Trench) 18-inch Sanitary Sewer				
7-a		0' - <8' Feet Depth @ _____ per linear foot	LF	213	\$	\$
7-b		8' - <10' Depth @ _____ per linear foot	LF	323	\$	\$
7-c		10' - <12' Depth @ _____ per linear foot	LF	586	\$	\$
7-d		12' - <14' Depth @ _____ per linear foot	LF	272	\$	\$
7-e		14' - <16' Depth @ _____ per linear foot	LF	325	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
7-f		16' - <18' Depth @_____per linear foot	LF	91	\$	\$
8	8	Furnish and Install C900 PVC DR-18 Sewer Pipe (Open Trench) 24-inch Sanitary Sewer				
8-a		10' - <12' Depth @_____per linear foot	LF	193	\$	\$
8-b		12' - <14' Depth @_____per linear foot	LF	2,162	\$	\$
8-c		14' - <16' Depth @_____per linear foot	LF	380	\$	\$
8-d		16' - <18' Depth @_____per linear foot	LF	190	\$	\$
8-e		18' - <20' Depth @_____per linear foot	LF	151	\$	\$
8-f		20' - <22' Depth @_____per linear foot	LF	734	\$	\$
8-g		22' - <24' Depth @_____per linear foot	LF	205	\$	\$
8-h		24' - <26' Depth @_____per linear foot	LF	25	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
9	9	Furnish and Install Epoxy-Lined Class 250 Ductile Iron Sewer Pipe (Open Trench)				
		18-inch DIP Sanitary Sewer				
9-a		0' - <8' Depth @ _____ per linear foot	LF	121	\$	\$
9-b		8' - <10' Depth @ _____ per linear foot	LF	120	\$	\$
9-c		10' - <12' Depth @ _____ per linear foot	LF	33	\$	\$
9-d		12' - <14' Depth @ _____ per linear foot	LF	44	\$	\$
9-e		14' - <16' Depth @ _____ per linear foot	LF	17	\$	\$
10	9	Furnish and Install Epoxy-Lined Class 250 Ductile Iron Sewer Pipe (Open Trench)				
		24-inch DIP Sanitary Sewer				
10-a		0' - <8' Depth @ _____ per linear foot	LF	93	\$	\$
10-b		8' - <10' Depth @ _____ per linear foot	LF	187	\$	\$
10-c		14' - <16' Depth @ _____ per linear foot	LF	54	\$	\$
10-d		16' - <18' Depth @ _____ per linear foot	LF	96	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
11	10	Furnish and Install Class 250 Restrained Joint Epoxy-Lined Ductile Iron Sewer Pipe (Open Trench)				
		24-inch DIP Sanitary Sewer				
11-a		12' - <14' Depth @_____per linear foot	LF	731	\$	\$
11-b		14' - <16' Depth @_____per linear foot	LF	696	\$	\$
11-c		16' - <18' Depth @_____per linear foot	LF	690	\$	\$
11-d		18' - <20' Depth @_____per linear foot	LF	371	\$	\$
11-e		20' - <22' Depth @_____per linear foot	LF	268	\$	\$
11-f		22' - <24' Depth @_____per linear foot	LF	99	\$	\$
12	11	Furnish Steel Encasement Pipe installed by Guaranteed Encased Trenchless Crossing with RJ Epoxy lined DIP Class 250 Sanitary Sewer Carrier Pipe				
12-a		54-inch Steel Encasement Pipe installed by Guaranteed Trenchless Crossing with 24-inch Sanitary Sewer Carrier Pipe @_____per linear foot	LF	835	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
13	13	Furnish and Install Sewer Service Lateral				
13-a		PVC Sewer Service Lateral, 6-inch Diameter @ _____ per each	EA	2	\$	\$
SANITARY SEWER MANHOLES, LATERALS AND COATINGS						
14	15	Furnish and Install Precast Concrete Manhole				
		Furnish and Install 4' Dia. Precast Concrete Manhole, Non-Traffic, CamLock Ring and Cover				
14-a		8' - <10' Feet Depth @ _____ each	EA	3	\$	\$
14-b		12' - <14' Depth @ _____ each	EA	2	\$	\$
14-c		14' - <16' Depth @ _____ each	EA	4	\$	\$
14-d		16' - <18' Depth @ _____ each	EA	5	\$	\$
15	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Non-Traffic, CamLock Ring and Cover				
15-a		10' - <12' Depth @ _____ each	EA	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
15-b		12' - <14' Depth @ _____ each	EA	4	\$	\$
15-c		14' - <16' Depth @ _____ each	EA	1	\$	\$
15-d		16' - <18' Depth @ _____ each	EA	1	\$	\$
15-e		18' - <20' Depth @ _____ each	EA	1	\$	\$
15-f		20' - <22' Depth @ _____ each	EA	2	\$	\$
15-g		22' - <24' Depth @ _____ each	EA	1	\$	\$
15-h		24' - <26' Depth @ _____ each	EA	1	\$	\$
16	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Traffic, Standard Ring and Cover				
16-a		8' - <10' Depth @ _____ each	EA	4	\$	\$
16-b		10' - <12' Depth @ _____ each	EA	5	\$	\$
16-c		12' - <14' Depth @ _____ each	EA	9	\$	\$
16-d		14' - <16' Depth @ _____ each	EA	4	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
16-e		16' - <18' Depth @ _____ each	EA	7	\$	\$
16-f		20' - <22' Depth @ _____ each	EA	1	\$	\$
16-g		22' - <24' Depth @ _____ each	EA	2	\$	\$
17	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Traffic, CamLock Ring and Cover				
17-a		10' - <12' Depth @ _____ each	EA	1	\$	\$
17-b		12' - <14' Depth @ _____ each	EA	2	\$	\$
17-c		14' - <16' Depth @ _____ each	EA	2	\$	\$
17-d		16' - <18' Depth @ _____ each	EA	2	\$	\$
17-e		20' - <22' Depth @ _____ each	EA	1	\$	\$
18	17	Furnish and Install Standard Manhole Vents @ _____ each	EA	9	\$	\$
19	18	Connect To Existing Manhole				
19-a		24-inch Diameter (Approx. Stat. 116+90, SSMH 45) @ _____ each	EA	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
20	16	Furnish and Install Inside Drop				
20-a		Interior Drop Structure for Sewer Service Lateral, 6-inch Diameter @ _____ per vertical foot	VF	10	\$	\$
21	20	Furnish and Install Anti-Microbial Admixture, Cementitious Base Coating and Polymeric Lining				
21-a		4-foot Inside Diameter @ _____ per vertical foot	VF	22	\$	\$
21-b		5-foot Inside Diameter @ _____ per vertical foot	VF	285	\$	\$
22	19	Furnish and Install Manhole Insert Odor Control @ _____ each	EA	3	\$	\$
EROSION AND SEDIMENTATION CONTROL						
23	21	Furnish and Install Erosion and Sedimentation Control Devices @ _____ lump sum	LS	1	\$	\$
24	22	Furnish and Install Anti-Seepage Collars				
24-a		Compacted Clay on 18" C900 PVC @ _____ each		10	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
24-b		Compacted Clay or Placed Concrete on 18" DIP @_____ each		1	\$	\$
24-c		Compacted Clay on 24" C900 PVC @_____ each		19	\$	\$
25	23	Convert Temporary Construction Entrance to Permanent Access @_____ each	EA	3	\$	\$
26	24	Furnish and Install Temporary Stream Crossing				
26-a		Stream S7 @_____ each	EA	1	\$	\$
26-b		Stream S8 @_____ each	EA	1	\$	\$
26-c		Stream S10 @_____ each	EA	1	\$	\$
27	25	Furnish and Install Temporary Wetland Crossing				
27-a		Wetland 1/A @_____ each	EA	1	\$	\$
27-b		Wetland 2 @_____ each	EA	1	\$	\$
27-c		Wetland 18 @_____ each	EA	1	\$	\$
27-d		Wetland 26 @_____ each	EA	1	\$	\$
27-e		Wetland 27 @_____ each	EA	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
27-f		Wetland 28 @_____each	EA	1	\$	\$
27-g		Wetland 29 @_____each	EA	1	\$	\$
27-h		Wetland B @_____each	EA	1	\$	\$
27-i		Wetland C @_____each	EA	1	\$	\$
28	26	Sod Grass Installation @_____per square foot	SF	450,430	\$	\$
29	27	Permanent Seeding				
29-a		Non-wetland Areas @_____per square foot	SF	112,608	\$	\$
29-b		Wetland Areas @_____per square foot	SF	151,905	\$	\$
INCIDENTALS, DEMOLITION AND RESTORATION						
34	29	Reconstruct NCDOT Maintained Residential Street (NOA)				
34-a		Lakeview Drive @_____per square yard	SY	4,400	\$	\$
34-b		Lake Farm Road @_____per square yard	SY	1,250	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
34-c		Mariner's Landing Drive @_____per square yard	SY	6,280	\$	\$
35	30	Mill and Overlay @_____per square yard	SY	1,155	\$	\$
36	32	Dirt Road Repair @_____per square yard	SY	1,195	\$	\$
39	33	Removal and Replacement of Concrete @_____per square yard	SY	915	\$	\$
40	31	Gravel Driveway Repair @_____per square yard	SY	287	\$	\$
41	38	Removal and Replacement Drainage Pipe				
41-a		15-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	560	\$	\$
41-b		18-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	48	\$	\$
41-c		24-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	144	\$	\$
41-d		48-inch Diameter Corrugated Plastic Pipe @_____per linear foot	LF	52	\$	\$
42	34	Undercut Pipe Trench And Replacement with No. 57 or 67 Stone for Pipe Foundation @_____per cubic yard	CY	1,000	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
43	35	Removal of Unsuitable Material Excavation and Backfill with Select Material @ _____ per cubic yard	CY	27,000	\$	\$
44	36	Rock Excavation and Replacement with Select Backfill @ _____ per cubic yard	CY	150	\$	\$
45	37	Maintenance Stone (No Overage Allowed) @ _____ per square yard	SY	11,930	\$	\$
46	45	Replacement of Existing Water Service Connection (AQUA) @ _____ each	EA	22	\$	\$
47	39	Hydrostatic Pressure Testing of New 24-inch Sewer Pipe at Aerial Pipes, Pipes Near Private Wells and Pipes Crossing Wetlands @ _____ per linear foot	LF	7,017	\$	\$
48	39	Hydrostatic Pressure Testing of New 18-inch Sewer Pipe at Aerial Pipes, Pipes Near Private Wells and Pipes Crossing Wetlands @ _____ per linear foot	LF	2,101	\$	\$
Subtotal- Part A, Alternate Base						\$
PART B - Peartree Estates Sanitary Sewer & Camden Glen Lift Station Connection						
SITE PREPARATION & ALLOWANCES						
1	1	Mobilization (less than or equal to 3% of Part B Bid) @ _____ lump sum	LS	1	\$	\$
2	2	Traffic Control & Traffic Control Plan @ _____ lump sum	LS	1	\$	\$
3	4	Lift Station Demolition - Camden Glen LS Abandonment @ _____ lump sum	LS	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
4	3	Allowance for "Third Party" Vibration Monitoring @ _____ lump sum	LS	1	\$5,000.00	\$5,000.00
SANITARY SEWER MAIN INSTALLATION						
5	7	Furnish and Install PVC SDR-26 (Pipe Stiffness 115) Sewer Pipe (Open Trench)				
		8-inch Sanitary Sewer				
5-a		10' - <12' Depth @ _____ per linear foot	LF	36	\$	\$
5-b		12' - <14' Depth @ _____ per linear foot	LF	50	\$	\$
5-c		14' - <16' Depth @ _____ per linear foot	LF	23	\$	\$
5-d		16' - <18' Depth @ _____ per linear foot	LF	20	\$	\$
5-e		18' - <20' Depth @ _____ per linear foot	LF	78	\$	\$
5-f		20' - <22' Depth @ _____ per linear foot	LF	121	\$	\$
5-g		22' - <24' Depth @ _____ per linear foot	LF	52	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
6	10	Furnish and Install Class 250 Restrained Joint Epoxy-Lined Ductile Iron Sewer Pipe (Open Trench)				
		8-inch Sanitary Sewer				
6-a		10' - <12' Depth @_____per linear foot	LF	5	\$	\$
7	10	Furnish and Install Class 250 Restrained Joint Epoxy-Lined Ductile Iron Sewer Pipe (Open Trench)				
		12-inch Sanitary Sewer				
7-a		8' - <10' Depth @_____per linear foot	LF	44	\$	\$
7-b		10' - <12' Depth @_____per linear foot	LF	15	\$	\$
8	11	Furnish Steel Encasement Pipe installed by Guaranteed Encased Trenchless Crossing with RJ Epoxy lined Class 250 DIP Sanitary Sewer Carrier Pipe				
8-a		36-inch Steel Encasement Pipe installed by Guaranteed Trenchless Crossing with 12-inch Sanitary Sewer Carrier Pipe @_____per linear foot	LF	411	\$	\$
9	12	Connect to Existing Sewer (Sheet C36A)				
9-a		8-inch Diameter @_____each	EA	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
10	14	Reconnect Existing Sanitary Sewer Service				
10-a		4" Sanitary Sewer Service @_____ each	EA	1	\$	\$
SANITARY SEWER MANHOLES						
11	15	Furnish and Install Precast Concrete Manhole Furnish and Install 4' Dia. Precast Concrete Manhole, Non-Traffic, Standard Ring and Cover				
11-a		8' - <10' Depth (Installation of Temporary Manhole - Sheet C36A) @_____ each	EA	1	\$	\$
11-b		12' - <14' Depth @_____ each	EA	1	\$	\$
12	15	Furnish and Install 4' Dia. Precast Concrete Manhole, Traffic, Standard Ring and Cover				
12-a		12' - <14' Depth @_____ each	EA	1	\$	\$
12-b		18' - <20' Depth @_____ each	EA	1	\$	\$
13	15	Furnish and Install 5' Dia. Precast Concrete Manhole, Traffic, Standard Ring and Cover				
13-a		18' - <20' Depth @_____ each	EA	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
13-b		22' - <24' Depth @ _____ each	EA	1	\$	\$
14	17	Furnish and Install Standard Manhole Vents @ _____ each	EA	1	\$	\$
15	16	Furnish and Install Interior Drop Structure				
15-a		8-inch Diameter @ _____ per vertical foot	VF	14	\$	\$
WATER MAIN INSTALLATION						
16	42	Remove and Replace 2-inch SDR-21 PVC Water Main @ _____ per linear foot	LF	40	\$	\$
17	44	Remove and Replace 2-inch Blow-off Assembly on SDR-21 PVC Water Main @ _____ each	EA	1	\$	\$
18	43	Furnish and Install 2-inch Ball Valve on Existing PVC Water Main (Cut-in Connection) @ _____ each	EA	1	\$	\$
19	46	Sterilization and Testing	LS	40	\$	\$
EROSION AND SEDIMENTATION CONTROL						
20	21	Furnish and Install Erosion and Sedimentation Control Devices @ _____ lump sum	LS	1	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
21	26	Sod Grass Installation @_____per square foot	SF	18,750	\$	\$
INCIDENTALS, DEMOLITION AND RESTORATION						
22	28	Asphalt Pavement Patch (FAYPWC M.1&M.2) @_____per square yard	SY	115	\$	\$
23	30	Mill and Overlay @_____per square yard	SY	700	\$	\$
24	33	Concrete Curb Repair @_____per linear foot	LF	110	\$	\$
25	34	Undercut Pipe Trench And Replacement with No. 57 or 67 Stone for Pipe Foundation @_____per cubic yard	CY	25	\$	\$
26	35	Removal of Unsuitable Material Excavation and Backfill with Select Material @_____per cubic yard	CY	25	\$	\$
27	36	Rock Excavation and Replacement with Select Backfill @_____per cubic yard	CY	15	\$	\$
28	40	Remove Existing Manhole (Sheet C36A-Existing Sewer Manhole in cul de sac and Temporary Manhole) @_____each	EA	2	\$	\$
29	38	Removal and Replacement Drainage Pipe				
29-a		18-inch Diameter Reinforced Concrete Pipe @_____per linear foot	LF	20	\$	\$

Item No.	Spec 01025 Ref. No.	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
30	41	Removal and Replacement Drainage Structures				
30-a		Curb Inlet Structures (Inclusive of connecting pipe) @ _____ each	EA	2	\$	\$
Subtotal Base Bid, Part B						\$
PART C - Well Abandonment/Relocation						
Item No.	Spec 01025 Ref. No..	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
1	C1	Mobilization (Less than or Equal to 5% of the Total Bid Price) @ _____ lump sum	LS	1		
2	C2	Traffic Control & Traffic Control Plan @ _____ lump sum	LS	1		
3	C3	Erosion and Sedimentation Control & Erosion and Sedimentation Control Plan @ _____ lump sum	LS	1		
4	C4	Clearing & Grubbing @ _____ per acre	AC	1		
5	C5	Fence Removal & Replacement @ _____ per linear foot	LF	308		
6	C6	Well Abandonment @ _____ each	EA	13		

Item No.	Spec 01025 Ref. No..	Description	Unit	Estimated Quantities	Bid Unit Price	Bid Price
7	C7	Water Supply Well System Installation @_____each	EA	13		
8	C8	Furnish & Install Well House/Pumphouse @_____each	EA	13		
9	C9	Replacement of Existing Residential Water Well Electrical Systems @_____each	EA	13		
10	C10	Replacement of Existing Residential Water Well Plumbing Systems @_____each	EA	13		
11	C11	Furnish & Install SOD @_____per square yard	SY	3,325		
12	C12	Gravel/Soil Driveway Restoration @_____per square yard	SY	676		
Subtotal Base Bid, Part C						\$
Total Base Bid (Part A, Base + Part B, Base + Part C, Base)						\$
Total Alternate Base Bid (Part A, Alternate Base + Part B, Base + Part C, Base)						\$

BID SUMMARY

TOTAL PART "A" BIG ROCKFISH CREEK SANITARY SEWER
OUTFALL (STA. 116+89 TO STA. 264+64)-BASE \$ _____

TOTAL PART "B" PEARTREE ESTATES SANITARY SEWER &
CAMDE GLEN LIFT STATION CONNECTION-BASE \$ _____

TOTAL PART "C" WELL ABANDONMENT/RELOCATION-BASE \$ _____

TOTAL BASE BID \$ _____

TOTAL PART "A" BIG ROCKFISH CREEK SANITARY SEWER
OUTFALL (STA. 116+89 TO STA. 264+64)-ALTERNATE BID \$ _____

TOTAL PART "B" PEARTREE ESTATES SANITARY SEWER &
CAMDE GLEN LIFT STATION CONNECTION-BASE \$ _____

TOTAL PART "C" WELL ABANDONMENT/RELOCATION-BASE \$ _____

TOTAL BASE ALTERNATE BID \$ _____

The undersigned BIDDER certifies that it is a licensed as a Contractor under the applicable provisions of North Carolina law regulating the practice of general contracting, and that its license number is _____
(License Number).

The undersigned BIDDER hereby agrees to accept an award of the Contract based on the Total Contract Amount (Total bid amount for Parts A, B, and C as applicable) as accepted by the OWNER and as indicated on the Notice of Award.

- 4. BIDDER agrees that Work shall be completed within the time frame indicated in the Agreement as follows:
 - a. All work described herein to be complete, including restoration and all punch list items within **670** consecutive calendar days from the start date stipulated on the Notice to Proceed.
 - b. The BIDDER acknowledges that time is of the essence in this Contract and that the OWNER will suffer financial loss if the Work is not complete within the time specified in Paragraph 4.a above plus any extensions thereof allowed in accordance with Article 10 of the General Conditions. BIDDER also recognizes the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the Work is not complete on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER **\$1,500.00** per calendar day for each day that expires after the time specified in Paragraph 4.a, plus any proper time extension, until the Work is finally complete.

5. The following documents are attached to and made part of this bid:

- a. Required Bid Security in the form of either a cashier's check or certified check or Bid Bond in the amount of 5% of maximum Bid price.

6. Communications concerning this Bid shall be addressed to:
(CONTRACTOR's Name, Address, Telephone Number and Email)

7. The terms used in this Bid which are defined in the General and Supplementary Conditions of the Contract Documents have the meanings assigned to them therein, which are incorporated by reference as if fully set forth herein.

8. An individual contractor is required to furnish his social security number and sole proprietorship, partnership and corporation are required to furnish their employer identification numbers to the PWC. Please indicate this information on this Bid Form as follows:

Social Security Number: _____

Federal Employer Identification Number: _____

SUBMITTED ON _____, 20____.

AN INDIVIDUAL

BY _____ (SEAL)
(Individual's Name and Signature)

Doing Business as: _____

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____

NOTARY PUBLIC

My Commission Expires: _____

A PARTNERSHIP

BY _____ (SEAL)
(Firm Name)

(General Partner and Signature)

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____.

NOTARY PUBLIC

My Commission Expires: _____

A CORPORATION OR OTHER LEGAL ENTITY

BY _____
(Legal Entity Name) (State of Incorporation)

BY _____ (SEAL)
(Name and Title of Person Authorized to Sign and Signature)

ATTEST: _____
(Name and Signature of Person Authorized to Attest)

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____.

NOTARY PUBLIC

My Commission Expires: _____

A JOINT VENTURE

BY _____
(Name and Signature)

North Carolina Contractor Registration Number: _____

Business Address: _____

Phone Number: _____

Subscribed and sworn to before me this _____ day of _____ 20_____.

NOTARY PUBLIC

My Commission Expires: _____

(Each joint venturer must sign. The name of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

BID BOND

This is a Bid Bond that is subject to the provisions of Article 3 of Chapter 44A of the North Carolina General Statutes.

This Bond is Executed on _____, 20_____.

The name of the PRINCIPAL is _____

The name of the SURETY is _____

The Fayetteville Public Works Commission is the OWNER

The amount of the Bond is _____
_____ (Dollars) (\$_____)

KNOW ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named OWNER hereinafter called the OWNER in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the OWNER a certain Bid attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

BIG ROCKFISH CREEK OUTFALL CONTRACT 2

NOW, THEREFORE

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for its faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection herewith, and shall in all other respects perform the agreement created by acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein state.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall in no way be impaired or affected by any extension of time within the OWNER may accept such Bid; and said surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

ATTEST:

(Principal Secretary)
(SEAL)

Principal

BY: _____(3)

(Address)

Witness as to Principal

Surety

(Address)

(Address)

ATTEST:

N.C. Resident Agent
(SEAL)

Witness as to Surety

(Address)

- (1) Correct name of contractor
- (2) A Corporation, a Partnership or an Individual, as the case may be
- (3) If contractor is a Partnership, all partners should execute bond

POWER OF ATTORNEY (Attach)

LIST OF SUBCONTRACTORS

In compliance with the Instructions to Bidders and the Supplementary Conditions, the undersigned submits the following names of Subcontractors to be used in performing the Work.

The Bidder certifies that all Subcontractors listed are eligible to perform the Work and that all Subcontractors performing more than five percent of the work are listed.

<u>Subcontractor's Work</u>	<u>Subcontractor's Name</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Bidder's Signature

MATERIAL PRICE FORM

In compliance with the Instructions to Bidders and the Bid Proposal, the undersigned submits the following material price to be used in performing the Work.

The Bidder certifies that all material pricing is the basis of their bid and was utilized to calculate the bid pricing for PVC and DI piping and steel encasement.

Material Description**	Material Unit	Material Unit Price/Quote	Supplier/Vendor Name and Address	Date of Quote
6" SDR 26 PVC	LF	\$ _____		
8" SDR 26 PVC	LF	\$ _____		
8" C900 DR 18 PVC	LF	\$ _____		
8" DI Class 51 Push On	LF	\$ _____		
8" DI Class 51 Restrained Joint	LF	\$ _____		
18" SDR 26 PVC PS 115	LF	\$ _____		
18" C900 DR 18 PVC	LF	\$ _____		
18" DI Class 51 Push On	LF	\$ _____		
18" DI Class 51 Restrained Joint	LF	\$ _____		
24" SDR 26 PVC PS 115	LF	\$ _____		
24" C900 DR 18 PVC	LF	\$ _____		
24" DI Pressure Class 350 Push On	LF	\$ _____		
24" DI Pressure Class Restrained Joint	LF	\$ _____		
30" Steel Encasement (ASTM A53) Wall Thickness 0.500"	LF	\$ _____		
48" Steel Encasement (ASTM A53) Wall Thickness 0.500"	LF	\$ _____		

**Bidder shall include authenticity of these prices with dated quote from the supplier.

Bidder's Signature

AFFIDAVIT OF ORGANIZATION AND AUTHORITY SWORN STATEMENT

STATE OF _____

COUNTY OF _____

_____ being the first duly sworn on oath deposes and says that the Bidder on the attached Bid Form is organized as indicated below and that all statements herein made are made on behalf of such Bidder and that this deponent is authorized to make them.

(Fill Out Applicable Paragraph)

1. CORPORATION

The bidder is a corporation organized and existing under the laws of the State of _____ and its President is _____, and its Secretary is _____, and does have a corporate seal. The _____ is authorized to sign construction contract and bids for the company by action of its Board of Directors taken _____, a certified copy of which is hereto attached. (Strike out last sentence if not applicable.)

2. PARTNERSHIP

The Bidder is a Partnership consisting of _____ and _____, partners doing business under the name of _____.

3. SOLE TRADER

The Bidder is an individual and if operating under a trade name, such trade name is as follows: _____

4. OTHER

The bidder is a _____ organized under the laws of _____ and its duly authorized representative(s) is/are _____, who is/are authorized to sign construction contracts and bids on behalf of this legal entity.

5. ADDRESS

The business address of the Bidder is as follows:

Its phone number is _____.

Bidder

By: _____

Subscribed and sworn before me this _____ day of _____, 20_____.

County _____

Notary Public

My Commission Expires: _____

EQUAL EMPLOYMENT OPPORTUNITY ACKNOWLEDGEMENT

During the performance of this Contract the Contractor agrees as follows:

- a. The Contractor will not discriminate against any employee or applicant because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor agrees to post in conspicuous of the nondiscrimination clause.
- b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- c. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contractual understanding, a notice to be provided, advising the labor union or worker's representative of the Contractor's commitments under the Equal Employment Opportunity Section of this Contract, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further OWNER Contracts.
- e. The Contractor will include the provisions of the section in every subcontract or purchase order unless exempted by rules, regulations or orders of the OWNER so that such provisions will be binding upon each Subcontractor or vendor.

(Use the following form for signatures by a Legal Entity):

Full Legal Name of the Entity

BY: _____

(Printed Name of Signer) (Title of Signer)

(Use the following form for signatures by an INDIVIDUAL):

BY: _____ (Seal)

WITNESS:

(THE ACKNOWLEDGEMENT OF THE ABOVE SIGNATURE MUST BE NOTARIZED USING THE FORM ON THE FOLLOWING PAGE)

(Use the following form for acknowledgement signature by an individual.)

NORTH CAROLINA

(Enter correct State and County if different than shown)

_____ COUNTY

I, the undersigned Notary Public, do hereby certify that _____,
personally appeared before me this day and acknowledge the due execution of the foregoing instrument.

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

Notary Public

My commission expires _____
(SEAL)

NONDISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Contract that the parties hereto named, their agents, employees or servants will not discriminate in any manner on the basis of age, handicap, race, color, creed, sexual orientation or national origin with reference to the subject matter of this Contract, no matter how remote.

This provision being incorporated for the benefit of the Fayetteville Public Works Commission and its residents may be enforced as set out in said ordinances, enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as by reference to the subject matter of this Contract.

(Use the following form for signatures by a LEGAL ENTITY):

Full Legal Name of the Entity

By: _____ (SEAL)

_____, _____
(Printed Name of Signer) (Title of Signer)

(Use the following form for signatures by an INDIVIDUAL)

BY: _____

(Printed Name)

WITNESS:

(Printed Name)

NON-COLLUSIVE AFFIDAVIT

State of _____)

County of _____)

_____ Being first duly sworn, deposes and says that:

(1) He is the _____ of
(Owner, Partner, Officer, Representative or Agent)
_____ The BIDDER that has submitted the
attached BID;

(2) He is fully informed respecting the preparation and contents of the attached BID and of all pertinent circumstances
respecting such Bid;

(3) Such BID is genuine and is not a collusive or sham BID;

(4) Neither the said BIDDER nor any of its officers, partners, owners, agents, representatives, employees, or parties
in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly,
with any other BIDDER, firm, or person to fix the price or prices in the attached BID or of any other BIDDER,
or to fix any overhead, profit, cost elements of the BID price or the BID price of any other BIDDER, or secure
through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the Fayetteville
Public Works Commission, or any person interested in the proposed Contract;

(5) The price or prices quoted in the attached BID are fair and proper and are not tainted by any collusion, conspiracy,
connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners,
employees or parties in interest, including this affidavit.

BY: _____

ITS _____
(Title)

Subscribed and sworn before me this _____ day of _____ 20_____.

_____ My Commission expires _____.
(Notary Public)

F.T.A. CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

(To be submitted with each bid or offer exceeding \$100,000)

The undersigned _____ certifies, to the best of his or her knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*.)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized
Official

_____ Date

CERTIFICATION OF
REGARDING DEBARMENT, SUSPENSION AND OTHER MATTERS

The Primary Participant, _____ (major third party contractor), certifies to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;
2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and
4. Have not within a three-year period preceding this application/proposal had one or more public transactions (federal, state or local) terminated for cause or default.

(If the primary participant is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.)

THE PRIMARY PARTICIPANT _____ CERTIFIES
OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE
STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT
THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET. SEQ. ARE APPLICABLE THERETO.

Signature

Title

Printed Name

Date

ATTACHMENT 4

DIVISION I GENERAL REQUIREMENTS

01000-1 – SPECIAL PROVISIONS (Well Abandonment/Relocation)

PART 1.

1.01 PURPOSE

These Special Provisions are intended to supplement and amplify the requirements of these Contract Documents. Where any article or item of these Contract Documents are modified or deleted by this section, the remaining unaltered provisions of that article, paragraph, subparagraph, or clause shall remain in effect. In the event of a conflict, these Special Provisions shall take precedence.

1.02 CUSTOMER SERVICE

The Contractor is expected to make every effort to reduce the impact of their operation to Fayetteville Public Works Commission's (PWC) operation and maintenance of the water and sewer system, and the affected customers within the project area. Full cooperation and coordination with PWC personnel, other utilities, and customers is expected. It shall be expected that the Contractor will promptly respond to any concerns voiced by customers and/or PWC personnel and make every effort to resolve them immediately. Providing exemplary customer service shall be incidental to this Contract, and no additional payment will be made for this service. The Contractor shall coordinate with the property owner to ensure access to the property is not inhibited at any time. To reduce any inconvenience to the property owner, the Contractor shall ensure existing wells are not abandoned until proposed wells are installed and active.

1.03 REPLACEMENT OF FENCING

The Contractor is to replace any fencing disturbed as part of their operations for the work described within these Contract Documents. If fence removal is required during construction, PWC shall reimburse the Contractor for costs associated with removal and replacement of existing fencing. If temporary fencing is required, the Contractor shall provide such fencing as necessary, at no additional cost to the Owner. Temporary fencing shall be of chain link construction and shall be a minimum of six (6) feet in height. The Contractor is responsible to coordinate the fence removal and replacement for both the temporary and permanent placement with the property owner. Fences removed during construction activities shall be replaced using new materials which match existing and shall be constructed to the same height as existing to restore the fence to the original condition or better.

1.04 PUBLIC CONVENIENCE

A. CONTRACTOR'S DUTY AND OBLIGATION TO THE PUBLIC

The Contractor at all times shall conduct the work in such a manner as to ensure the least obstruction to traffic practicable. The convenience of the general public and of the residents and businesses along and adjacent to the street(s) shall be provided for in a satisfactory manner, consistent with the operation and local conditions. Costs for such work shall be incidental to the unit prices bid. The Contractor shall at all times cooperate with the public and merchants affected by the construction operations and shall maintain good public relations at all times.

The Contractor shall schedule and stage construction in a sequence to minimize disruption to the largest number of residents/businesses for the shortest period of time. Special considerations shall be given to the neighborhood solid waste and trash collection schedule, mail delivery, and bus routes, if applicable.

B. PUBLIC SAFETY

The Contractor shall barricade all work, roads, etc. to keep the public away from the construction. The Contractor shall provide protection to all portions of the Work when the work is not in progress. The Contractor shall provide and install all measures necessary to protect the public. Damage due to the lack of proper protection shall be the Contractor's sole responsibility.

The Contractor and subcontractors shall be responsible for any damage to any Owner's property, private property, or property owned by other utilities. The Contractor shall repair all damage to as good as or better than existing conditions. The Contractor and subcontractors shall be responsible for and pay any claims.

C. JOBSITE REQUIREMENTS

In addition to requirements outlined in these Contract Documents, the following are mandatory requirements that will be strictly enforced:

- Posted speed limits shall be strictly adhered to. No speeding.
- Driveways shall not be blocked without prior notification and coordination with the resident.
- To the maximum extent possible, one lane of traffic shall be maintained at all times.
- Excess soil, stone, equipment, materials, etc. in the road or along the right-of-way shall be removed at the end of each workday. Soil, stone, millings, pipe, etc., shall not be stored or stockpiled in the road right-of-way.
- Mailboxes and traffic signs shall be only removed as necessary to facilitate the installation of the Work and shall be reinstalled during the same day of removal. Any damages to mailboxes, signs or posts shall be repaired by the Contractor at no cost to the Owner.
- Contractor(s) shall not enter onto private property for the purpose of using water or electricity without the written permission of the property owner.
- The use of profane or abusive language or obscene gesturing by workmen will not be tolerated and will be just cause for immediate dismissal from the project site as directed by the Owner or its authorized representative.
- OSHA safety measures are to be maintained at all times.
- An English-speaking Contractor's representative is required for each separate work crew.
- Do not litter at any time.
- Respond to all complaints within 24 hours.
- Wear proper protective clothing (hard hats, shoes, shirts, etc). Personnel must wear an approved safety vest at all times while working on the Owner's project.
- The trench shall be completely backfilled at the end of each workday.
- If construction is temporarily halted during the workday, the open trench shall be manned continuously.
- Damage to sod and/or grass along the street right-of-way due to (but not limited to) temporarily stockpiled material, construction travel and other construction related activities shall be replaced with sod at the Contractor's sole expense.

PART 2.

2.02 UTILITIES

A. OWNERSHIP OF EXISTING UTILITIES

Existing utilities indicated on the Plans to be abandoned shall remain the property of the property owner. The Contractor shall be responsible for removing the existing utilities as noted on the plans and removing the material from the site unless otherwise directed by the property owner. The property owner shall have the right of first refusal regarding the salvage of the material.

B. CONSTRUCTION AROUND UTILITY POLES AND GUY WIRES

The Contractor will be required to perform construction work around utility poles and guy wires which shall be left in place within the construction limits of the project. The Contractor shall contact the owner of the utility to coordinate securing the poles during construction. It may be necessary for the Contractor to hire an electrical utility contractor to secure poles. All work outlined in this paragraph shall be at no additional cost to the Owner.

C. UTILITY COORDINATION

Whenever the property owner's use of the water must be interrupted by the Work, the Contractor shall notify the residents a minimum of 48 hours prior to service interruption. This notification shall be accomplished with door hanger notification cards placed at the addresses of the affected residents. Property owners shall be informed when service interruption takes place and the expected duration. To minimize the duration of interrupted water services, the Contractor shall not abandon/disconnect existing water service until the proposed well and water utilities are installed and ready to be activated.

D. PROTECTION OF EXISTING UTILITIES

The Contractor shall take every precaution to prevent damage to existing utilities. Any damage to existing utilities shall be replaced or repaired by the Contractor.

If existing utilities are damaged, the Contractor shall immediately notify the property owner and the Project Coordinator. The Contractor shall immediately commence repairs to the damaged utility in accordance with the property owner's requirements.

Any damage to the City of Fayetteville's storm drainage infrastructure shall be repaired in accordance with City of Fayetteville requirements within seven (7) business days after damage occurs. All costs associated with the required repairs shall be the responsibility of the Contractor, at no cost to the Owner.

E. SPILL RESPONSE

The Contractor shall not discharge or pump any sewage, solids, or debris on the ground, streets, storm water system, ditches, or streams. Any sewage spills shall be immediately reported to the North Carolina Department of Environment, Health, and Natural Resources, (919) 807-6308.

In the event that raw sewage is spilled, discharged, leaked or otherwise deposited in the open environment, due to the Contractor's work, the Contractor is responsible for any clean-up of solids and disinfection of the area affected. This work will be performed at the Contractor's expense with no additional cost to the Owner. The Contractor is also responsible for complying with all regulatory requirements in regard to the size spill with no additional cost to the Owner. The

Contractor shall cooperate fully with the Owner and the applicable state agencies in responding to and cleaning up the spill. Any work completed by the Owner in responding to a spill caused by the Contractor's operations shall be billed to the Contractor.

F. DAMAGE TO EXISTING UTILITIES

If the Work is delayed as a result of damage to an improperly marked utility, the Contractor may request an extension of the Contract Time in accordance with these Contract Documents. Should the Contractor determine compensation for the delay is also warranted, the Contractor shall submit a claim to the utility owner. Adjustments to the Contract Price will not be made due to delays or additional work resulting from damage to existing utilities that are not properly located.

If the Work is delayed as a result of damage to a properly marked utility, no additional Contract Time or compensation shall be granted.

G. CROSSING EXISTING OR PROPOSED UTILITIES

The Contractor shall conduct their operations so that the following requirements are adhered to:

1. Underground telephone, cable TV, and gas utilities or conduit banks shall be crossed maintaining a minimum of 12-inch separation or clearance.
2. Electrical crossings shall be performed while the conductor is de-energized and at all times in the presence of the utility owner. Electrical crossings shall be in accordance with NESC requirements. Electrical primary conductor crossings shall be as follows:
 - a. Crossing over a conductor, maintain a minimum of 12-inches of undisturbed soil encasing the conductor.
 - b. Crossing under a conductor shall be accomplished by boring, maintaining 12-inches of undisturbed soil encasing the conductor.

No separate payment shall be made for this work.

H. WATER SUPPLY WELL SYSTEM INSTALLATION

The Contractor shall enlist a licensed plumber and electrician licensed in the State of North Carolina to perform due diligence prior to completing the plumbing and electrical works improvements such that the following steps are completed for properties within the project boundary that require a well relocation. All verifications must be coordinated with PWC Project Coordinator minimum of two weeks in advanced to gain access and entry to residence crawlspace to inspect existing water supply appurtenances, including bladder tank, pressure switch, and piping, and interior of residence if inspection of main electrical panel is needed. Verification or condition assessment of existing conditions shall be coordinated closely with installation of new well and the expected new well pump size to verify required water supply and electrical power upgrade.

1. Verify current configuration of the water well system to confirm most effective water supply piping from relocated well to existing plumbing. The Contractor shall also verify ability to reuse existing pressure switch, bladder tank, etc. or if new appurtenances are needed to serve the property. Should a licensed plumber determine components of the existing water supply system are acceptable for reuse during construction activities, the Contractor may elect to reuse components resulting in a cost savings to PWC.

2. Verify electrical loading capacity of existing breaker and circuit from the residential control main electrical breaker panels to confirm it is acceptable to power new well pump. If a larger pump exceeding the acceptable load capacity of the existing circuit and breaker occurs, determine available load capacity of existing circuit and breaker to power new well pump. Should the verification determine that any component of the existing electrical system is unacceptable and requires upgrades outside these boundaries or entails complete replacement of electrical circuit, circuit breaker replacement/upfit and/or other electrical upfits to meet required conditions and/or current code, the Contractor shall replace the electrical systems from limits as shown on Drawings to the residential structure as required.

For the basis of bid comparison and determination, Contractor is to price work based on the following:

1. Abandonment of existing wells as shown on the “Additional Services-Well Relocation on Lakeview Drive” Drawings
2. Install complete a new residential well as shown on the “Additional Services-Well Relocation on Lakeview Drive” Drawings
3. Connect new water supply pipe from new well to existing water supply piping near the limits as generally shown on the “Additional Services-Well Relocation on Lakeview Drive” Drawings.
4. Connect new electrical circuit to existing buried electrical circuit using appropriate field, waterproof splice that meet all local and state building code requirements.
5. The Contractor shall coordinate, prepare, submit, and acquire all applicable building and inspection permits upon determination of the required plumbing and electrical improvements.
6. Should the verification determine that an existing plumbing system is unacceptable and requires upgrades outside these boundaries or entails complete replacement of water supply piping, pressure switch, bladder tank, piping, and any other incidentals to meet required conditions and/or current code, the Contractor shall replace the water supply system from limits as shown on drawings to the residential structure as required.

The Contractor shall install water supply wells to comply with the following conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a)(1) and (2):

1. Grout will be required the entire length of the casing from land surface into gravel pack/confining layer.
2. The well shall be sampled for bacteria and inorganics.
3. No potential sources of groundwater contamination shall be stored near the well-head.
4. The well shall meet current 2C.0100 rules, including but not limited to being 12” above land surface, properly sealed, and adequately vented.

The Contractor shall install water supply wells in accordance with all other requirements and criteria of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to comply with any other applicable Federal, State, or local laws or regulations.

I. BUILDER'S RISK POLICY

The Contractor shall furnish Builder's Risk as specified in General Conditions 00700 (Article 1.03.A.4) for all well abandonment and relocation work.

2.02 TESTING

A. COMPLIANCE SAMPLING/TESTING

Following installation of wells, the Contractor will complete required sampling and analysis of groundwater collected from wells within 30 days after issuing a certificate of completion in accordance with Section .3800 15A NCAC 18A .3802. Water samples shall be collected from the sample tap at the well or the closest accessible collection point to the water source with a tap capable of being disinfected, provided the sampling point shall precede any water treatment devices. Samples shall be collected using aseptic sampling techniques for collection of coliform bacteria and sampling techniques and containers for chemical constituents following methods described in 40 Code of Federal regulations 143.4 Monitoring, which are incorporated by reference including any subsequent amendments, additions or editions. Samples for total coliform and fecal coliform bacteria shall be collected after the disinfectant agent has been flushed from the well and water supply system. The water shall be determined to be free of disinfectant before collection of samples for bacteria. Water samples shall be analyzed in the North Carolina State Laboratory of Public Health or a certified laboratory. Water samples shall be tested for total coliform bacteria, and if present, further analyzed for the presence of fecal coliform bacterial or E. coli. Water samples shall also be analyzed for arsenic, barium, cadmium, chromium, copper, fluoride, lead, iron, magnesium, manganese, mercury, nitrate, nitrite, selenium, silver, sodium, zinc, and pH.

2.03 CONSTRUCTION REQUIREMENTS

A. COORDINATION OF WORK

The Contractor shall maintain unobstructed access to all areas for other Contractors. The Contractor is required to conduct his operations in a manner that will not interfere with or damage work that is being performed by others. The Contractor shall coordinate his operations in a manner which will facilitate the progress of work in adjacent areas.

Any conflicts or interference that cannot be resolved through direct communication with other Contractors working on the site shall immediately be brought to the Project Engineer's attention for resolution. The Project Engineer's decisions regarding resolution of conflicts between Contractors shall be final and binding. The Contractor shall not claim extra compensation for delays caused by other Contractors unless such delays are clear violations of a prior coordination agreement facilitated by the Owner.

B. CONSTRUCTION FACILITIES

The Contractor shall be responsible for obtaining all temporary utilities required for construction at no additional cost to the Owner. The Contractor shall make all necessary arrangements for

securing water for construction purposes. The Contractor shall contact the utility owner to obtain the necessary permit for the temporary water usage.

C. CLEANLINESS DURING CONSTRUCTION

The Contractor shall perform a daily clean-up of all dirt, debris, scrap materials and other items resulting from their operations. No open accumulation of refuse, surplus or scrap materials will be permitted. The Contractor shall legally dispose off-site all waste materials and other excess materials resulting from construction.

Failure of the Contractor to maintain a clean site, including streets, will be basis for the Owner to issue a written notice of non-compliance with the Contract. The Contractor shall comply with the notice within 24 hours or as directed. If the Contractor fails to comply, the Owner may authorize the cleanup to be performed by others and the costs shall be deducted from the Contractor's pay application.

D. RIGHTS-OF-WAY

The Contractor shall locate the limits of the rights-of-way, or property lines prior to beginning construction and shall not encroach beyond those limits. The Contractor shall be solely responsible for any damage to property resulting from failing to locate these limits prior to beginning construction.

E. RESPONSIBILITY FOR MATERIAL

All pipe, fittings, manholes, and other materials shall be inspected upon arrival at the job site by a competent superintendent before unloading to ensure that the quality of the materials conform to the specifications. All materials shall be subject to inspection by the County. Materials found to be defective shall be clearly marked and removed from the project.

F. WATER OUTAGES

The Contractor shall schedule, coordinate and sequence so new well installation and water supply connection results in minimum outage (less than 2 hours as specified herein) to customer.

The Contractor shall schedule a coordination meeting with the Project Coordinator and Project Engineer a minimum of three (3) working days prior to any proposed water outage. The coordination meeting shall be conducted prior to any notices being issued. The Contractor shall locate (vertically and horizontally) any utilities within the work area, in accordance with these Contract Documents. The locations of all utilities within the work area shall be determined prior to the coordination meeting. Any conflicts with the proposed work and the existing utilities shall be identified, and a plan for resolving the conflicts shall be presented to the Owner. The purpose of this coordination meeting is to ensure that the Contractor has a good understanding of the requirements related to the proposed outage, verify that there are no utility conflicts, discuss any necessary contingency plans, and all equipment, materials, tools, and all other incidentals necessary to complete the work are on the project site in good working order. The Contractor shall also provide a proposed construction sequence to present to the Owner and/or the Project Engineer for approval. **The proposed construction sequence shall be developed with the intent to mitigate the duration of water service interruption for the property owner.**

Should, for any reason, the Owner deem that the Contractor is not prepared for the proposed outage, the outage notifications will not be distributed, and the outage shall be postponed a minimum of two (2) weeks. The Owner will provide written notification to the Contractor of this decision. No additional contract time will be granted for this delay. Should the Contract time expire within that

two (2) week period, the Owner reserves the right to assess liquidated damages, as outlined in these Contract Documents.

Once the water outage notifications have been issued, a follow-up coordination meeting with the Project Coordinator and Project Engineer shall be held a minimum of 24 hours prior to the scheduled outage. The purpose of this meeting is to verify that the Contractor is prepared to proceed with the outage, and that all equipment, materials, tools, and all other incidentals necessary to complete the Work are on the project site and in good working order. If for any reason the Owner deems that the Contractor is not prepared, the outage shall be postponed, and all customers immediately notified of the cancellation. The outage shall be postponed a minimum of two (2) weeks. No additional Contract time will be granted for this delay. Should the Contract time expire within that two (2) week period, the Owner reserves the right to assess liquidated damages, as outlined in these Contract Documents.

The Contractor shall complete the required work and restore water service within two (2) hours following service interruption. Should the Contractor fail to complete the work within the allotted time, the Owner shall assess a penalty of \$500 per 15-minute interval or any portion thereof until water service is restored. This penalty will be deducted from the Contractor's pay application or be billed directly to the Contractor. The penalty may be waived for circumstances beyond the Contractor's control, as deemed by the Owner. The Project Coordinator and/or Project Engineer reserve the right to cancel or postpone the outage at any time, for any reason.

G. DISPOSITION OF SURPLUS PROPERTY

All property which is surplus to the needs of the project will remain or become the property of the Contractor, unless otherwise stated in these Contract Documents. All property belonging to the Contractor shall be removed from the project by the Contractor prior to final acceptance.

H. CONTRACTOR'S RESPONSIBILITY FOR WORK

Until final acceptance by the Owner, the project site and all the Work shall be the responsibility of the Contractor. The Contractor shall take every precaution to prevent damage to the project site, Work, and the surrounding areas. It shall be the responsibility of the Contractor to address any damage or injury arising from their direct or indirect performance on this project. The Contractor shall be responsible for maintaining the project site at all times and ensuring that the Work is installed and maintained in accordance with these Contract Documents until accepted by the Owner. This paragraph does not supersede the requirements of the general warranty.

I. FINAL COMPLETION DOCUMENTATION

Prior to receiving final payment, the Contractor shall complete and/or provide the following:

- 1) Complete all punch list items to the satisfaction of the Project Engineer.
- 2) Satisfactorily resolve all customer complaints and obtain the required releases.
- 3) Provide project record drawings, in accordance with Submittals Section 01300;
- 4) Provide well abandonment reports, well completion reports, and well water analytical records to the Cumberland County Health Department in accordance with NCAC Title 15A Subchapter 2C Section .0100; and
- 5) Provide project close-out submittals in accordance with Submittals Section 01300.

DIVISION I GENERAL REQUIREMENTS

01025-1 MEASUREMENT AND PAYMENT (Well Abandonment/Relocation)

GENERAL

A. The purpose of this Section is to define the methods of measurement and payment for each of the unit prices and/or lump sum prices listed in the Bid Form, which are required to construct the Work. Payment will be made based on completion in a satisfactory manner of the specified items included in the description in this Section for each Bid Item. Not all Work required, significant, or incidental, is identified in this Section or in the Bid Form. Where Work is shown on the Drawings and/or specified in the Contract Documents, but not specifically described in this Section or is incidental to or affiliated with the Work as described, the Work shall be deemed to be included in the value of the Work described in the Pay Items with which the Work is most closely associated. All Work so shown or specified is included in these payment items.

B. The unit price and/or lump sum price bid shall be full compensation for the work required under each bid item, which shall include all incidental costs relative thereto. Certain items of work are specified and/or shown as a detail in the Contract Documents and drawings; bid prices shall include all items of work required to furnish and/or install each in accordance with the Project requirements, whether specifically stated or itemized in the Measure and Payment description.

C. Certain bid items have been designated to conform to maximum payment widths and/or lengths and no additional payment therefore will be allowed unless otherwise approved by the Fayetteville Public Works Commission (PWC). These designated items will be as identified in the Bid Form, Technical Specifications and as may be indicated on the Drawings. The designation of these items of work shall be noted as "No Overage Allowed" or "NOA". Prospective bidders shall be responsible for verifying that the actual quantities of work are listed in the Bid Form prior to submitting bids and include all costs (regardless whether the Bid quantities are over or under the quantities indicated on the Drawings) in the unit price bid.

LUMP SUM PAYMENT ITEMS

C1 MOBILIZATION/ DEMOBILIZATION

A lump Sum Payment less than or equal to 5% of the Total Bid Price (to include all bonds, insurance, move on expenses, etc.) will be allowed for "mobilization" and "demobilization" as a progress payment line item. The actual cost of bonds and insurance (up to the maximum payment of 5%) will be considered in the initial payment request provided that cost documentation suitable to the PWC Project Engineer is furnished by the Contractor. Any outstanding balance of the mobilization and demobilization Pay Item will be payable when the Project is determined to be 10% complete as indicated by the approved progress payments (less cost of mobilization).

C2 TRAFFIC CONTROL & TRAFFIC PLAN

The lump sum prices bid under each PART in the Bid Form shall include all costs for the preparation and implementation of required traffic management plans, furnishing, installing and maintaining traffic control signage and devices, relocating or removing signs or other traffic control devices, replacement of street signs, replacement of traffic signal loops, and all other incidental work throughout the project site, throughout the project duration. The Contractor shall coordinate his activities so as to minimize disruption of traffic and inconvenience to residents and the general public. All such traffic control devices, signage, traffic patterns and road closures shall be approved by the City of Fayetteville and/or NCDOT. All traffic control measures outside of public right-of-way shall be approved by the PWC Project Engineer.

Payment under the lump sum prices shall be made as follows:

- (1) 25% of the Lump Sum Price when the Project work is 10% complete as indicated by approved progress payments.
- (2) 50% of the Lump Sum Price when the Project is 50% complete as indicated by approved progress payments.
- (3) 100% of the Lump Sum Price when the Project is 80% complete as indicated by approved progress payments.

Prospective bidders are advised that failure to provide and maintain adequate traffic control devices and/or signage may result in the Project Engineer's refusal to make payment until corrective measures are in place. Improper signage and/or traffic control devices will not be allowed. The City of Fayetteville, NCDOT, and/or the Fayetteville Public Works Commission reserves the right to relocate and/or remove such non-conforming signs and devices, setup proper signage to ensure public safety and deduct all costs for these items which may be incurred by the Owner. The Contractor shall make no claim for such work performed.

C3 EROSION AND SEDIMENTATION CONTROL

The lump sum prices bid under the applicable PARTs in the Bid Form bid for erosion and sedimentation control shall include all costs for furnishing, erecting, maintaining and removing silt fence, temporary sedimentation control devices, and any other erosion control devices shown or as may be required by the appropriate regulatory agencies throughout the project site, throughout the project duration. No additional payment will be made for removal of soil and debris from drainage structures, features, or reconditioning grading that is part of the normal maintenance activities associated with the approved erosion control plan. No additional payment shall be made for any other work due to inadequate or improperly maintained measures.

Prospective bidders are advised that erosion and sedimentation control will be strictly enforced, and any failure to conform to required standards is considered a right precedent to the Owner to deny payment. Additional measures required by the North Carolina Department of Environmental Quality (NCDEQ) shall not be cause for change in the lump sum price bid. Bidders shall make themselves aware of all NCDEQ regulations and requirements. The Contractor shall be responsible for all fines levied due to improper erosion and sediment control measures to include all costs incurred by City of Fayetteville and/or Fayetteville Public Works Commission necessary to bring a non-conforming site into compliance.

The lump sum price bid shall include all costs necessary for the Contractor to comply with the requirements of the NPDES permit that is associated with the approved erosion control permit. Such activities include but are not limited to installation and maintenance of rain gauges, completing the required inspection reports, posting the permit and reports on the project, and furnishing copies of the inspections reports to the Owner.

Payment under the lump sum prices bid for each PART shall be made monthly as indicated in the Contractor's schedule for the substantial completion of all work under this Contract. In no case, shall the monthly payment exceed ten (10) percent of the lump sum prices bid without the approval of the Owner.

UNIT PRICE ITEMS

C4 CLEARING AND GRUBBING

The unit price bid per acre shall include the costs for felling trees, stump removal and disposal off-site, cutting trees in pulpwood length and stacking within limits of disturbance (LOD) if required, disposing of all trimmings, removing and disposing off-site all logs, branches, trunks, root mats, brush, vegetation, debris from clearing and grubbing operations and all other incidental materials not to be re-used in the work. Areas containing and requiring cutting and removal of weeds, grass, grain annual or perennial plants, or saplings less than one inch in diameter shall not be measured and paid for as clearing and grubbing. Payment shall be based on the horizontal area cleared and grubbed as designated on the plans or as directed by the Owner. Measurement will be made to the nearest one hundredth of an acre.

The unit price bid per acre.

C5 FENCE REMOVAL & REPLACEMENT

The unit price bid per linear foot shall include the cost associated with removal and replacement of existing residential property fence as needed to gain necessary access to the existing and proposed well locations. If fence removal is required during construction, PWC shall reimburse the Contractor for costs associated with removal and replacement of existing fencing. If temporary fencing is required, the Contractor shall provide such fencing as necessary, at no additional cost to the Owner. Temporary fencing shall be of chain link construction and shall be a minimum of six (6) feet in height. The Contractor is responsible to coordinate the fence removal and replacement for both the temporary and permanent placement with the property owner. Fences removed during construction activities shall be replaced using new materials which match existing and shall be constructed to the same height as existing to restore the fence to the original condition or better.

C6 WELL ABANDONMENT

Payment under this item shall include all costs to abandon existing wells in accordance with NCDEQ requirements. Work shall include, but not limited to, chlorinating the well before sealing, perforating the well casing, filling the well with cement, grout, bentonite, and or gravel, furnishing all necessary records to NCDEQ, furnishing all records and confirmations of receipt of records by NCDEQ to the Owner, removal and disposal of the existing well house/pumphouse, removal and disposal of piping, removing the pump and providing it to the property owner, disconnecting any electrical components from the power source to the well pump, disconnecting and plugging existing plumbing, and properly disposing of waste

generated during well abandonment activities, and any other incidentals necessary to complete the work.

Abandoned wells are to be sealed at locations shown in the contract or as directed. Perform all work in accordance with NCDEQ requirements. Contractor shall utilize a Well Contractor that is certified by the State of North Carolina to perform abandonment. Prior to commencing clearing and grubbing in the easement, the Contractor shall inspect the area to determine if there are any wells within the clearing limits. The well shall be inspected from land surface to the entire depth of the well before it is sealed to ensure freedom from obstructions that may interfere with sealing operations. Before sealing, place chlorine in the well in sufficient quantities to produce a chlorine residual of at least 100 milligrams per liter in the well. All casing and screen materials may be salvaged except casing that is cemented in place. In the case of gravel-packed wells in which the casing and screens have not been removed, perforate the casing opposite the gravel pack at intervals not exceeding 10 feet. Completely fill bored wells with cement grout or dry clay compacted in place. Completely fill wells constructed in unconsolidated formations with cement grout by introducing it through a pipe extending to the bottom and raising it as the well is filled. Fill wells constructed in consolidated rock formations or that penetrate zones of consolidated rock to at least 5 feet below the top of the consolidated rock with sand, gravel, or grout opposite the zones of consolidated rock. Fill the remainder of the well with cement grout. Complete a certified well abandonment record (Form GW-30) and submit to the Owner and to NCDEQ.

C7 WELL INSTALLATION

Payment under this item shall include all costs to install proposed wells in accordance with NCDEQ requirements. Work shall include but not limited to all materials, labor and tools for drilling and installing the screened well including the well screen and casing, sand filter pack, bentonite, and grout or rock well including casing into competent rock and rock bore to yielding strata; well development which includes purging groundwater from newly installed wells to remove sediment until discharge is clear and free of sediment; furnishing all necessary records to NCDEQ; furnishing all records and confirmations of receipt of records by NCDEQ to the Owner; excavation (including exploratory excavation); containerization and proper disposal of all waste generated during well installation activities; and any other incidentals necessary to complete the work.

Piping within wells to include all PVC pipe for raw and treated water.

Cost shall also include associated sampling and analysis of groundwater collected from wells within 30 days after issuing a certificate of completion in accordance with Section .3800 15A NCAC 18A .3802.

C8 Furnish and Install Well House/Pump House

Payment under this item shall include all costs to install well house/pumphouse; including heat trace wire or heat bulb for freeze protection if existing bulb are present prior to construction; and any other incidentals necessary to complete the work. Well House/Pump House should match existing well house that is being replaced.

C9 Replacement of Existing Residential Water Well Electrical System

Payment under this item shall include all costs for removal and replacement of the existing residential water well electrical system from the power source to the well including but not limited to the well pump, pump controllers, motor drives, sensors, accessories, electrical circuit, circuit breaker replacement/upfit and/or other electrical upfits to meet required conditions and any other incidentals necessary to complete the work per State Requirements and Electrical Code.

C10 Replacement of Existing Residential Water Well Plumbing System

Payment under this item shall include all costs to for removal and replacement of the existing residential water well plumbing system including but not limited to piping, fittings, valves, fasteners, gaskets, pipe supports, sample taps, hose bibs, manual pressure gauges, pressure switch, bladder tank, piping, and any other incidentals necessary to complete the work per State Requirements and Plumbing Code.

C11 SOD (NO OVERAGE ALLOWED)

Payment for placing sod as indicated on the drawings or as directed by the Project Coordinator or Project Engineer shall be made at the unit price bid per square yard listed in the Bid Form. Payment shall include grading, fine raking, sod bed preparation, pest and disease control, soil amendments, placing sod, anchoring, fertilizing, maintaining, protection of turf areas, removal and replacement of dying sod and watering to ensure growth. No payment will be made for sodding outside Limits of Disturbance (LOD) or rights-of-way disturbed. Contractor will be responsible for collateral damage outside LOD.

Stripping of topsoil will not be measured and paid for as a separate bid item. All work shall be included for payment under the applicable items listed in the Bid Form. Work shall include stripping, stockpiling, spreading, leveling, supplemental topsoil, filling, grading and compaction of suitable topsoil along right-of-way and LOD.

C12 GRAVEL & SOIL DRIVEWAY RESTORATION

Payment for restoring gravel & soil driveways as indicated on the drawings or as directed by the Project Coordinator or Project Engineer shall be made at the unit price bid per square yard listed in the Bid Form. Payment shall include grading, fine raking, and placing gravel/soil to pre-construction conditions. No payment will be made for repairs outside LOD, or rights-of-way disturbed. Contractor will be responsible for collateral damage outside LOD.

PWC

Fayetteville's

HOME TOWN UTILITY

FAYETTEVILLE, N.C.



VICINITY MAP
1"=6,500'

BIG ROCKFISH CREEK OUTFALL

ADDITIONAL SERVICES

WELL RELOCATION ON LAKEVIEW DRIVE



SCALE: 1" = 1,000'



Oct 18 2022 8:26 AM

SHEET INDEX		
SHEET NO.	PROPERTY OWNER	SITE ADDRESS
00	COVER	
1	ELLIS E EHLE	2673 LAKE VIEW DR
2	ELLIS E EHLE JR	2667 LAKEVIEW DR
3	JEFFREY M BRYANT	2659 LAKEVIEW DR
4	CATHERINE D PHIPPS	2653 LAKEVIEW DR
5	WILLIAM K & WILLIAM H DEAN	2623 LAKEVIEW DR
6	AUDREY L STONE	2603 LAKEVIEW DR
7	SAMUEL O JR & DENISE D HUGGINS	2571 LAKEVIEW DR
8	ALTON LOCKLEAR LIFE ESTATE	2551 LAKEVIEW DR
9	DEBORAH L WILLIFORD	2545 LAKEVIEW DR
10	HELGA NIEDENTHAL	2564 LAKEVIEW DR
11	SAMUEL O JR & DENISE D HUGGINS	2561 LAKEVIEW DR
12	BRANT, ELLIS M & DEBORAH F	2583 LAKEVIEW DR
13	SCOTT R LANCE & SARAH MARET GURNEY	2507 LAKEVIEW DR



720 Corporate Center Drive
Raleigh, North Carolina 27607
(w) 919.782.0495
(f) 919.782.9672
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NC LICENSE NO. F-0274



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Call before you dig.



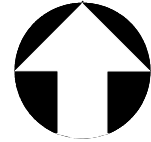
OCTOBER 17, 2022

100% DESIGN DOCUMENT - FOR BIDDING PURPOSES ONLY

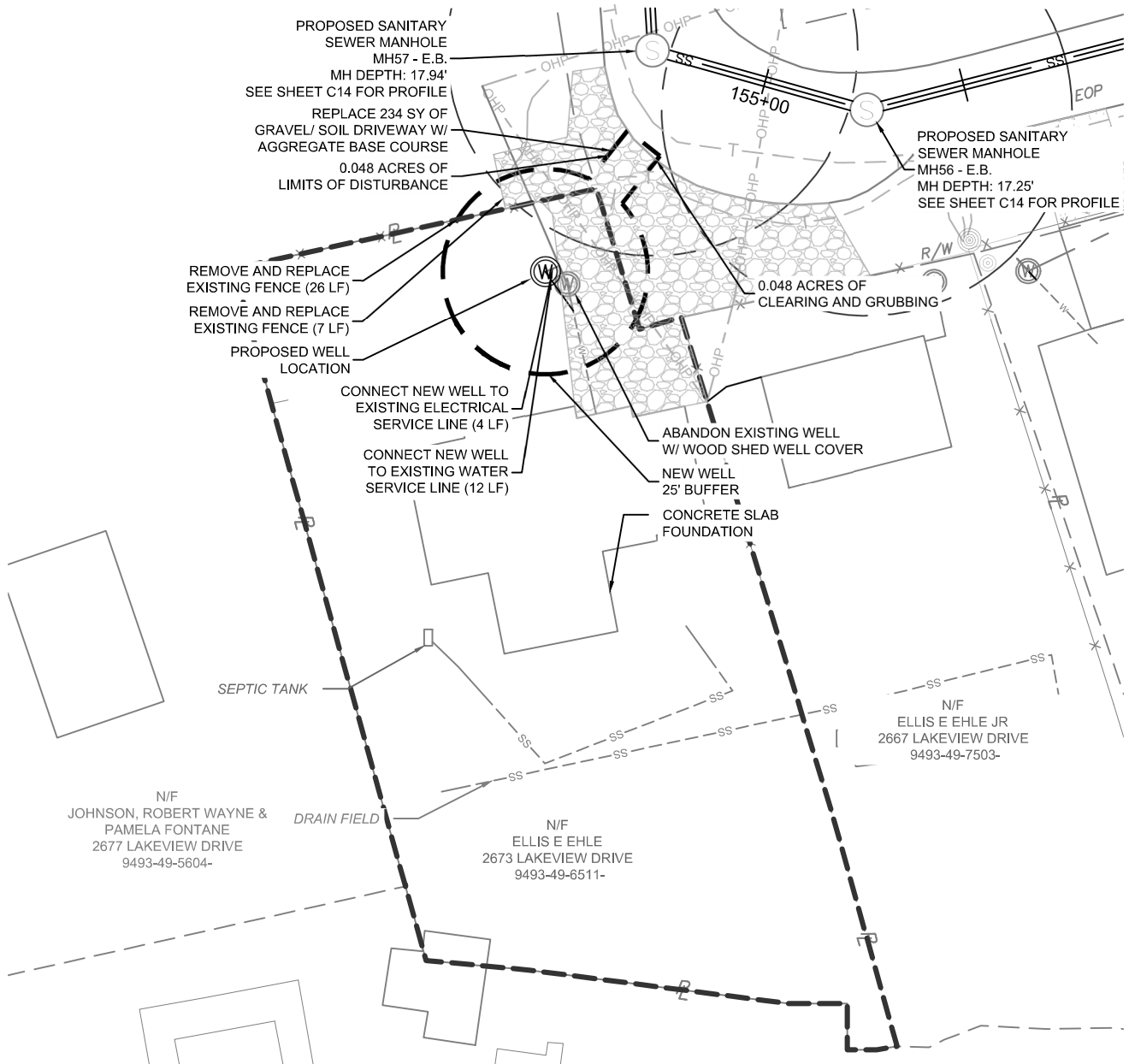
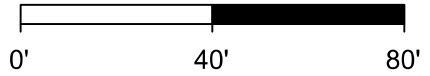
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WKD PROJ #20200629.00.RA

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EXHIBIT MAP 1 WELL RELOCATION ON THE LANDS OF ELLIS E EHLE 2673 LAKEVIEW DR PIN# 9493-49-6511

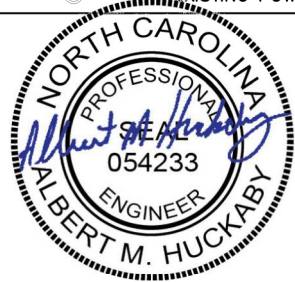


SCALE: 1" = 40'



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.



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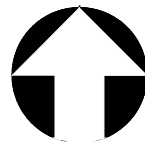
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PUBLIC WORKS COMMISSION
FWC WATER RESOURCES ENGINEERING

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955 Old Wilmington Road, Fayetteville, NC 28301

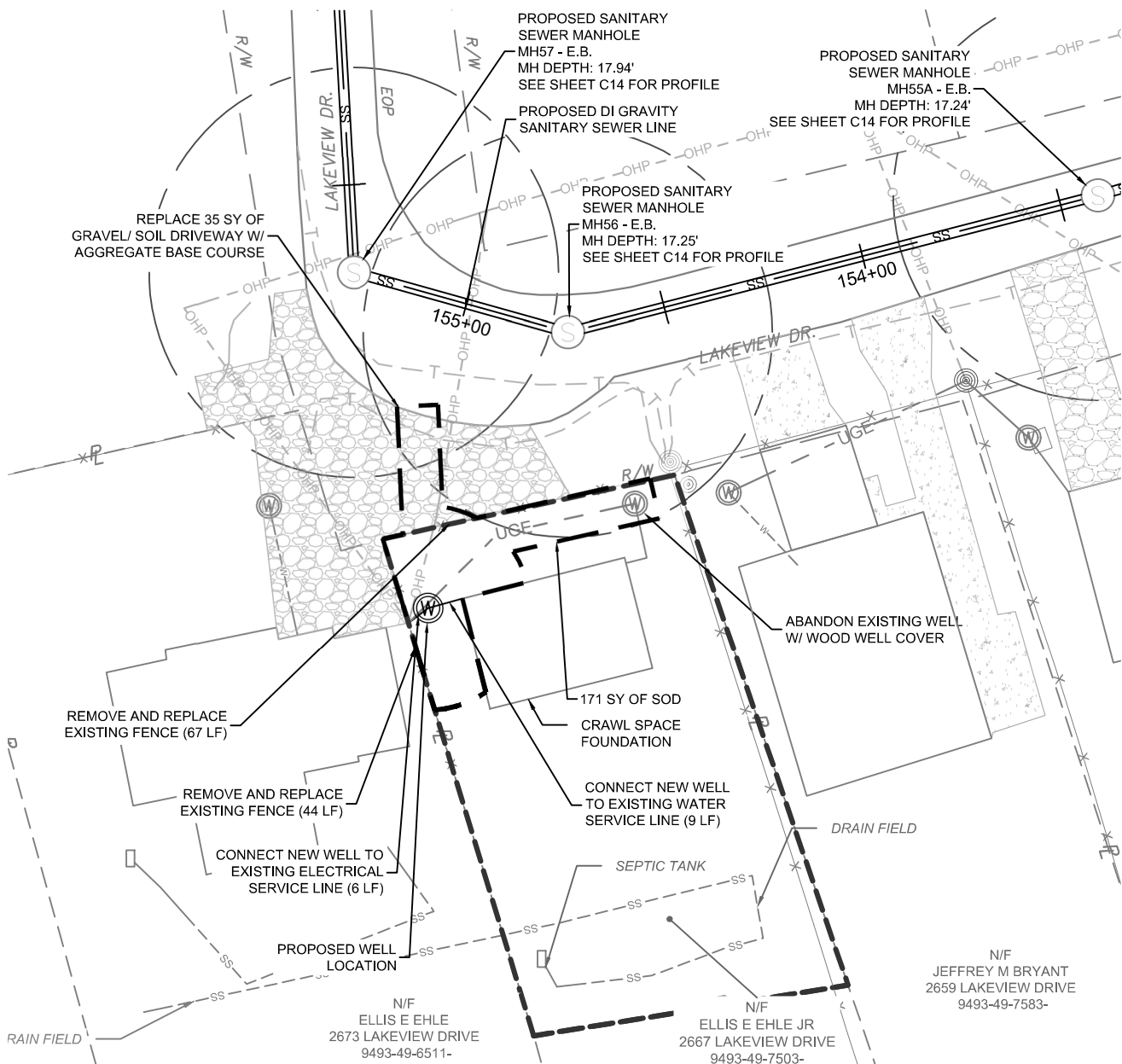
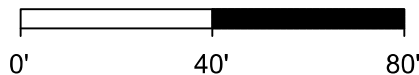
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LAYOUT BY: L J G	DATE: 10/4/22		
PLAN/PROF. BY: L J G			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			
SHT: 1 OF 13		20200629.00.RA	

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EXHIBIT MAP 2 WELL RELOCATION ON THE LANDS OF ELLIS E EHLE JR 2667 LAKEVIEW DR PIN# 9493-49-7503



SCALE: 1" = 40'



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

N/F
JEFFREY M BRYANT
2659 LAKEVIEW DRIVE
9493-49-7583-

N/F
ELLIS E EHLE
2673 LAKEVIEW DRIVE
9493-49-6511-

N/F
ELLIS E EHLE JR
2667 LAKEVIEW DRIVE
9493-49-7503-



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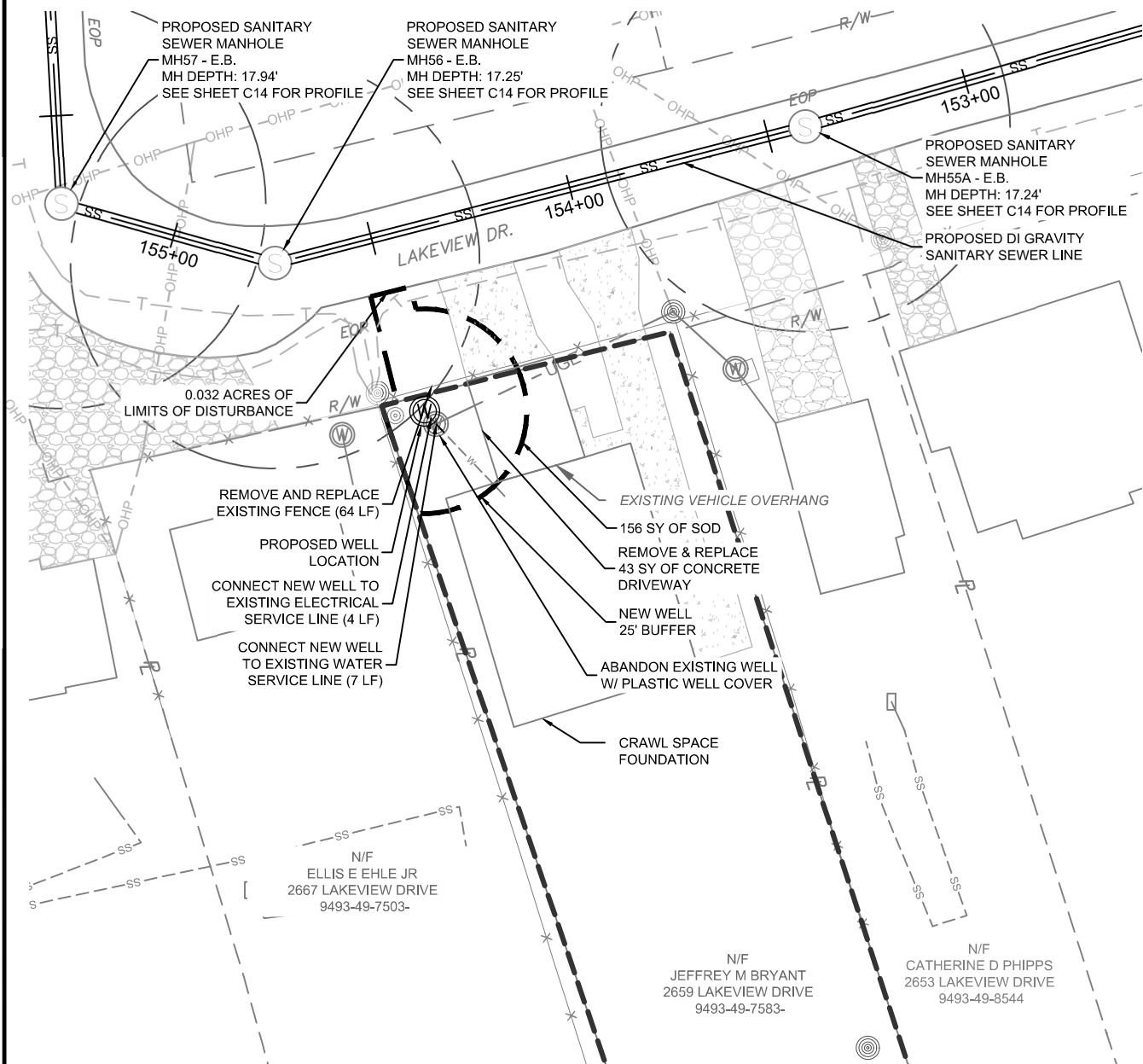
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	LAYOUT BY: L.JG	DATE: 10/4/22		
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	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY: AMH			
SCALE: HOR: 1" = 40'	SHT: 2 OF 13		20200629.00.RA	

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EXHIBIT MAP 3 WELL RELOCATION ON THE LANDS OF JEFFREY M BRYANT 2659 LAKEVIEW DR PIN# 9493-49-7583

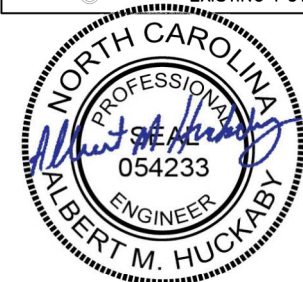


SCALE: 1" = 40'



LEGEND	
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	PROPOSED GRAVITY SANITARY SEWER
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	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
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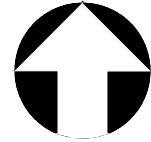
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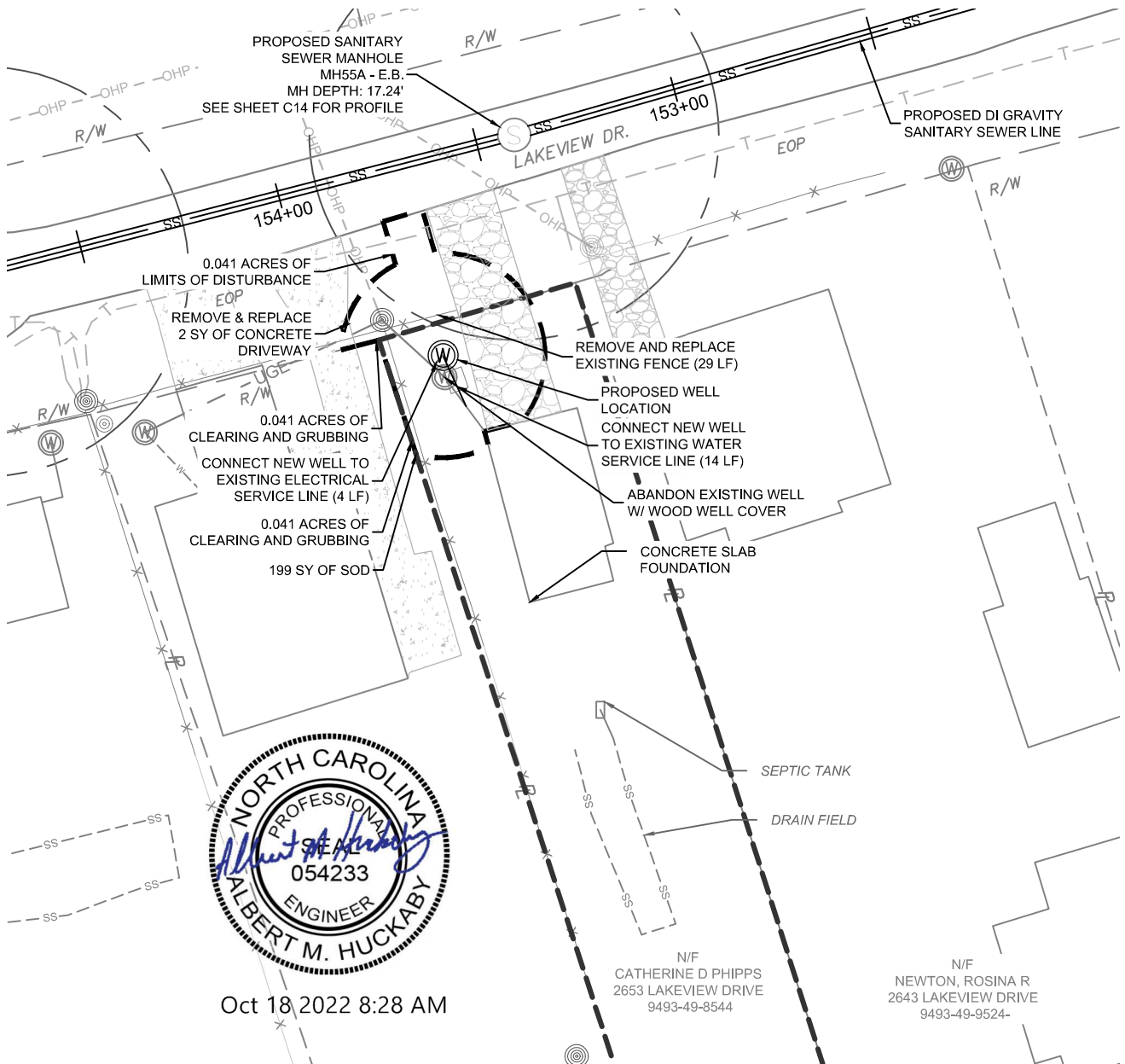
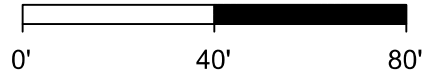
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APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			
SHT: 3 OF 13		20200629.00.RA	

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EXHIBIT MAP 4 WELL RELOCATION ON THE LANDS OF CATHERINE D PHIPPS 2653 LAKEVIEW DR PIN# 9493-49-8544



SCALE: 1" = 40'



Oct 18 2022 8:28 AM

LEGEND

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
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- DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

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P.O. Box 1089, Fayetteville, NC 28302
955 Old Wilmington Road, Fayetteville, NC 28301

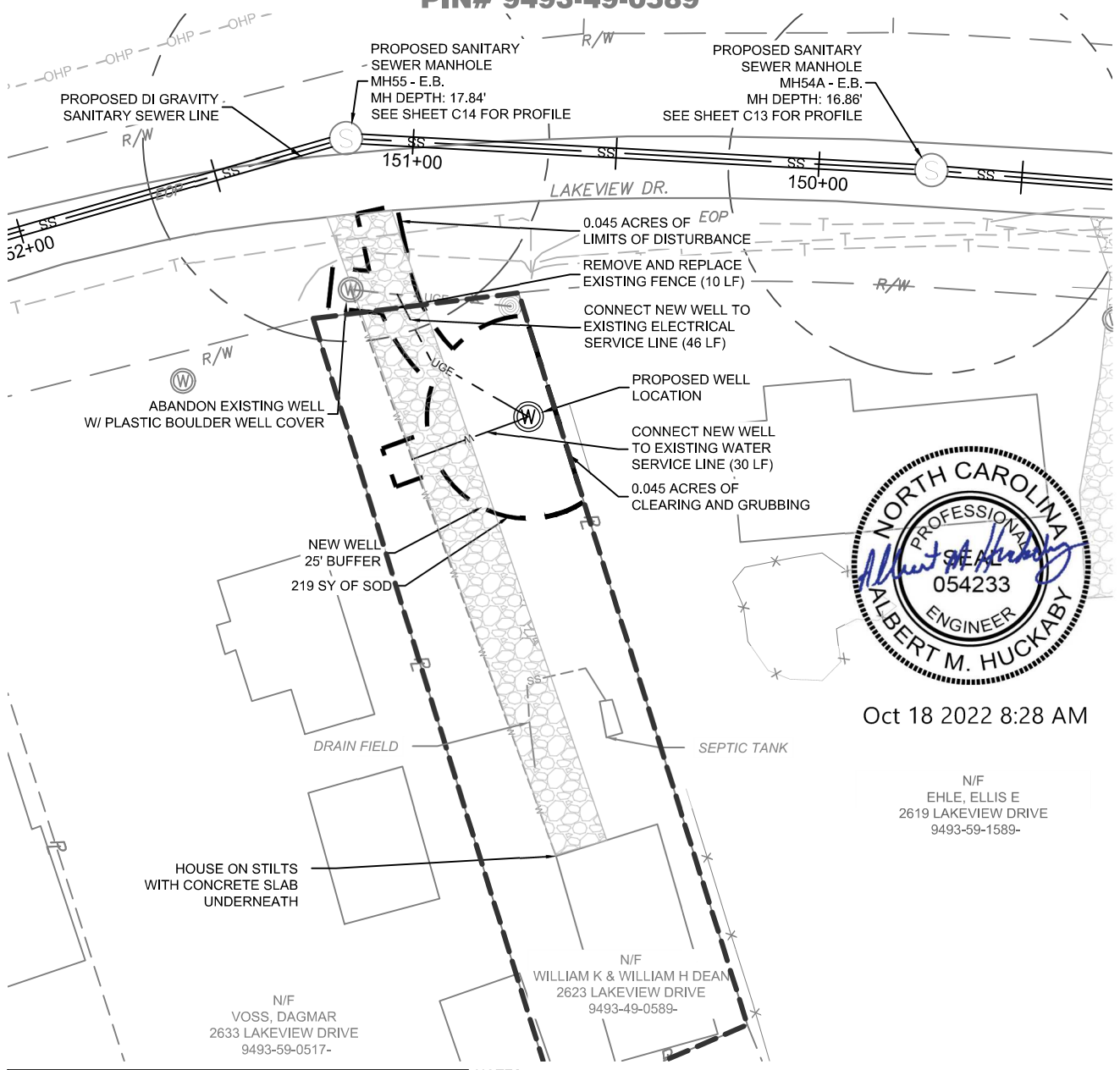
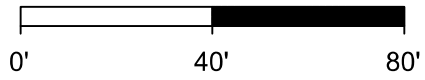
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LAYOUT BY: L J G	DATE: 10/4/22		
PLAN/PROF. BY: L J G			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'	SHT: 4 OF 13	20200629.00.RA	

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EXHIBIT MAP 5 WELL RELOCATION ON THE LANDS OF WILLIAM K & WILLIAM H DEAN 2623 LAKEVIEW DR PIN# 9493-49-0589



SCALE: 1" = 40'



Oct 18 2022 8:28 AM

N/F
EHLE, ELLIS E
2619 LAKEVIEW DRIVE
9493-59-1589-

N/F
VOSS, DAGMAR
2633 LAKEVIEW DRIVE
9493-59-0517-

N/F
WILLIAM K & WILLIAM H DEAN
2623 LAKEVIEW DRIVE
9493-49-0589-

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

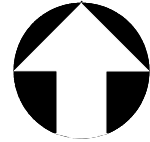
- NOTES:
- CONTRACTOR TO PROVIDE ACCESS TO PROPERTY TO THE PROPERTY OWNER AT ALL TIMES.
 - CONTRACTOR SHALL FOLLOW WELL PERMIT AND ALL FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.
 - CONTRACTOR SHALL ABANDON WELLS PER STATE AND LOCAL REQUIREMENTS.
 - CONTRACTOR SHALL FIELD VERIFY ALL UNDERGROUND UTILITIES PRIOR TO INITIATING GROUND BREAKING ACTIVITIES.
 - CLEARING AND GRUBBING WILL BE QUANTIFIED AND PAID BASED UPON A PER ACREAGE BASIS.
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 - PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM & CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/16."
 - THE EXISTING WELL, PROPOSED WELL, AND EXISTING SEPTIC TANK/DRAIN FIELD WERE LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 - PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.
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 - CONTRACTOR IS TO VERIFY THAT THE EXISTING ELECTRICAL BOX IS SUFFICIENT TO POWER NEW PUMP. IN THE OCCURRENCE THAT IT IS NOT ADEQUATE THE CONTRACTOR IS TO REMOVE AND REPLACE WITH A NEW ELECTRICAL BOX TO MEET THE DEMAND OF THE NEW WELL PUMP.
 - CONTRACTOR IS TO CONNECT EXISTING PLUMBING TO NEW PLUMBING.
 - CONTRACTOR SHALL REPLACE EXISTING PUMP ENCLOSURE WITH A NEW ENCLOSURE EQUAL IN LIKENESS. CONTRACTOR TO REMOVE AND PROPERLY DISPOSE OF EXISTING PUMP ENCLOSURE.
 - CONTRACTOR TO COORDINATE SCHEDULE AND REMOVAL OF EXISTING FENCE WITH PROPERTY OWNER PRIOR TO COMPLETING FENCE REMOVAL ACTIVITIES. FOLLOWING COMPLETION OF WELL INSTALLATION ACTIVITIES, THE CONTRACTOR SHALL INSTALL A NEW PERMANENT FENCE OF EQUAL LIKENESS TO REPLACE THE REMOVED FENCE.
 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

PWC PROJ #BS-15614

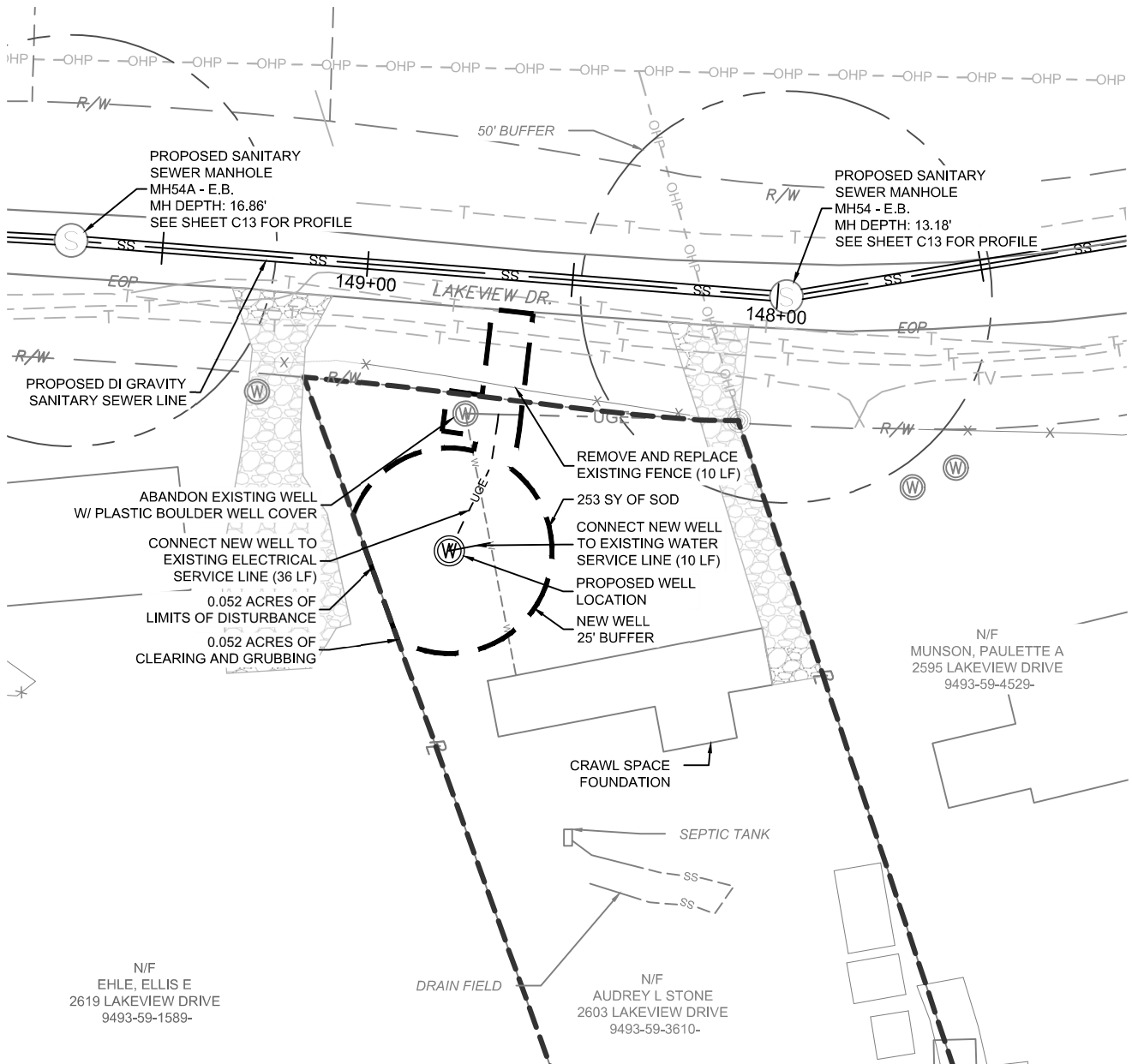
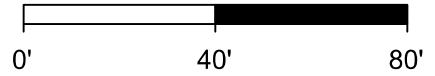
 FAYETTEVILLE PUBLIC WORKS COMMISSION WATER RESOURCES ENGINEERING P.O. Box 1089, Fayetteville, NC 28302 955 Old Wilmington Road, Fayetteville, NC 28301	SURVEY/GPS BY: MCKIM & CREED	DATE	REVISIONS	BY
	LAYOUT BY: L.J.G.	DATE: 10/4/22		
	PLAN/PROF. BY: L.J.G.			
	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY: AMH			
SCALE: HOR: 1" = 40'		SHT: 5 OF 13	20200629.00.RA	

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EXHIBIT MAP 6 WELL RELOCATION ON THE LANDS OF AUDREY L STONE 2603 LAKEVIEW DR PIN# 9493-59-3610



SCALE: 1" = 40'



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

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 - THE EXISTING WELL, PROPOSED WELL, AND EXISTING SEPTIC TANK/DRAIN FIELD WERE LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.



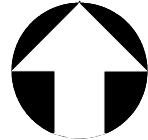
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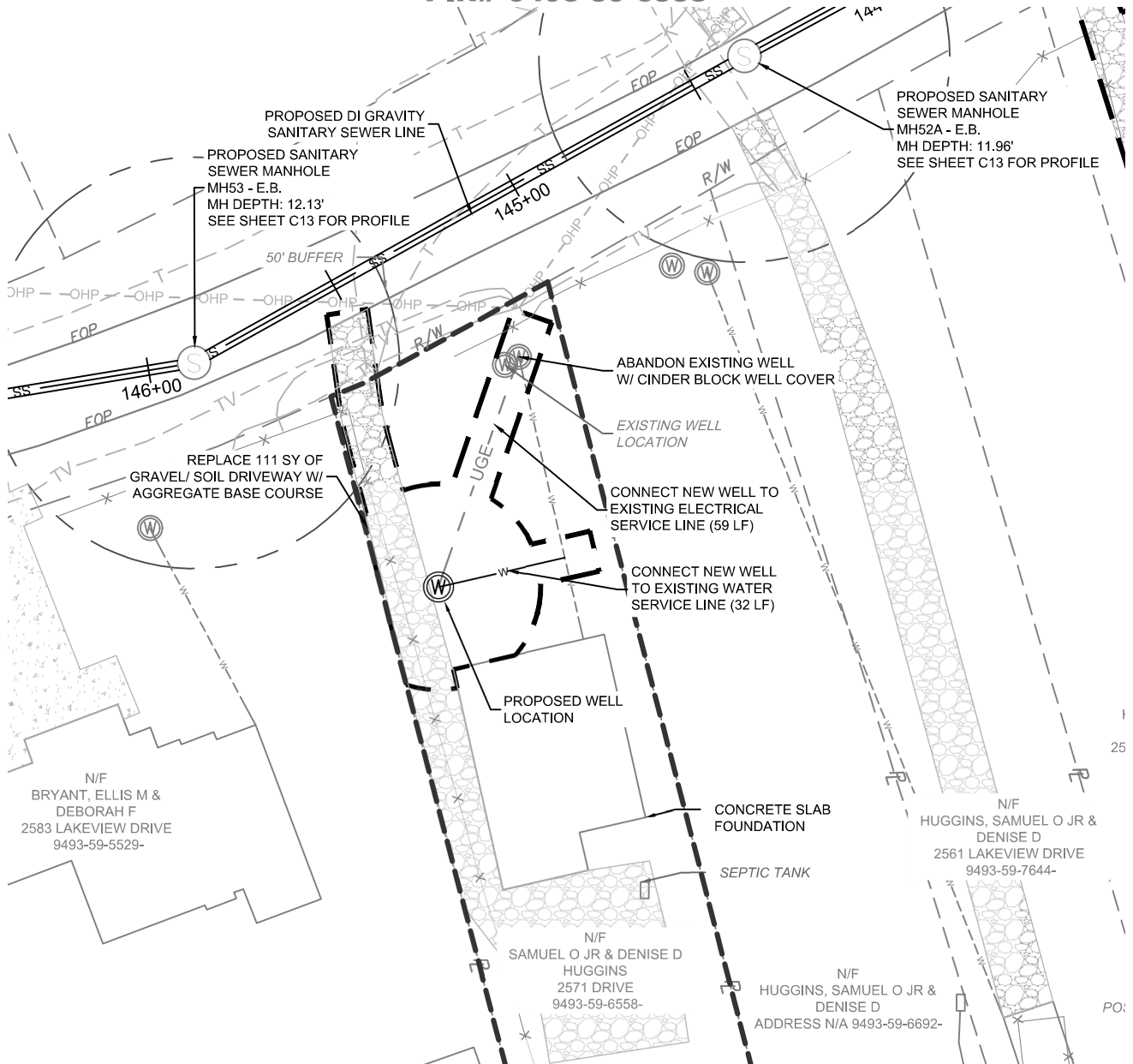
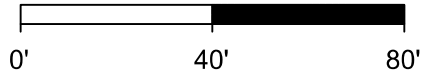
FAYETTEVILLE PUBLIC WORKS COMMISSION WATER RESOURCES ENGINEERING P.O. Box 1089, Fayetteville, NC 28302 955 Old Wilmington Road, Fayetteville, NC 28301	SURVEY/GPS BY: MCKIM & CREED	DATE	REVISIONS	BY
	LAYOUT BY: L.J.G.	DATE: 10/4/22		
	PLAN/PROF. BY: L.J.G.			
	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY: AMH			
SCALE: HOR: 1" = 40'	SHT: 6 OF 13		20200629.00.RA	

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EXHIBIT MAP 7 WELL RELOCATION ON THE LANDS OF SAMUEL O JR & DENISE D HUGGINS 2571 LAKEVIEW DR PIN# 9493-59-6558



SCALE: 1" = 40'



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

- NOTES:
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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.



Oct 18 2022 8:29 AM

PWC PROJ #BS-15614

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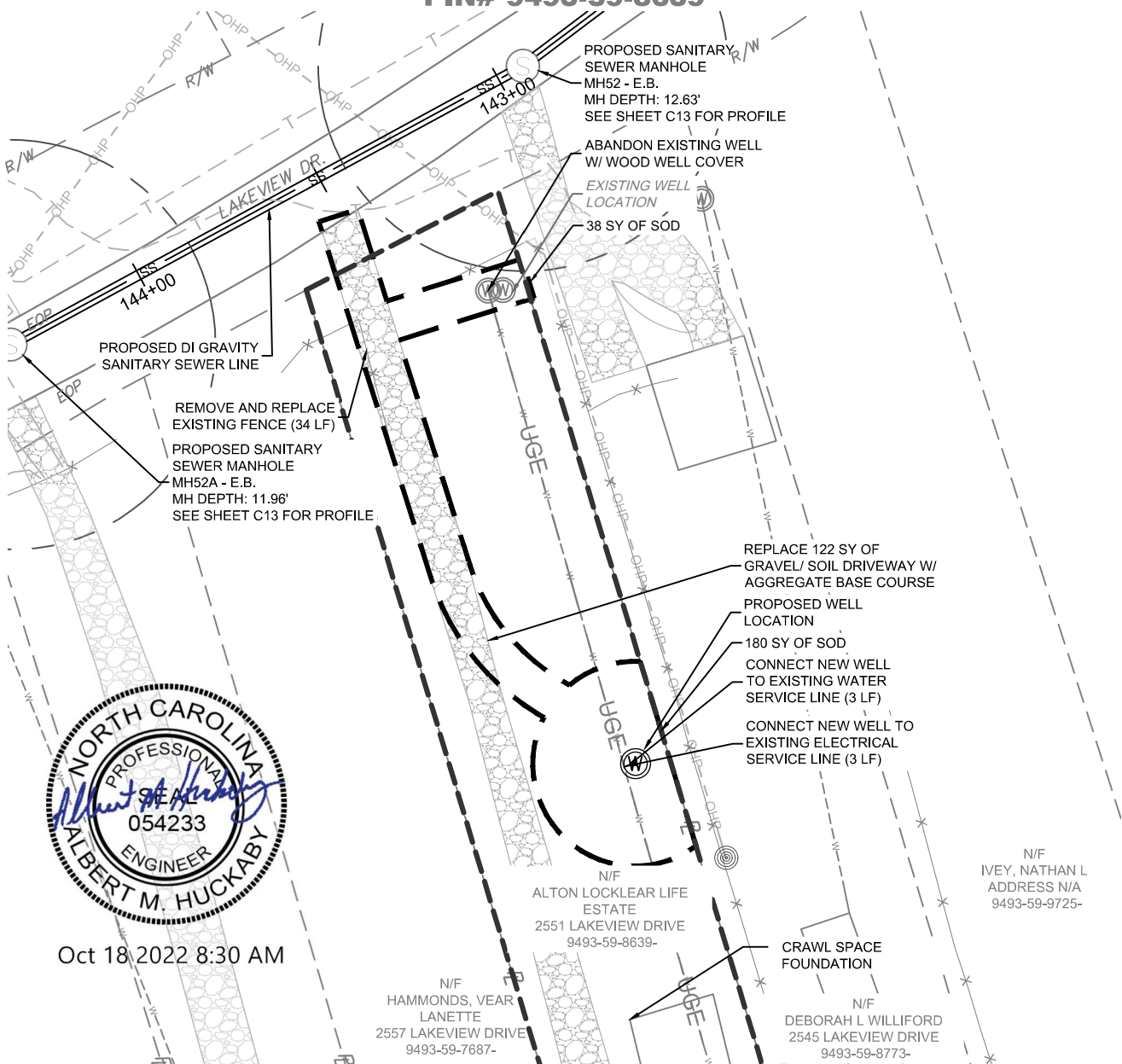
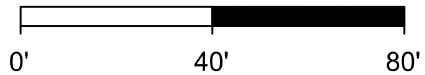
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LAYOUT BY: L.JG	DATE: 10/4/22		
PLAN/PROF. BY: L.JG			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			
SHT: 7 OF 13		20200629.00.RA	

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EXHIBIT MAP 8 WELL RELOCATION ON THE LANDS OF ALTON LOCKLEAR LIFE ESTATE 2551 LAKEVIEW DR PIN# 9493-59-8639



SCALE: 1" = 40'



Oct 18, 2022 8:30 AM

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
SS	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
EOP	EDGE OF PAVEMENT
R/W	RIGHT-OF-WAY
T	TELEPHONE LINE
X	EXISTING FENCE LINE
OHP	EXISTING OVERHEAD POWER
UGE	EXISTING UNDERGROUND ELECTRICAL
W	EXISTING RESIDENTIAL WATER LINE
W	PROPOSED RESIDENTIAL WATER LINE
UGE	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

PWC PROJ #BS-15614

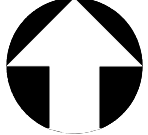
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WATER RESOURCES ENGINEERING**

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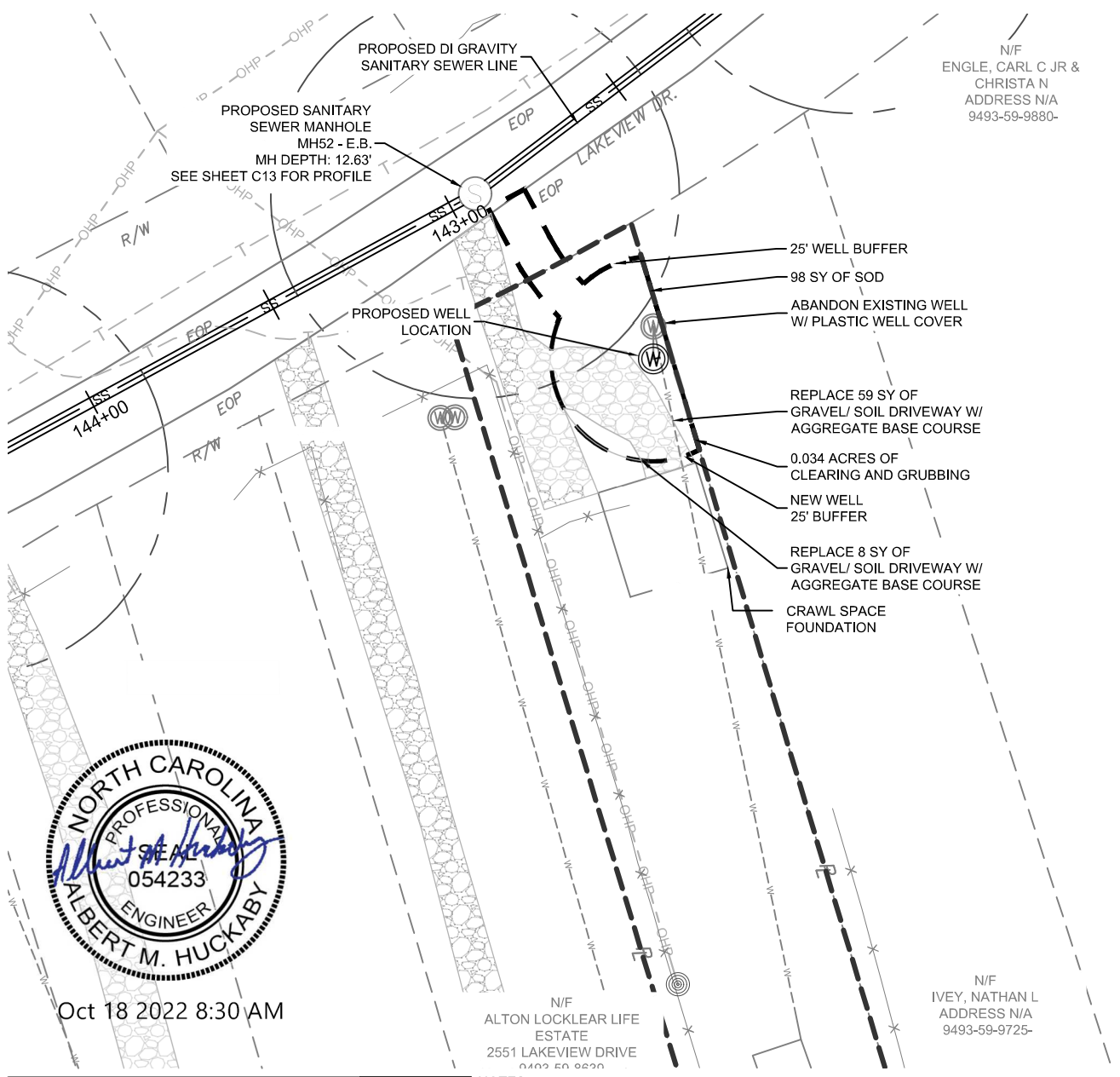
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LAYOUT BY: L J G	DATE: 10/4/22		
PLAN/PROF. BY: L J G			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			
SHT: 8 OF 13		20200629.00.RA	

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EXHIBIT MAP 9 WELL RELOCATION ON THE LANDS OF DEBORAH L WILLIFORD 2545 LAKEVIEW DR PIN# 9493-59-8773



SCALE: 1" = 40'



N/F
ENGL, CARL C JR &
CHRISTA N
ADDRESS N/A
9493-59-9880-

N/F
ALTON LOCKLEAR LIFE
ESTATE
2551 LAKEVIEW DRIVE
9493-59-9820

N/F
IVEY, NATHAN L
ADDRESS N/A
9493-59-9725-



Oct 18 2022 8:30 AM

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
SS	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
SS	EXISTING SEPTIC SYSTEM
EOP	EDGE OF PAVEMENT
R/W	RIGHT-OF-WAY
T	TELEPHONE LINE
X	EXISTING FENCE LINE
OHP	EXISTING OVERHEAD POWER
UGE	EXISTING UNDERGROUND ELECTRICAL
W	EXISTING RESIDENTIAL WATER LINE
W	PROPOSED RESIDENTIAL WATER LINE
UGE	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

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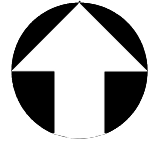
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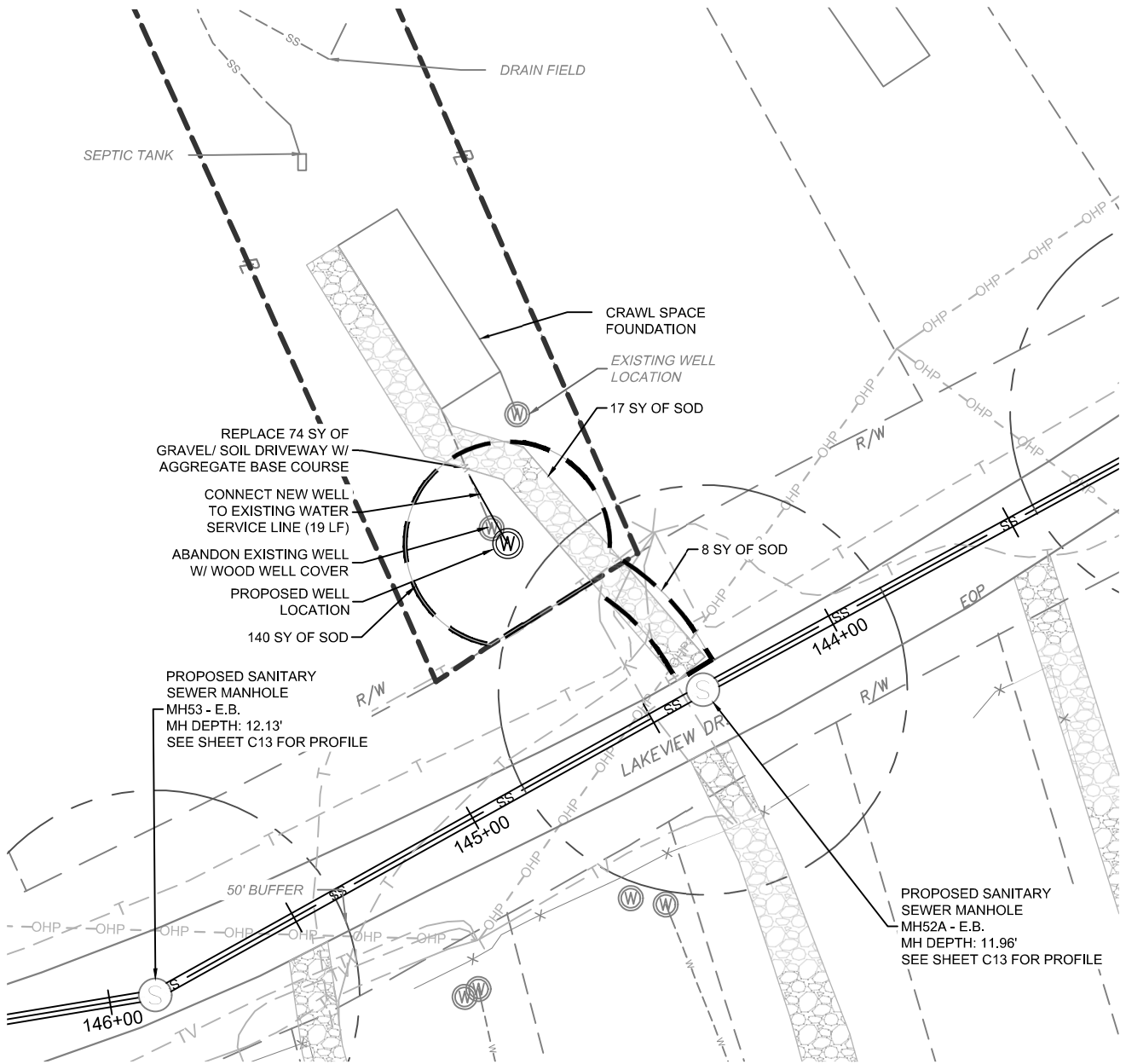
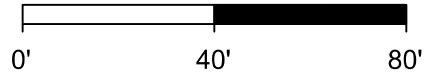
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LAYOUT BY: L J G	DATE: 10/4/22		
PLAN/PROF. BY: L J G			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			
SHT: 9 OF 13		20200629.00.RA	

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EXHIBIT MAP 10 WELL RELOCATION ON THE LANDS OF HELGA NIEDENTHAL 2564 LAKEVIEW DR PIN# 9493-59-5997

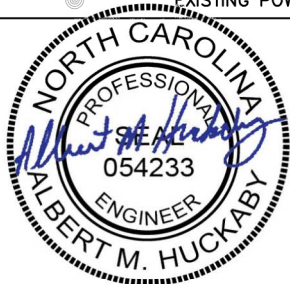


SCALE: 1" = 40'



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

- NOTES:
- CONTRACTOR TO PROVIDE ACCESS TO PROPERTY TO THE PROPERTY OWNER AT ALL TIMES.
 - CONTRACTOR SHALL FOLLOW WELL PERMIT AND ALL FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.
 - CONTRACTOR SHALL ABANDON WELLS PER STATE AND LOCAL REQUIREMENTS.
 - CONTRACTOR SHALL FIELD VERIFY ALL UNDERGROUND UTILITIES PRIOR TO INITIATING GROUND BREAKING ACTIVITIES.
 - CLEARING AND GRUBBING WILL BE QUANTIFIED AND PAID BASED UPON A PER ACREAGE BASIS.
 - PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA.
 - PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM & CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/16."
 - THE EXISTING WELL, PROPOSED WELL, AND EXISTING SEPTIC TANK/DRAIN FIELD WERE LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 - PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.
 - CONTRACTOR SHALL COMPLETE WELLS SUCH THAT THE SCREENED INTERVAL IS INSTALLED BELOW A LITHOLOGICAL CONFINING LAYER LOCATED AT A GREATER DEPTH THAN THE SANITARY SEWER.
 - CONTRACTOR IS TO RECONNECT ALL ELECTRICAL AFFECTED BY WELL RELOCATION WORK.
 - CONTRACTOR IS TO VERIFY THAT THE EXISTING ELECTRICAL BOX IS SUFFICIENT TO POWER NEW PUMP. IN THE OCCURRENCE THAT IT IS NOT ADEQUATE THE CONTRACTOR IS TO REMOVE AND REPLACE WITH A NEW ELECTRICAL BOX TO MEET THE DEMAND OF THE NEW WELL PUMP.
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 - CONTRACTOR SHALL REPLACE EXISTING PUMP ENCLOSURE WITH A NEW ENCLOSURE EQUAL IN LIKENESS. CONTRACTOR TO REMOVE AND PROPERLY DISPOSE OF EXISTING PUMP ENCLOSURE.
 - CONTRACTOR TO COORDINATE SCHEDULE AND REMOVAL OF EXISTING FENCE WITH PROPERTY OWNER PRIOR TO COMPLETING FENCE REMOVAL ACTIVITIES. FOLLOWING COMPLETION OF WELL INSTALLATION ACTIVITIES, THE CONTRACTOR SHALL INSTALL A NEW PERMANENT FENCE OF EQUAL LIKENESS TO REPLACE THE REMOVED FENCE.
 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.



Oct 18 2022 8:30 AM

PWC PROJ #BS-15614

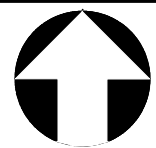
**FAYETTEVILLE
PUBLIC WORKS COMMISSION
WATER RESOURCES ENGINEERING**

P.O. Box 1089, Fayetteville, NC 28302
955 Old Wilmington Road, Fayetteville, NC 28301

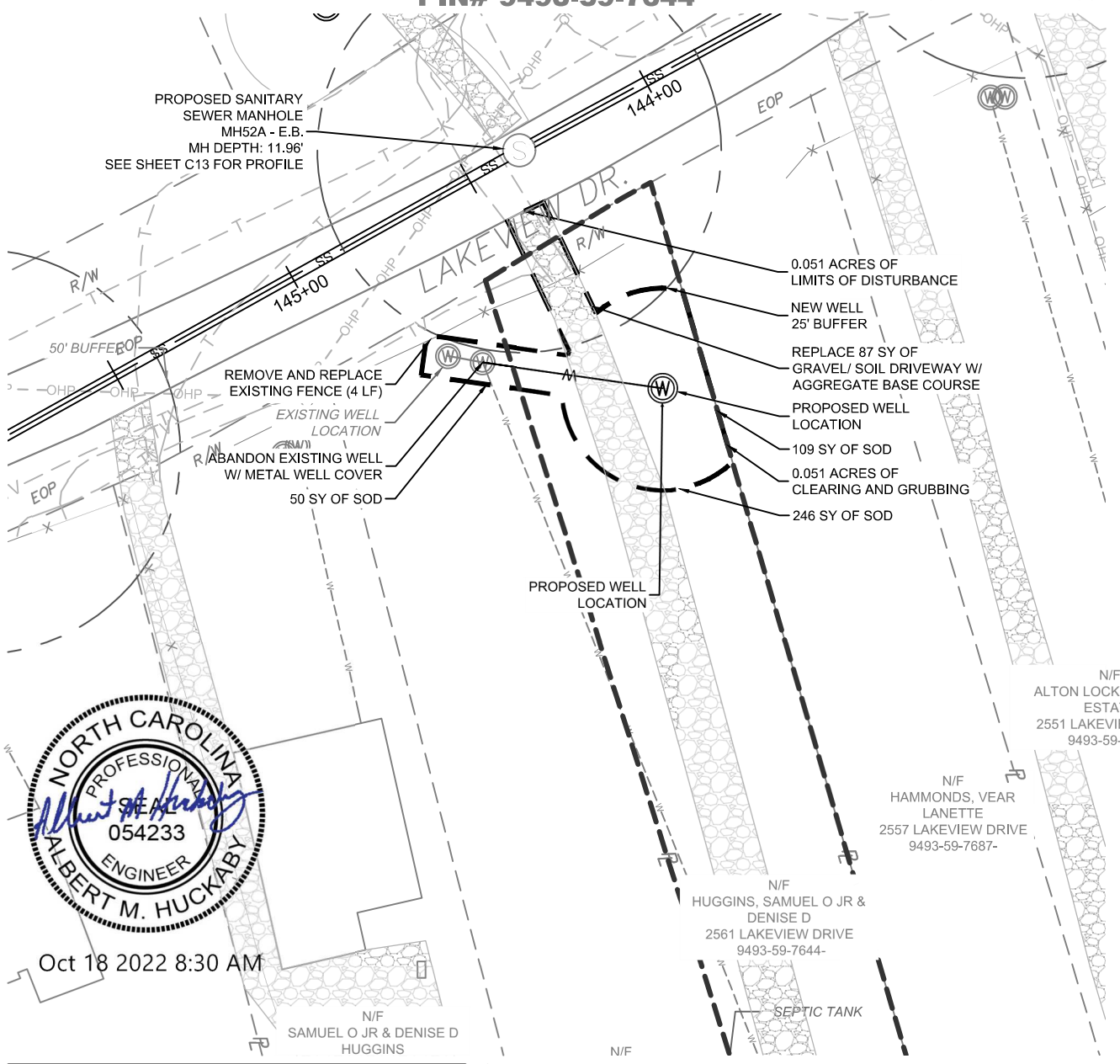
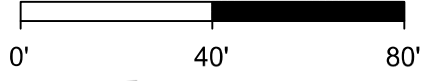
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LAYOUT BY: L J G	DATE: 10/4/22		
PLAN/PROF. BY: L J G			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			
SHT: 10 OF 13		20200629.00.RA	

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EXHIBIT MAP 11 WELL RELOCATION ON THE LANDS OF SAMUEL O JR & DENISE D HUGGINS 2561 LAKEVIEW DR PIN# 9493-59-7644



SCALE: 1" = 40'



Oct 18 2022 8:30 AM

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

- NOTES:
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 - CONTRACTOR SHALL ABANDON WELLS PER STATE AND LOCAL REQUIREMENTS.
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 - PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA.
 - PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM & CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/16."
 - THE EXISTING WELL, PROPOSED WELL, AND EXISTING SEPTIC TANK/DRAIN FIELD WERE LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 - PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.
 - CONTRACTOR SHALL COMPLETE WELLS SUCH THAT THE SCREENED INTERVAL IS INSTALLED BELOW A LITHOLOGICAL CONFINING LAYER LOCATED AT A GREATER DEPTH THAN THE SANITARY SEWER.
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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

PWC PROJ #BS-15614

**FAYETTEVILLE
PUBLIC WORKS COMMISSION
WATER RESOURCES ENGINEERING**

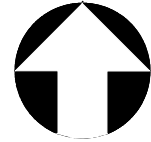
P.O. Box 1089, Fayetteville, NC 28302
955 Old Wilmington Road, Fayetteville, NC 28301

SURVEY/GPS BY: MCKIM & CREED	DATE	REVISIONS	BY
LAYOUT BY: L.J.G.	DATE: 10/4/22		
PLAN/PROF. BY: L.J.G.			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			

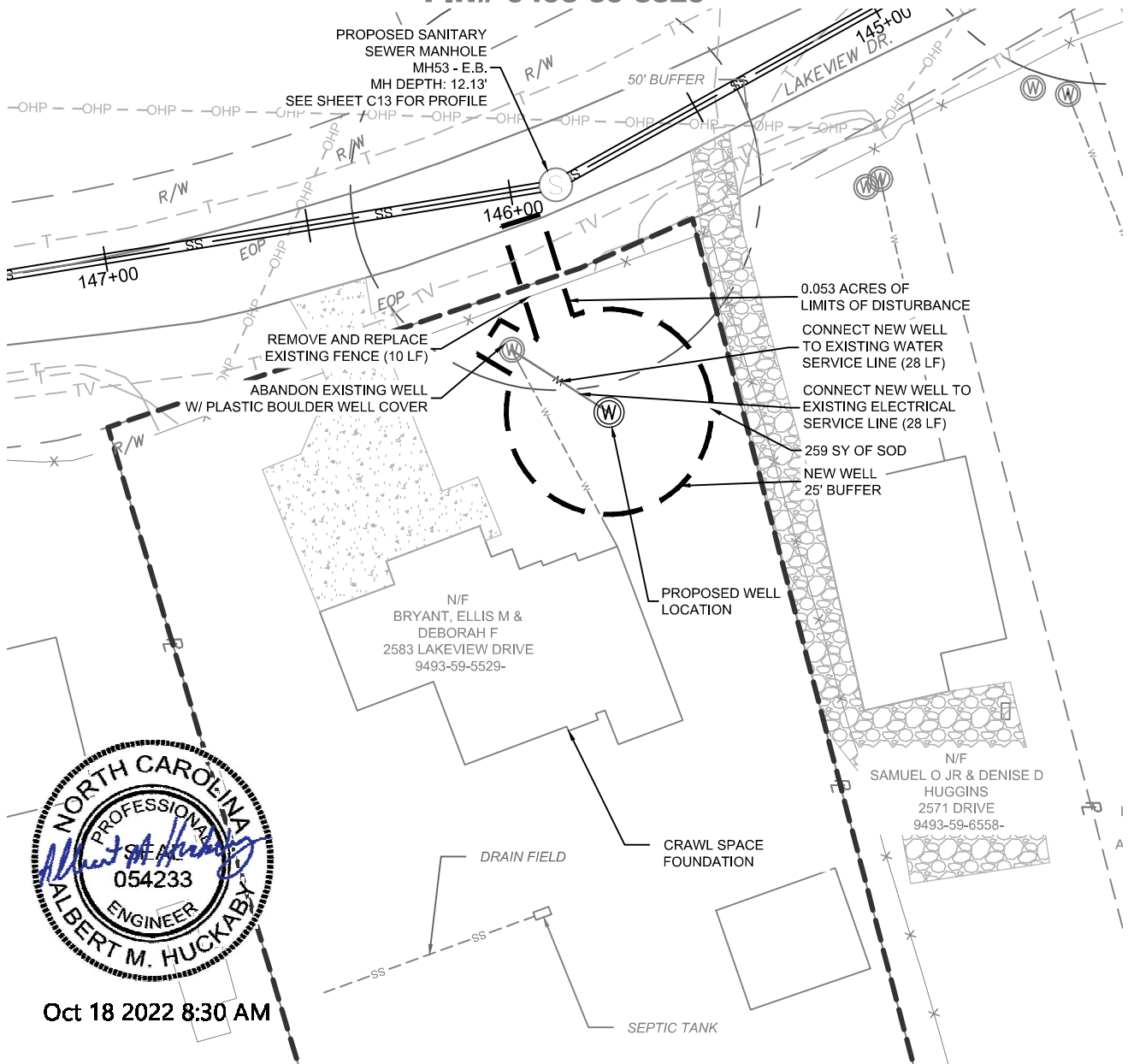
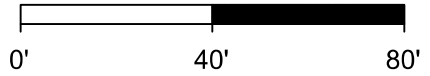
SHT: 11 OF 13 20200629.00.RA

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EXHIBIT MAP 12 WELL RELOCATION ON THE LANDS OF BRYANT, ELLIS M & DEBORAH F 2583 LAKEVIEW DR PIN# 9493-59-5529



SCALE: 1" = 40'



Oct 18 2022 8:30 AM

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
	PROPOSED WELL
	EXISTING WELL
	EXISTING POWER POLE

NOTES:

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- DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

PWC PROJ #BS-15614

**FAYETTEVILLE
PUBLIC WORKS COMMISSION
WATER RESOURCES ENGINEERING**

P.O. Box 1089, Fayetteville, NC 28302
955 Old Wilmington Road, Fayetteville, NC 28301

SURVEY/GPS BY: MCKIM & CREED	DATE	REVISIONS	BY
LAYOUT BY: L.J.G.	DATE: 10/4/22		
PLAN/PROF. BY: L.J.G.			
DESIGN REVIEW BY: W/R ENGR. DEPT			
APPROVED BY: AMH			
SCALE: HOR: 1" = 40'			

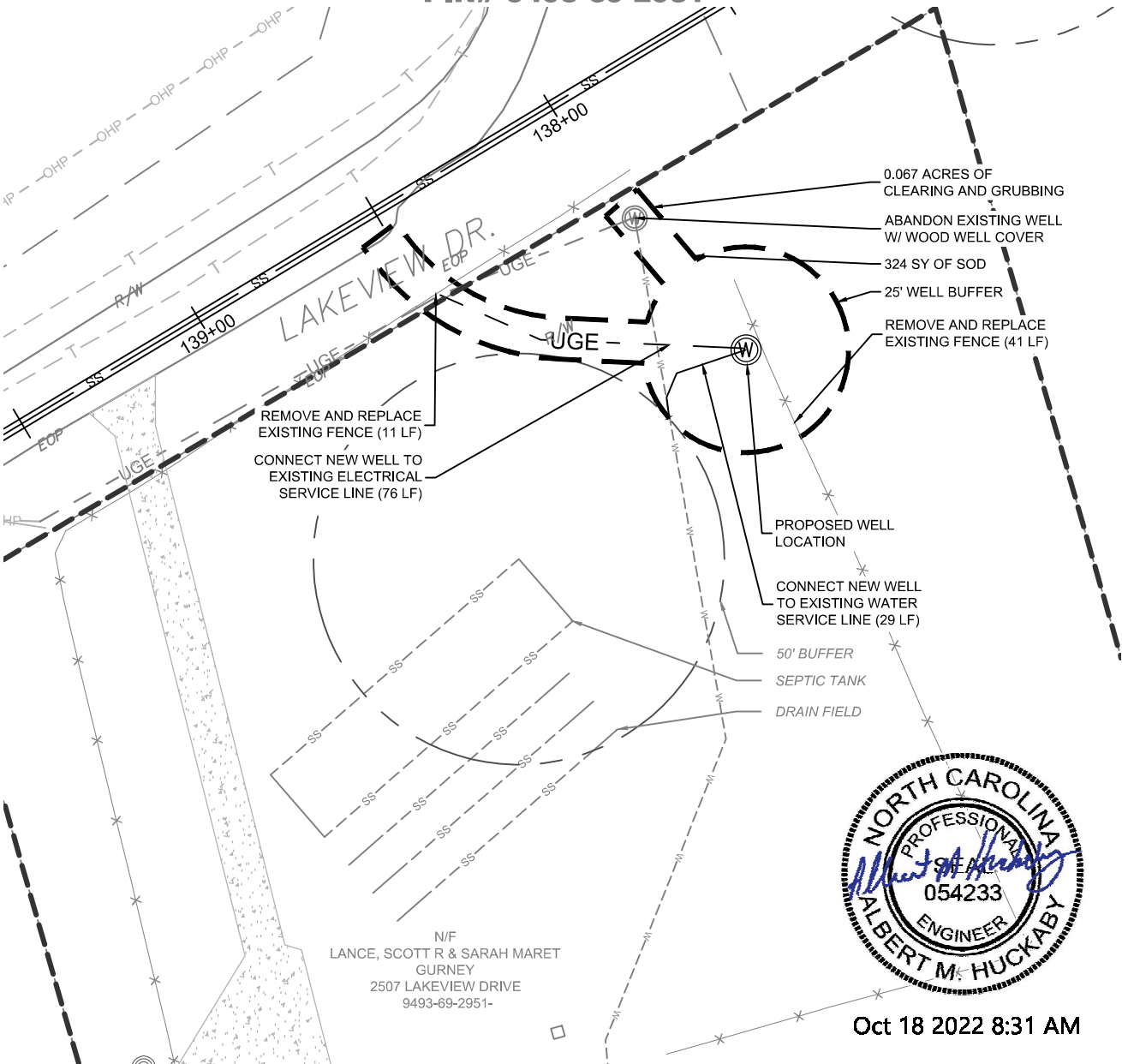
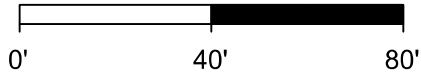
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**EXHIBIT MAP 13
WELL RELOCATION
ON THE LANDS OF
SCOTT R LANCE &
SARAH MARET GURNEY
2507 LAKEVIEW DR
PIN# 9493-69-2951**



SCALE: 1" = 40'



Oct 18 2022 8:31 AM

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	EXISTING SEPTIC SYSTEM
	EDGE OF PAVEMENT
	RIGHT-OF-WAY
	TELEPHONE LINE
	EXISTING FENCE LINE
	EXISTING OVERHEAD POWER
	EXISTING UNDERGROUND ELECTRICAL
	EXISTING RESIDENTIAL WATER LINE
	PROPOSED RESIDENTIAL WATER LINE
	PROPOSED UNDERGROUND ELECTRICAL
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 - DATUM: NAD83 NORTH CAROLINA STATE PLANES, US FOOT.

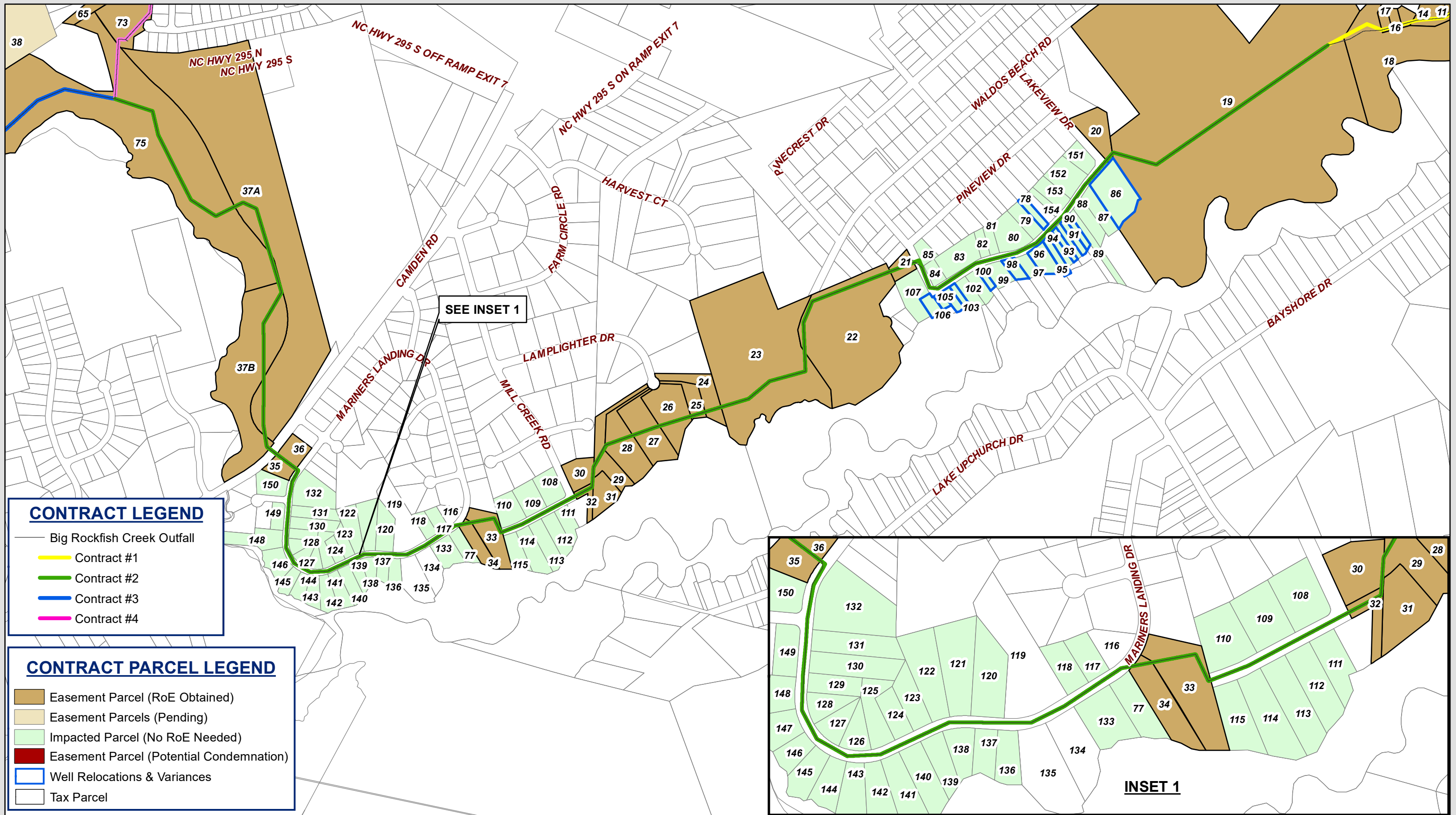
NOTE FOR PROPERTY:
CONTRACTOR TO COORDINATE SCHEDULE AND INSTALLATION OF TEMPORARY FENCING WITH PROPERTY OWNER PRIOR TO REMOVAL OF EXISTING FENCE. CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING TEMPORARY FENCE THROUGHOUT WELL INSTALLATION ACTIVITIES AND SHALL HOLD SOLE RESPONSIBILITY FOR ANY EVENT RESULTING FROM UNSATISFACTORY TEMPORARY FENCE INSTALLATION. FOLLOWING COMPLETION OF WELL INSTALLATION ACTIVITIES, THE CONTRACTOR SHALL INSTALL A NEW PERMANENT FENCE OF EQUAL LIKENESS TO REMOVED FENCE.

ELECTRICAL GATE IS CONNECTED TO WELL POWER. IF/WHEN POWER IS RELOCATED THE ELECTRICIAN NEEDS TO DROP A LINE TO GET POWER BACK TO EXISTING GATE LINE.

PWC PROJ #BS-15614

<p>FAYETTEVILLE PUBLIC WORKS COMMISSION WATER RESOURCES ENGINEERING</p> <p>P.O. Box 1089, Fayetteville, NC 28302 955 Old Wilmington Road, Fayetteville, NC 28301</p>	SURVEY/GPS BY: MCKIM & CREED	DATE	REVISIONS	BY
	LAYOUT BY: L J G	DATE: 10/4/22		
	PLAN/PROF. BY: L J G			
	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY: AMH			
SCALE: HOR: 1" = 40'	SHT: 13 OF 13 20200629.00.RA			

ATTACHMENT 5



CONTRACT LEGEND

- Big Rockfish Creek Outfall
- Contract #1
- Contract #2
- Contract #3
- Contract #4

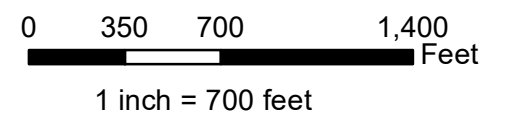
CONTRACT PARCEL LEGEND

- Easement Parcel (RoE Obtained)
- Easement Parcels (Pending)
- Impacted Parcel (No RoE Needed)
- Easement Parcel (Potential Condemnation)
- Well Relocations & Variances
- Tax Parcel



Big Rockfish Creek Outfall - Contract 2
Fayetteville Public Works Commission
 Cumberland County, North Carolina

Date: 10/11/2022



ATTACHMENT 6

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

	2020	1088			Date:	8/11/2020
PIN:	9493-89-2951					
Address	2507 LAKEVIEW DR.		City	Fayetteville	Zip	28308-
Subdivision:			Lot(s)	Section		
Applicant:	BILL'S WELL DRILLING CO		Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD		City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By: *Celestine Fairley* Date: 8-12-2020

See Attached Site Plan

Well Grout

Driller: _____ Date: _____

Grout Depth 0 Ft Type Of Well: _____

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By: _____ Date: _____

FINAL WELL APPROVAL

Final Well Approved By: _____ Date: _____

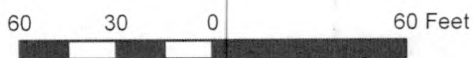
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:



CCGIS

Cumberland County Department of Public Health
 Environmental Health Division





Well Permit Decision Tool

How to U



Screening	
Report:	
Back	Area : 3,134,508.63 ft ²
Known Releases of Contamination	(0)
No results found	

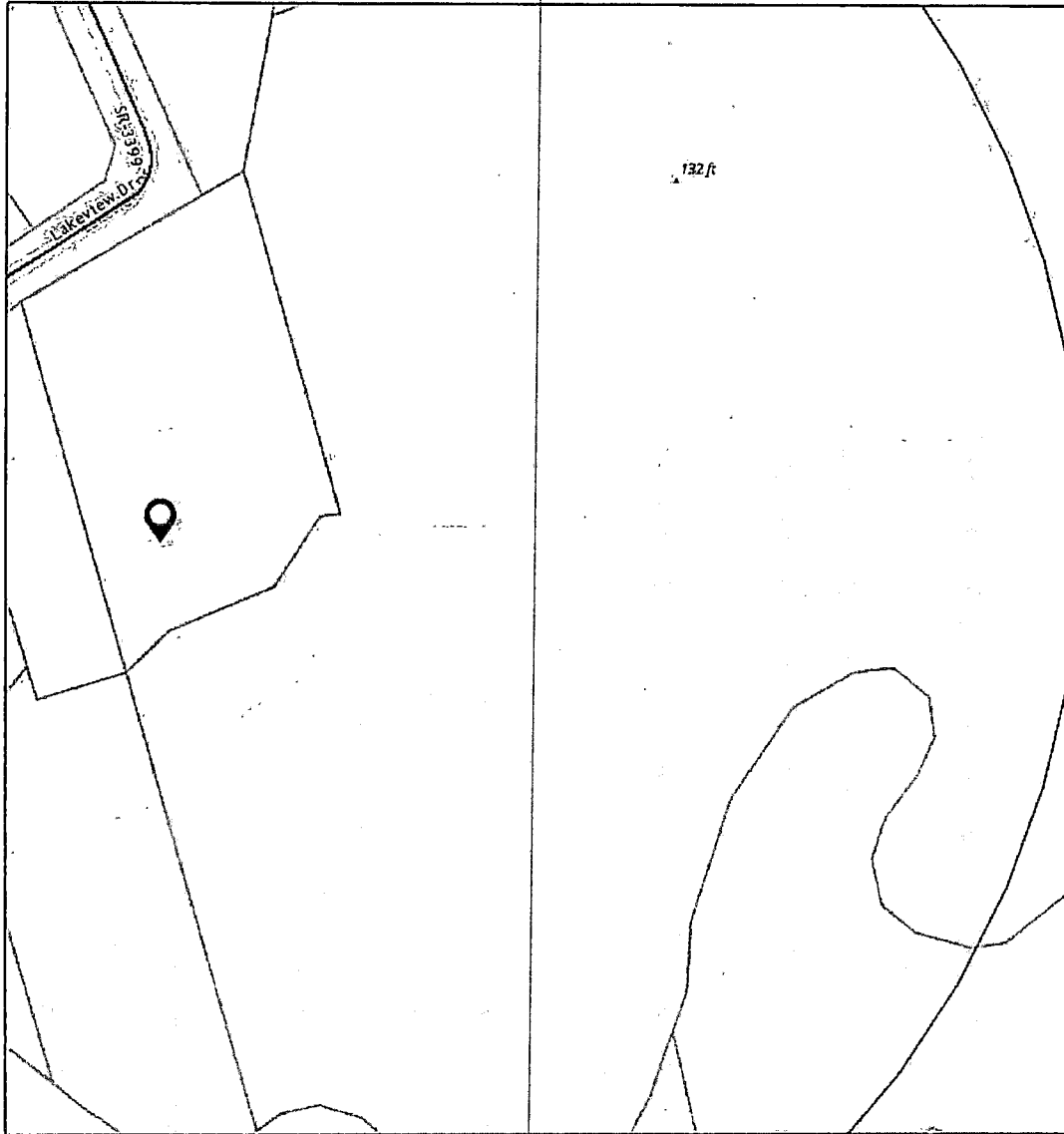


WPDT Report

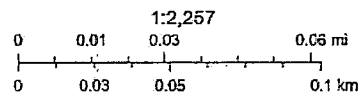
Area of Interest (AOI) Information

Area : 3,134,508.63 ft²

Aug 12 2020 9:13:52 Eastern Daylight Time



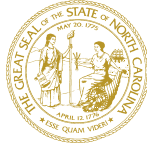
- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NCDOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NINA, Geodistribyrolsen, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community. Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, OpenStreetMap contributors.

2507 Lakeview Dr

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
November 3, 2020

Deborah Williford
2545 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1112

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2545 Lakeview Dr., Fayetteville, NC 28306

Dear Ms. Williford:

On November 3, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2545 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health
Permit to Construct a Water Supply Well

2020	1354	Date:	10/27/2020		
PIN:	9493-59-8773				
Address	2545 LAKEVIEW DRIVE	City	Fayetteville	Zip	28308-
Subdivision:		Lot(s)	27	Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By: *Celston Raines* Date: 11-3-2020

See Attached Site Plan

Driller: _____ Well Grout _____
Date: _____
Grout Depth 0 Ft _____ Type Of Well: _____

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By: _____ Date: _____

FINAL WELL APPROVAL

Final Well Approved By: _____ Date: _____

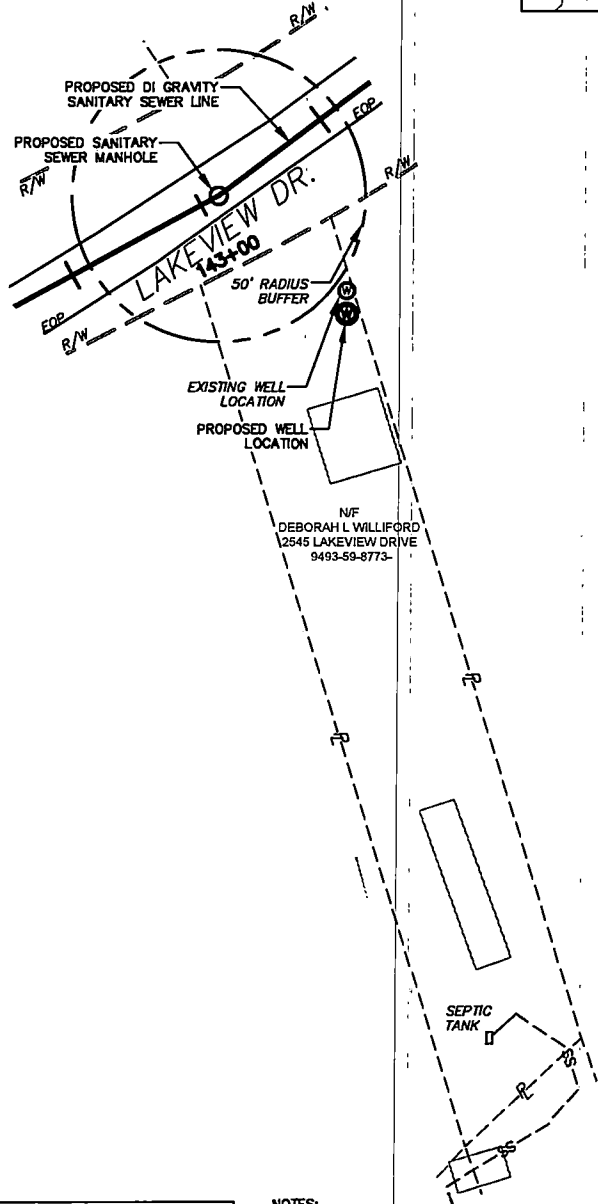
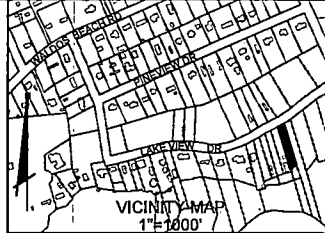
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

N
N.C. GRID (NAD83/01)

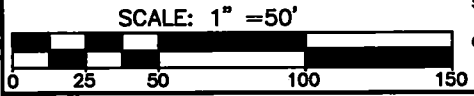
**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
DEBORAH L WILLIFORD
PIN# 9493-59-8773**



N/F
DEBORAH L WILLIFORD
2545 LAKEVIEW DRIVE
9493-59-8773

LEGEND

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY



- NOTES:**
1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
 2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
 3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
 4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DW PROJECT NO. CS170434-15/16.
 5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

<p>FWC PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING</p> <p>955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730</p>	SURVEY/GPS BY:	DATE	REVISIONS	BY
	LAYOUT BY:	DATE: 10/09/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR. DEPT.			
	APPROVED BY:			
SCALE: HOR: 1"=50' VERT: 1"=		SHT: 9 OF 10		

VARIANCE APPLICATION FOR 2C .0100 WELL CONSTRUCTION STANDARDS:

PRIVATE DRINKING WATER WELLS UNDER 15A NCAC 02C .0300

WATER SUPPLY WELLS UNDER 15A NCAC 02C .0107

All water supply wells not considered "Private Drinking Water Wells" and including irrigation, industrial, and commercial wells.

WELLS OTHER THAN WATER SUPPLY UNDER 15A NCAC 02C .0108

Including monitoring and recovery wells.

Print clearly or type information. Illegible submittals will be returned as incomplete.

DATE: November 3, 2020

PERMIT NO.: 2020-1354 (to be completed by DWQ/DPH)

- A. **WELL OWNER** – For single family residences list the property owner(s). For all others, list name of the business, organization, or government agency and person delegated signature authority:

Deborah Williford

Mailing Address: 2545 La Keview Dr

City: Fayetteville State: NC Zip Code: 28306 County: Cumberland

Day Tele No.: 9106894089 Cell No.: _____

EMAIL Address: _____ Fax No.: _____

- B. **PHYSICAL LOCATION OF WELL SITE**

(1) Parcel Identification Number (PIN) of well site: 9493-59-8773

County: Cumberland

(2) Physical Address (if different than mailing address): _____

City: _____ State: NC Zip Code: _____

- C. **WELL DRILLER INFORMATION** (if known)

Well Drilling Contractor's Name: Jonathan Kamionka

NC Well Drilling Contractor Certification No.: 3465-A

Company Name: Bill's Well Drilling Co Contact Person: _____

City: Fayetteville State: NC Zip Code: 28311 County: Cumberland

Day Tele No.: 9104893740 Cell No.: 9108508754

EMAIL Address: office@hillswelldrilling.com Fax No.: _____

D. REASON FOR VARIANCE REQUEST – Include type of well(s) to be constructed; rule for which the variance is being requested; description of how the alternate construction will not endanger human health and welfare and the environment; and reason why construction and/or operation in accordance with the standards is not technically feasible and/or provides equal or better protection of the groundwater.

New Rockwell will be less than 100' from
man hole

E. ATTACHMENTS – Provide the following information as attachments to this application:

- (1) A map showing general location of the property (including road names, NC State Route Number, distances, any key landmarks, etc.) sufficient for finding the well location.
- (2) Detailed site map with scale showing location of proposed well relevant to septic system(s), building foundations, property lines, water bodies, potential sources of contamination, other wells, etc.
- (3) Submit a copy of the local well permit application and site evaluation map (if applicable).
- (4) Any other information relevant to the variance request such as a well construction diagram showing proposed well liner or atypical construction materials/methods.

F. OTHER MINIMUM CONSTRUCTION REQUIREMENTS


For water supply wells, approval of a variance will require that additional construction requirements beyond those specified in 15A NCAC 02C .0107 be met. Minimum additional construction requirements for Coastal Plain and Piedmont and Mountain region wells are referenced on Attachments A and B on pages 4 and 5 of this application. Approval of a variance will not be considered in cases where the specified minimum additional construction requirements cannot be met.

G. SIGNATURES



Signature of Person Responsible for Well Construction (typically the well driller)

Jonathan Kamionka
Print or Type Full Name of Person Responsible for Well Construction
(typically the well driller)



Signature of County Environmental Health Specialist

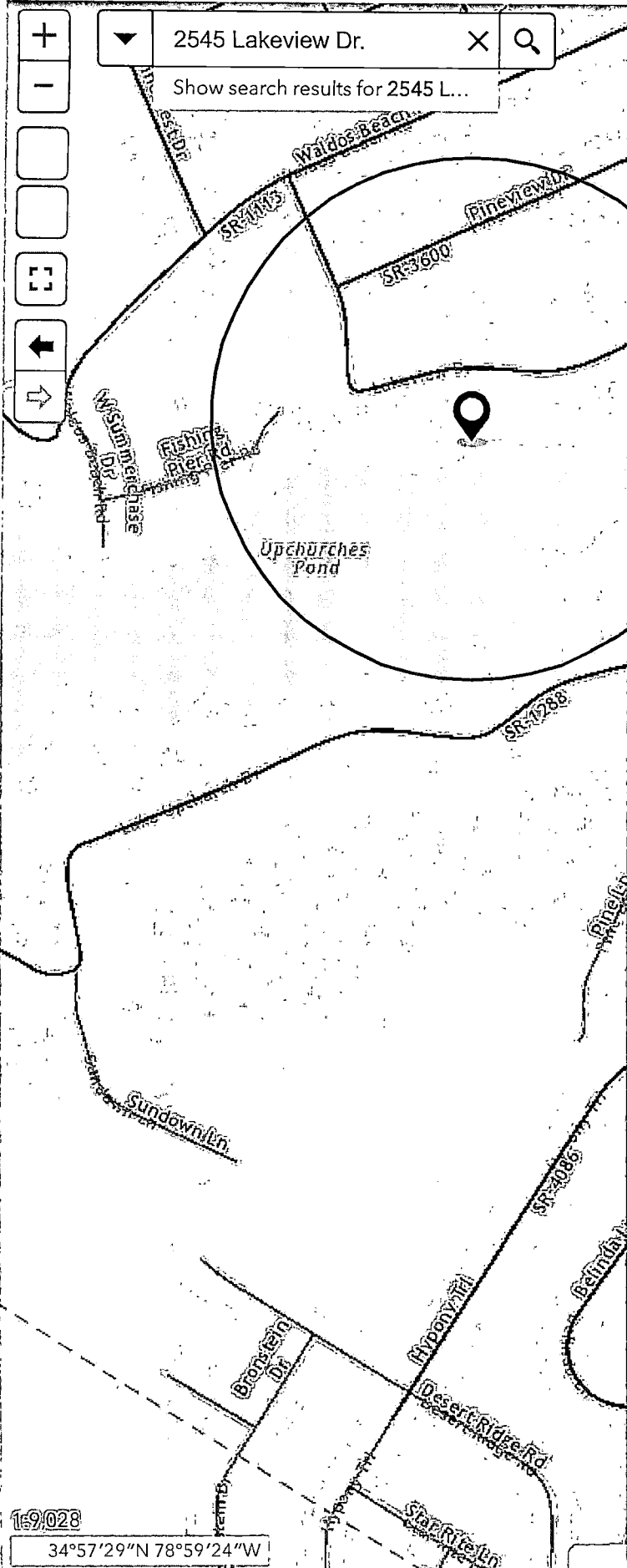
Celeste Rainci-Smith
Print or Type Full Name of County Environmental Health Specialist

Per 15A NCAC 02C .0118 the Secretary of the Division of Water Quality or the Division of Public Health may require submittal of information deemed necessary to make a decision on the variance, may impose conditions as part of the decision, and shall respond in writing to the request within 30 days of receipt of the variance request. A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition as described in G.S. 150B-23 within 60 days after receipt of the decision.



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.61 ft ²
Known Releases of Contamination	(0)
No results found	

1:9,028

34°57'29"N 78°59'24"W

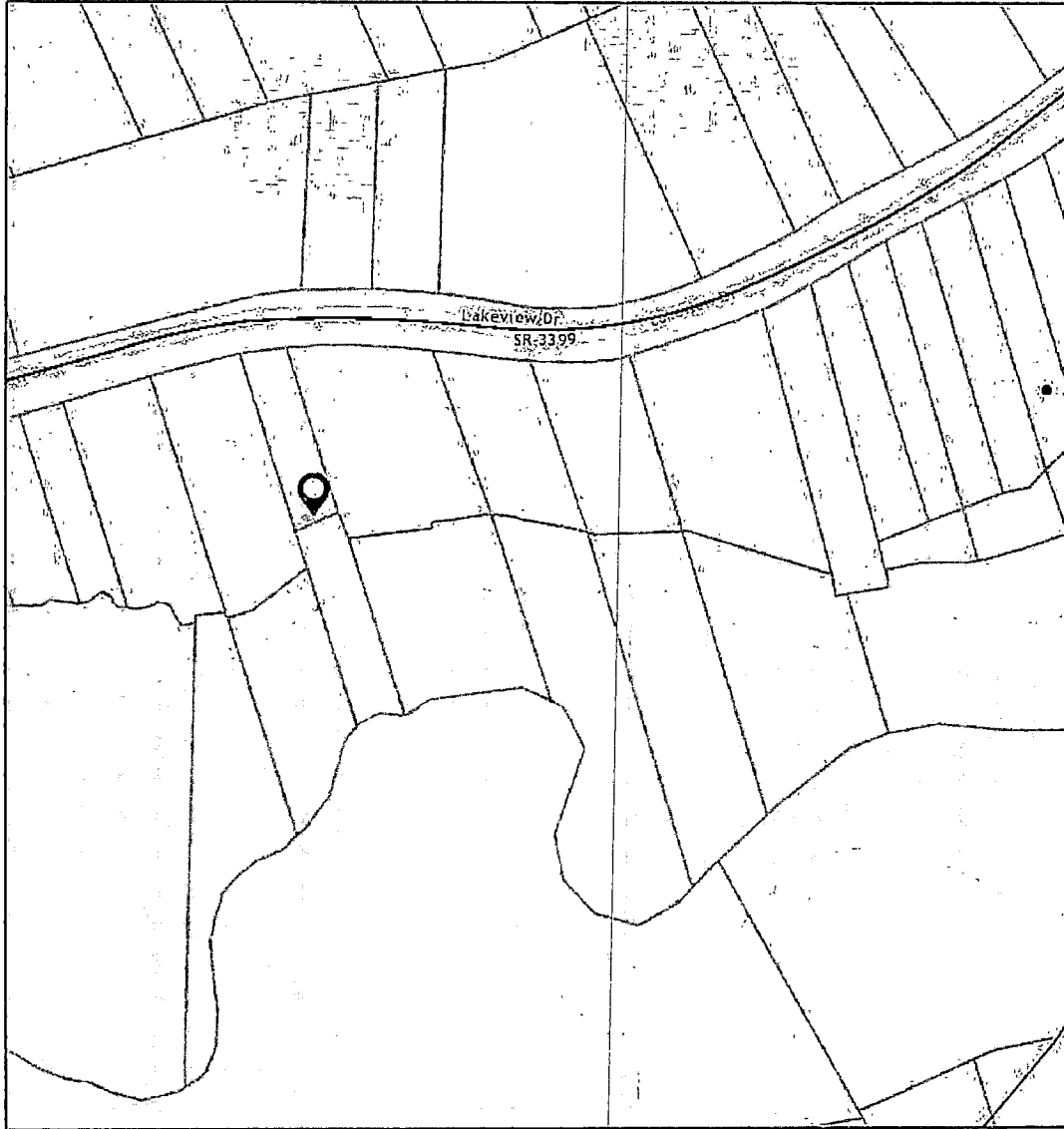


WPDT Report

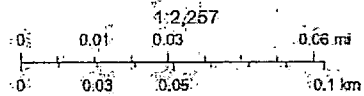
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 29 2020 8:06:40 Eastern Daylight Time



- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NC DOT GIS Unit Sources: Esri, Airbus DS, USGS, NOAA, NASA, CGIAR, N. Robinson, NCEAS, NLS, OS, NIMA, Geodanishytrolon, Rijksdienst voor Geografie, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cumberland, State of North

2545 Lakeview Dr.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
November 3, 2020

Deborah Williford
2545 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1112
Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2545 Lakeview Dr., Fayetteville, NC 28306

Dear Ms. Williford:

On November 3, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2545 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

A handwritten signature in cursive script that reads "Wilson Mize".

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1504	Date:	12/11/2020		
PIN:	9493-59-8639				
Address	2551 LAKEVIEW DRIVE	City	Fayetteville	Zip	28306
Subdivision:		Lot(s)		Section	
Applicant:	BILL'S WELL DRILLING	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311

Permit To Construct

Permit Issued By: *F. Nk*

Date: 12-11-20

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

Date:

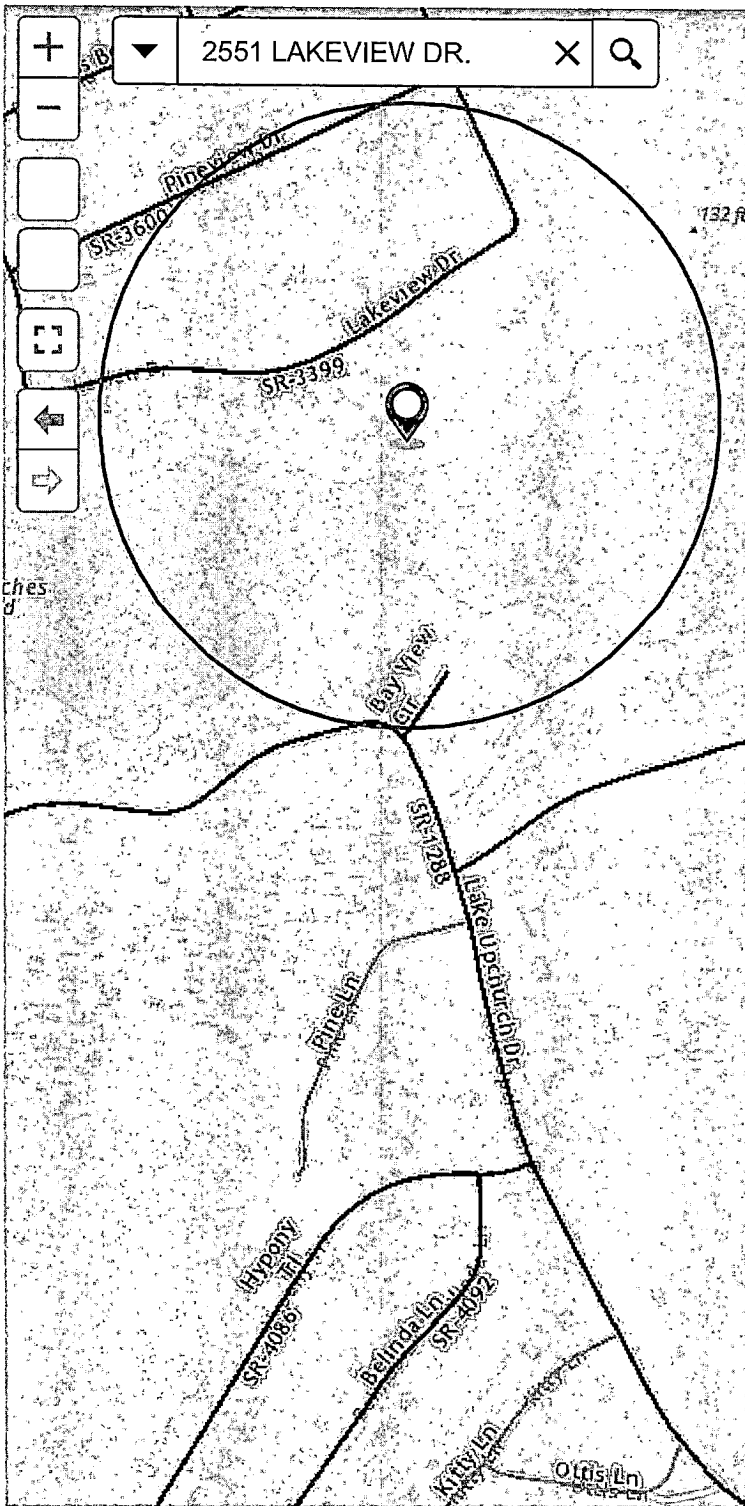
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:



Well Permit Decision Tool

How to U



Screening

AOI

Place name	Draw
Search for a location	
<input type="button" value="v"/> <input type="text" value="2551 LAKEVIEW DRIVE, FAYE"/> <input type="button" value="X"/> <input type="button" value="Q"/>	
Buffer distance (optional)	
Show results within	
<input type="text" value="1,000"/>	<input type="text" value="Feet"/>

Report

Start Over

1:9,028

34°57'23"N 79°00'16"W



WPDT Report

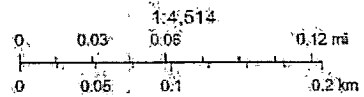
Area of Interest (AOI) Information

Area : 3,134,508.7 ft²

Dec 11 2020 15:33:35 Eastern Standard Time



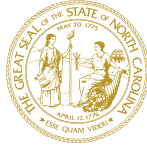
- Parcels (Polygons) - Parcels
- Non-System Roads
 - Federal Route
 - Non-System
- Other System Roads
 - Ramps, Rest Areas, Non-Mainline
- Projected Route
- Other State Agency Route
- Secondary Route
- Primary Roads
 - Interstate
 - US Route



NCDOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N, Robinson, NCEAS, NLS, OS, NMA, Geodanisys/triun, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cumberland, State of North

2551 LAKEVIEW DRIVE

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 28, 2020

Samuel Huggins
2561 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1106

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2561 Lakeview Dr., Fayetteville, NC 28306

Dear Mr. Huggins:

On October 28, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1356	Date:	10/27/2020		
PIN:	9493-59-7644				
Address	2561 LAKEVIEW DRIVE	City	Fayetteville	Zip	28306-
Subdivision:		Lot(s)	24	Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By:  Date: 10-28-2020

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

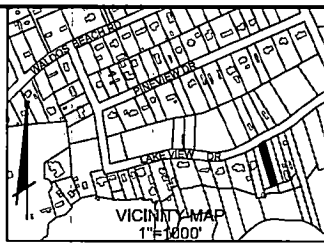
Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

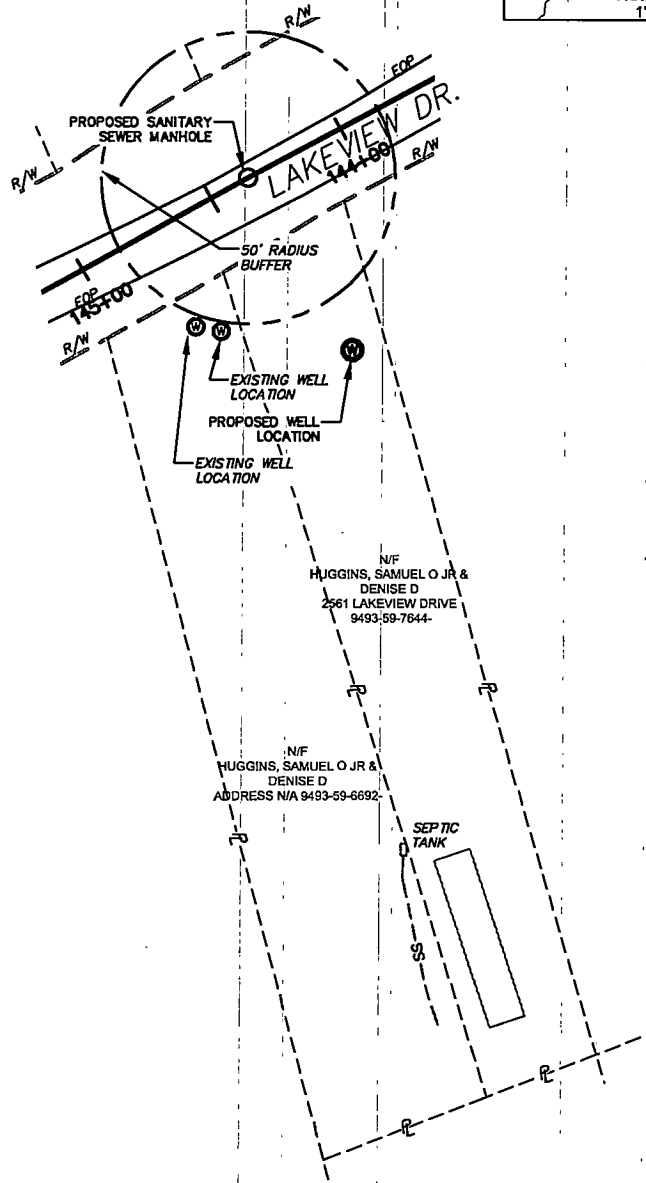
Other Information:

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
SAMUEL O JR & DENISE
D HUGGINS
PIN# 9493-59-7644**

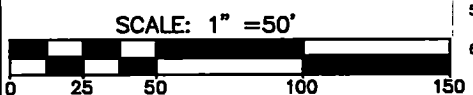


N
N.C. GRID (NAD83/01)



LEGEND

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY



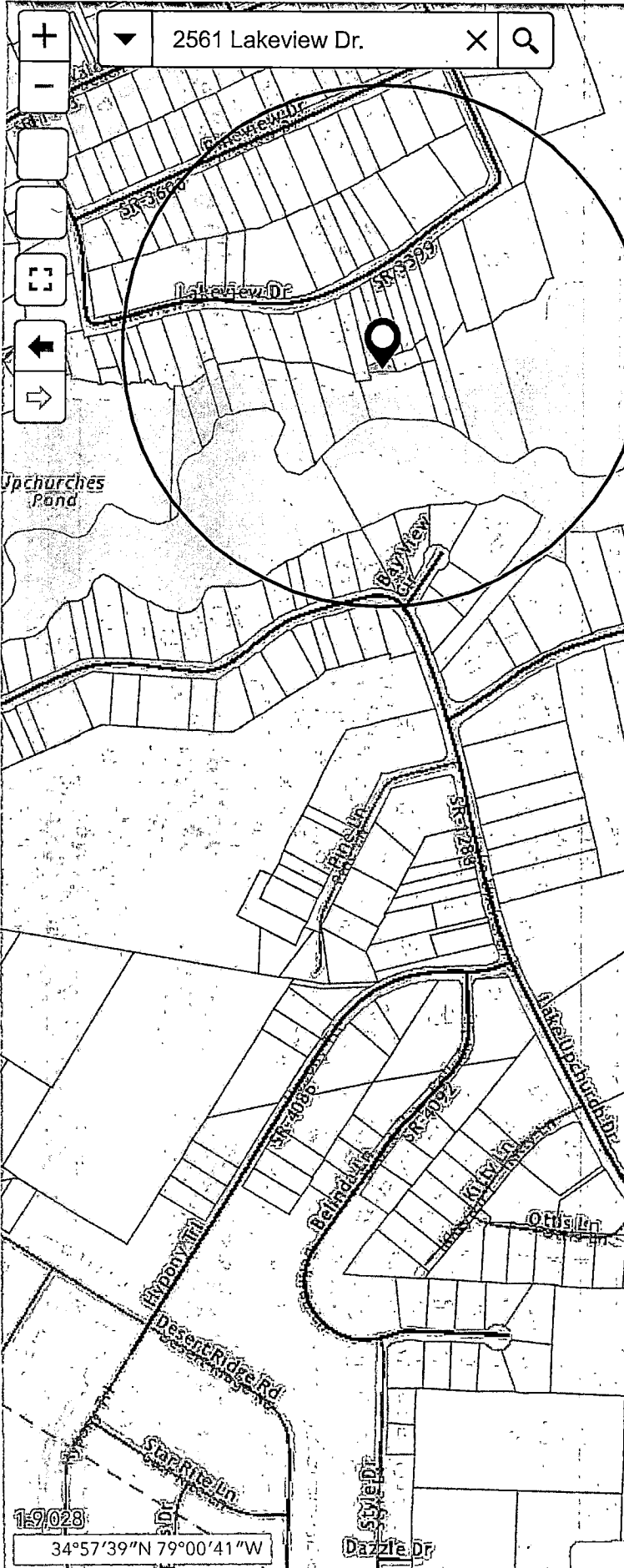
- NOTES:**
1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
 2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
 3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
 4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/18."
 5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

<p>FWC PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING</p> <p>955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730</p>	SURVEY/GPS BY:	DATE	REVISIONS	BY
	LAYOUT BY:	DATE: 10/08/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY:			
SCALE: HOR: 1"=50' VERT: 1"=		SHT: 11 OF 10		



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.67 ft ²
Known Releases of Contamination	(0)
No results found	



WPDT Report

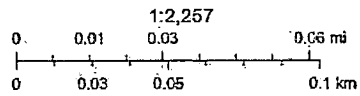
Area of Interest (AOI) Information

Area : 3,134,508.67 ft²

Oct 28 2020 8:46:22 Eastern Daylight Time



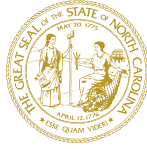
- Parcels (Polygons) - Parcels
- Non-System Roads**
- Federal Route
- Non-System
- Other System Roads**
- Ramps, Rest Areas, Non-Mainline
- Projected Route
- Other State Agency Route
- Secondary Route
- Primary Roads**
- Interstate
- US Route



NCDOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasystemen, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cumberland, State of North

2561 Lakeview Dr.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 29, 2020

Catherine Phipps
PO Box 41652
Fayetteville, NC 28309

RE: Approval No. WWM1108

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2563 Lakeview Dr., Fayetteville, NC 28306

Dear Ms. Phipps:

On October 29, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2563 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

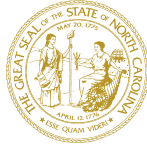
- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 28, 2020

Helga Niedenthal
2633 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1107

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2564 Lakeview Dr., Fayetteville, NC 28306

Dear Mr. Huggins:

On October 28, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health
Permit to Construct a Water Supply Well

2020	1355	Date:	10/27/2020		
PIN:	9493-59-5997				
Address:	2564 LAKEVIEW DRIVE	City:	Fayetteville	Zip:	28306-
Subdivision:		Lot(s):	5B	Section:	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type:	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City:	Fayetteville	Zip:	28311-

Permit To Construct

Permit Issued By: *Celeste R. [Signature]* Date: *10-28-2020*
See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

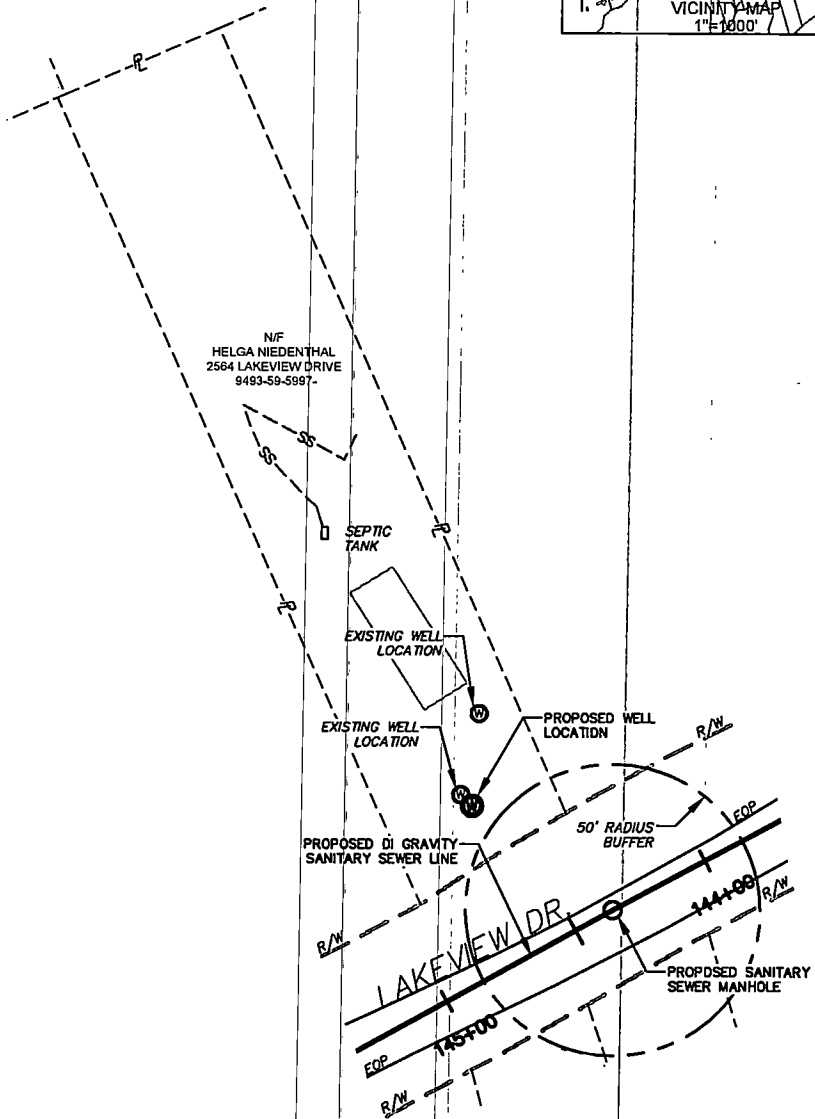
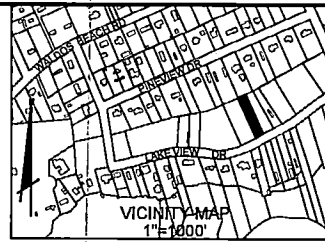
Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:

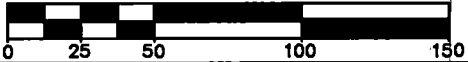
THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

EXHIBIT MAP 1 WELL RELOCATION ON THE LANDS OF HELGA NIEDENTHAL PIN# 9493-59-5997



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY

SCALE: 1" = 50'



NOTES:

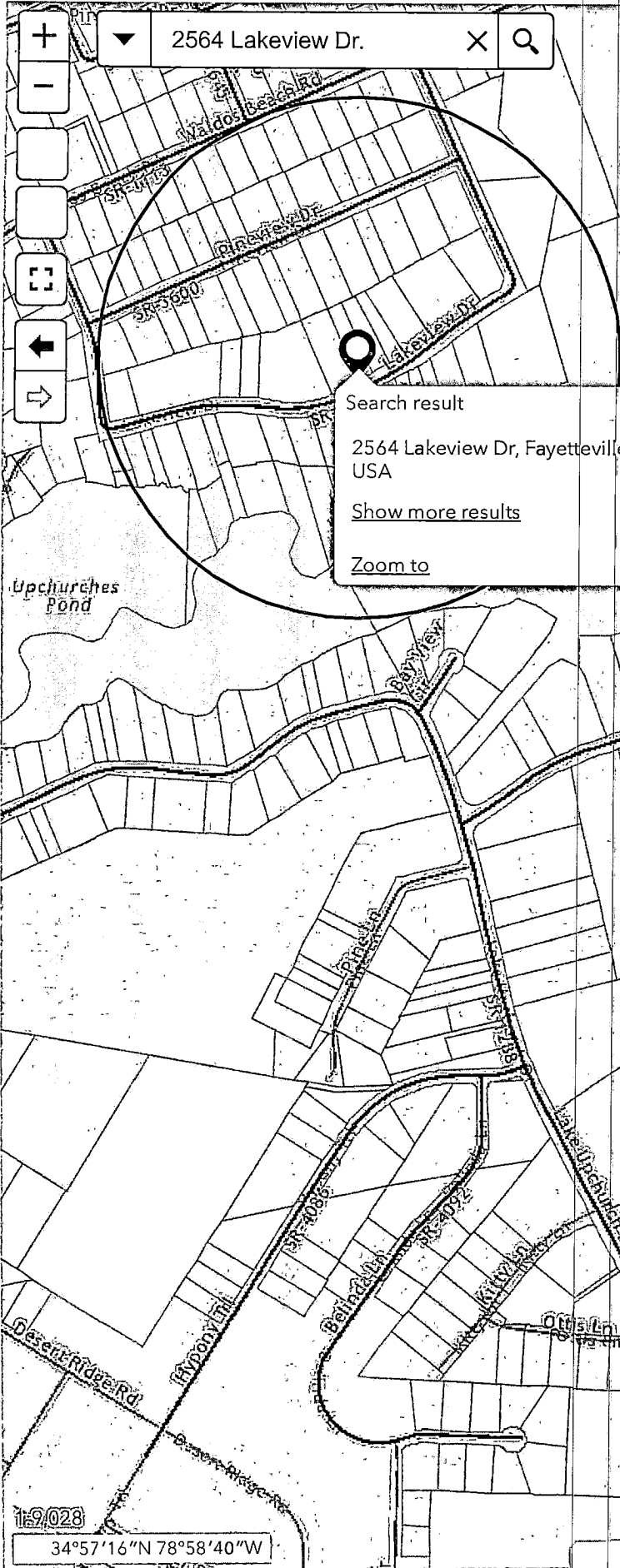
- PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
- THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
- THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
- PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/16."
- SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
- PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

FWC PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING 955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730	SURVEY/GPS BY: _____	DATE	REVISIONS	BY
	LAYOUT BY: _____	DATE: 10/09/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY: _____			
SCALE: HOR: 1"=50' VERT: 1"=		SHT: 10 OF 10		



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.61 ft ²
Known Releases of Contamination (0)	
No results found	

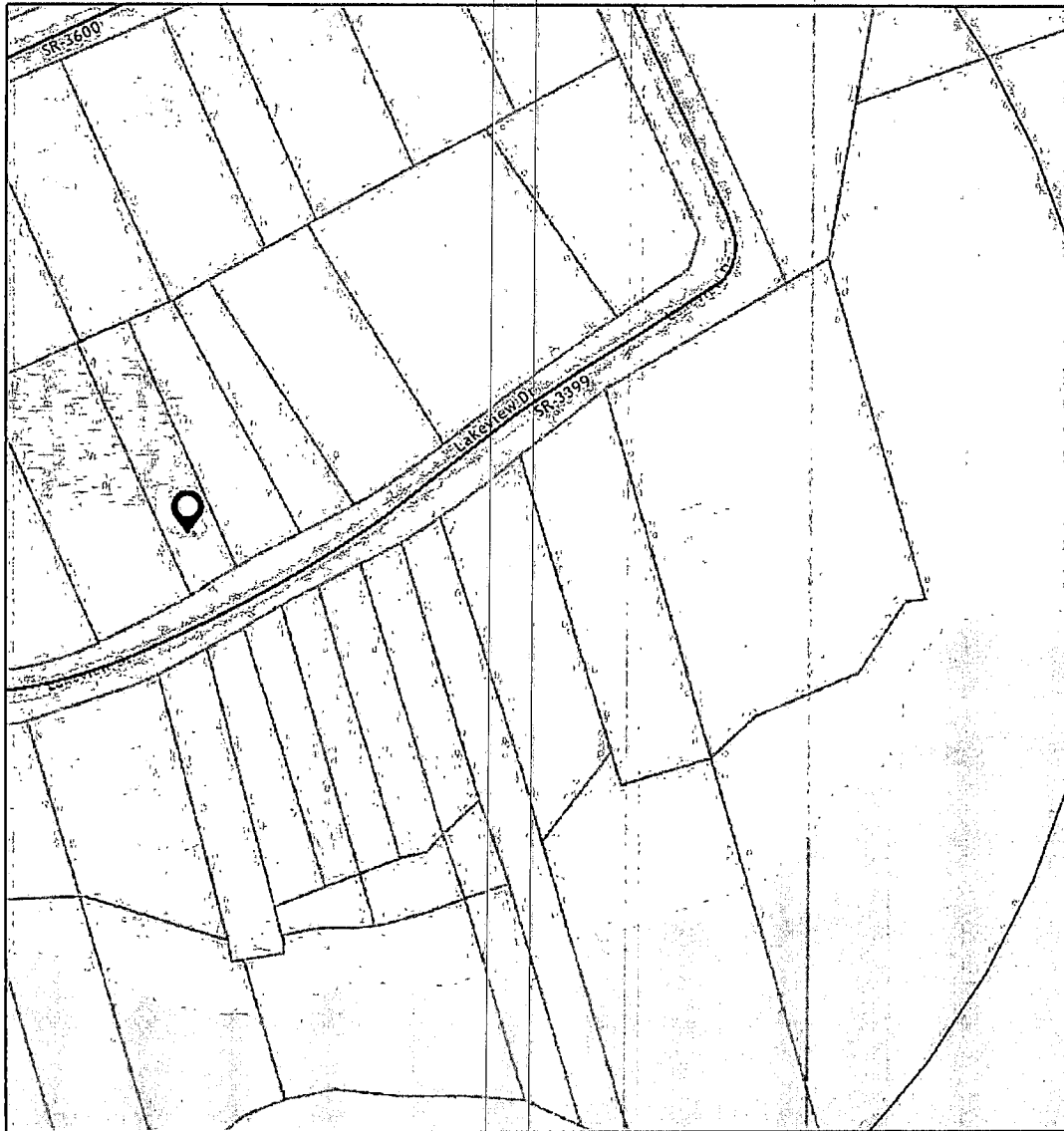


WPDT Report

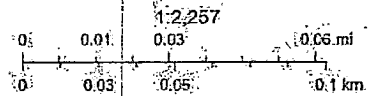
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 28 2020 8:49:12 Eastern Daylight Time



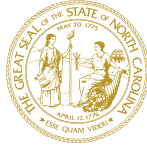
- Parcels (Polygons) - Parcels
- Non-System Roads
 - Federal Route
 - Non-System
- Other System Roads
 - Ramps, Rest Areas, Non-Mainline
- Projected Route
- Other State Agency Route
- Secondary Route
- Primary Roads
 - Interstate
 - US Route



NCDOT GIS URL Source: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N
 Robinson, NCEAS, NLS, OC, NMA, Geodatosystem, Rijkswaterstaat,
 GSA, Geoland, FEMA, Intermap and the GIS user community, Esri,
 Community Maps Contributors, County of Cumberland, State of North

2564 Lakeview Dr.

All North Carolina Department of Environmental Quality (NCDEQ) GIS data is expressly provided "AS IS" and "WITH ALL FAULTS". The NCDEQ makes no warranty of any kind, express or implied, concerning this information, including but not limited to any warranties of merchantability or fitness for any particular purpose. The NCDEQ assumes no responsibility or legal liability concerning the Data's accuracy, reliability, completeness, timeliness, or usefulness. The data is not intended to constitute advice nor is it to be used as a substitute for specific advice from a professional. Users should not act (or refrain from acting) based upon information in the Data without independently verifying the information and obtaining any necessary professional advice. Users are solely responsible for ensuring the accuracy, currency and other qualities of any products derived from or in connection with the NCDEQ's Data. The Data is collected from various sources and may be modified over time without notice to improve spatial and attribute accuracy. The NCDEQ disclaims responsibility for the spatial accuracy and attribution of GIS features and makes no warranty concerning same.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
November 18, 2020

Samuel Huggins
5539 Heather St.
Hope Mills, NC 28348

RE: Approval No. WWM1123

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2571 Lakeview Dr., Fayetteville, NC 28306

Dear Mr. Huggins:

On November 18, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health

OM

Permit to Construct a Water Supply Well

2020	1352	Date:	10/27/2020		
PIN:	9493-59-6558				
Address	2571 LAKEVIEW DRIVE	City	Fayetteville	Zip	28308-
Subdivision:		Lot(s)	22	Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	600 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By: *[Signature]*

Date: 11-17-20

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

Date:

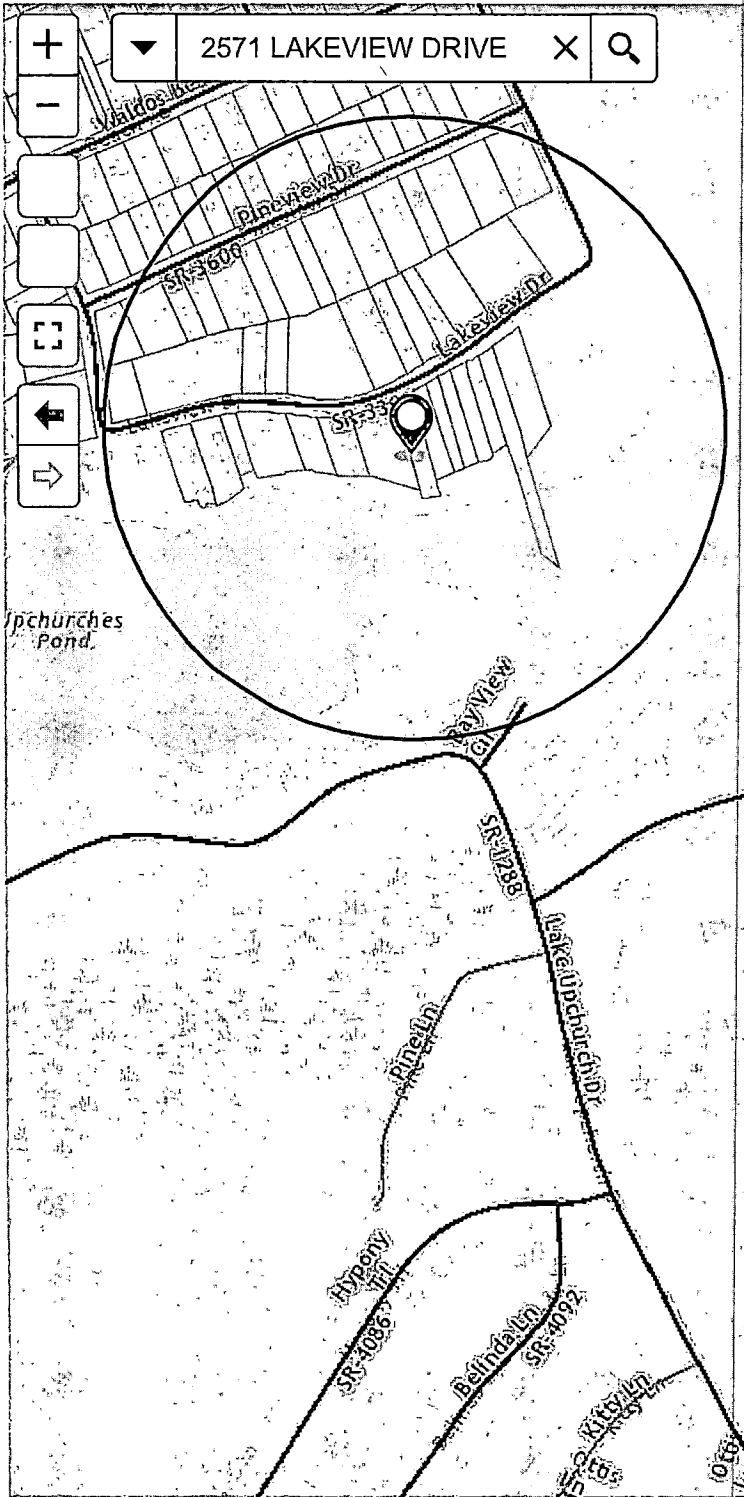
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.67 ft ²
Known Releases of Contamination	(0)
No results found	
<p>Upload shapefile to include in analysis Upload</p>	

1:9,028

34°57'28"N 79°00'06"W

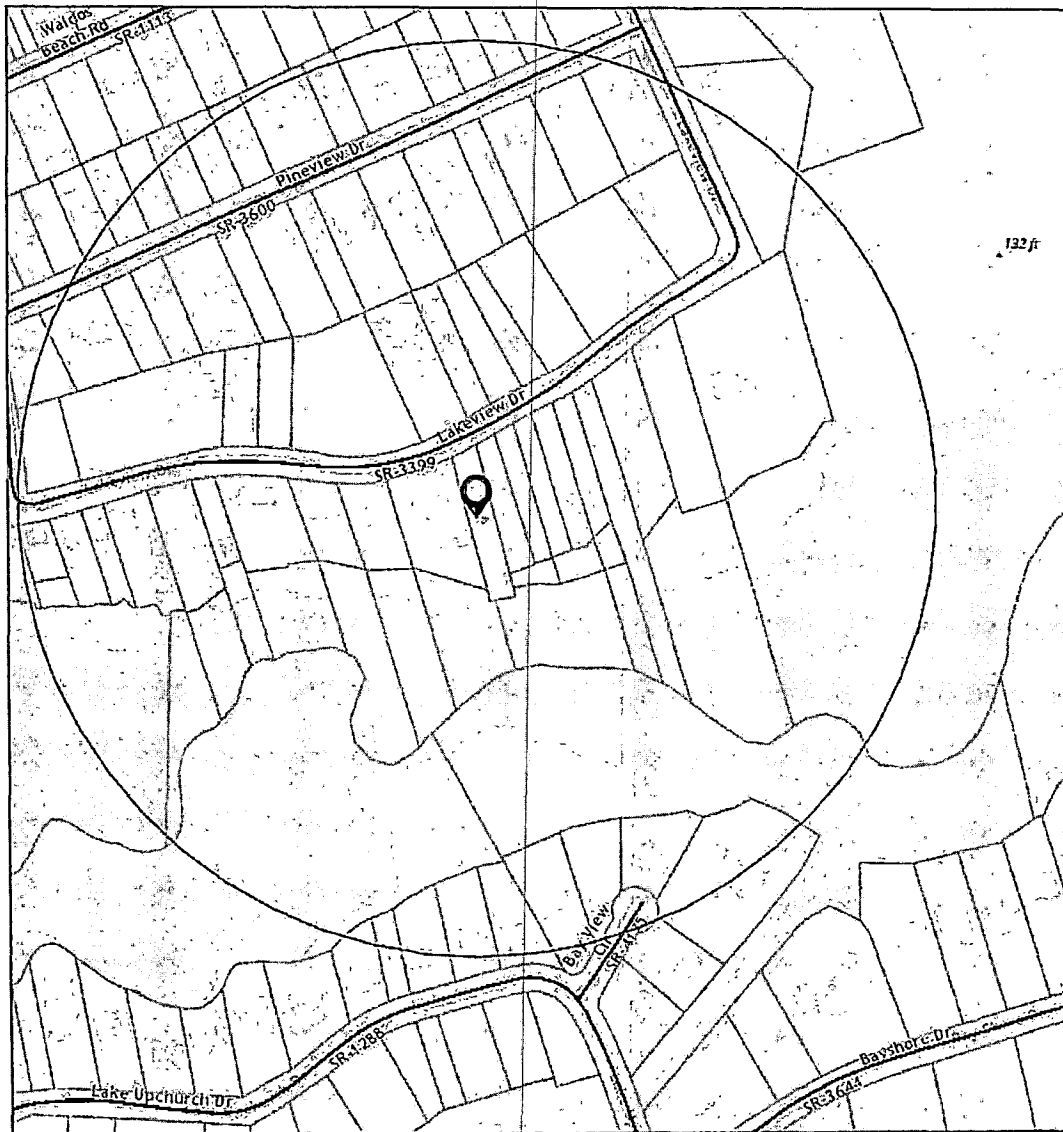


WPDT Report

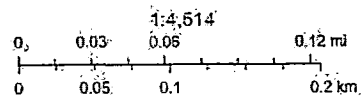
Area of Interest (AOI) Information

Area : 3,134,508.67 ft²

Nov 17 2020 12:08:04 Eastern Standard Time



- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NCDOT GIS Unit Sources: Esri, Airbus DS, USGS, NGA, NASA, COMAR, N
 Reticon, NCEAS, NLS, OS, NMA, Geodinslyrteisen, Bjokvatorellat,
 GSA, Geoland, FEMA, Intermap and the GIS-user community, Esri
 Community Maps Contributors, County of Cumberland, State of North

2571 LAKEVIEW DRIVE

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VARIANCE APPLICATION FOR 2C .0100 WELL CONSTRUCTION STANDARDS:

PRIVATE DRINKING WATER WELLS UNDER 15A NCAC 02C .0300

WATER SUPPLY WELLS UNDER 15A NCAC 02C .0107

All water supply wells not considered "Private Drinking Water Wells" and including irrigation, industrial, and commercial wells.

WELLS OTHER THAN WATER SUPPLY UNDER 15A NCAC 02C .0108

Including monitoring and recovery wells.

Print clearly or type information. Illegible submittals will be returned as incomplete.

DATE: _____, 20____ PERMIT NO.: _____ (to be completed by DWQ/DPH)

- A. **WELL OWNER** – For single family residences list the property owner(s). For all others, list name of the business, organization, or government agency and person delegated signature authority:

Samuel Huggins

Mailing Address: 5539 Heather St

City: Hope Mills State: NC Zip Code: 28348 County: _____

Day Tele No.: 4248890 Cell No.: _____

EMAIL Address: _____ Fax No.: _____

- B. **PHYSICAL LOCATION OF WELL SITE**

(1) Parcel Identification Number (PIN) of well site: 9493-59-6558

County: Cumberland

(2) Physical Address (if different than mailing address): 2571 Lakeview Dr

City: Fayetteville State: NC Zip Code: 28306

- C. **WELL DRILLER INFORMATION** (if known):

Well Drilling Contractor's Name: Jonathan Kamionka

NC Well Drilling Contractor Certification No.: 3465-A

Company Name: Bill's Well Drilling Co Contact Person: _____

City: Fayetteville State: NC Zip Code: 28311 County: Cumberland

Day Tele No.: 9104893740 Cell No.: 9108508754

EMAIL Address: office@billswelldrilling.com Fax No.: _____

D. REASON FOR VARIANCE REQUEST – Include type of well(s) to be constructed; rule for which the variance is being requested; description of how the alternate construction will not endanger human health and welfare and the environment; and reason why construction and/or operation in accordance with the standards is not technically feasible and/or provides equal or better protection of the groundwater.

New Rockwell will be less than 100' from
man hole

E. ATTACHMENTS – Provide the following information as attachments to this application:

- (1) A map showing general location of the property (including road names, NC State Route Number, distances, any key landmarks, etc.) sufficient for finding the well location.
- (2) Detailed site map with scale showing location of proposed well relevant to septic system(s), building foundations, property lines, water bodies, potential sources of contamination, other wells, etc.
- (3) Submit a copy of the local well permit application and site evaluation map (if applicable).
- (4) Any other information relevant to the variance request such as a well construction diagram showing proposed well liner or atypical construction materials/methods.

F. OTHER MINIMUM CONSTRUCTION REQUIREMENTS

For water supply wells, approval of a variance will require that additional construction requirements beyond those specified in 15A NCAC 02C .0107 be met. Minimum additional construction requirements for Coastal Plain and Piedmont and Mountain region wells are referenced on Attachments A and B on pages 4 and 5 of this application. Approval of a variance will not be considered in cases where the specified minimum additional construction requirements cannot be met.

G. SIGNATURES


Signature of Person Responsible for Well Construction (typically the well driller)

Jonathan Kamionka
Print or Type Full Name of Person Responsible for Well Construction
(typically the well driller)

Signature of County Environmental Health Specialist

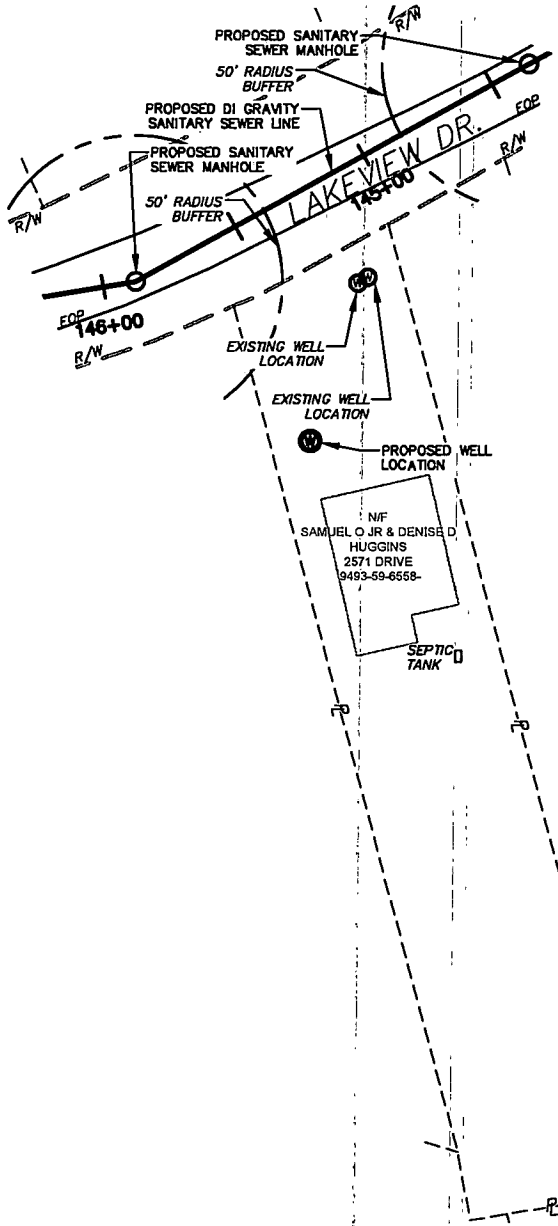
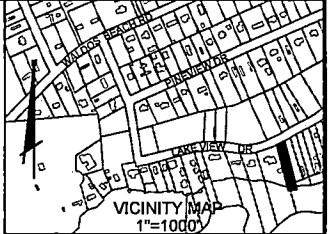
Print or Type Full Name of County Environmental Health Specialist

Per 15A NCAC 02C .0118 the Secretary of the Division of Water Quality or the Division of Public Health may require submittal of information deemed necessary to make a decision on the variance, may impose conditions as part of the decision, and shall respond in writing to the request within 30 days of receipt of the variance request. A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition as described in G.S. 150B-23 within 60 days after receipt of the decision.

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

N
N.C. GRID (NAD83/01)

**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
SAMUEL O JR & DENISE
D HUGGINS
PIN# 9493-59-6558**

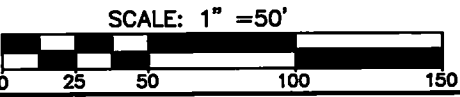


N/F
SAMUEL O JR & DENISE D
HUGGINS
2571 DRIVE
9493-59-6558.

SEPTIC TANK

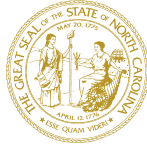
LEGEND

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY



- NOTES:**
1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
 2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
 3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
 4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DIM PROJECT NO. CS370434-15/16."
 5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

 PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING 955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730	SURVEY/GPS BY:	DATE:	REVISIONS	BY
	LAYOUT BY:	DATE: 10/09/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR DEPT			
	APPROVED BY:			
SCALE: HOR: 1"=50' VERT: 1"=		SHT: 7 OF 10		



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 14, 2020

Ellis Bryant
2583 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1069

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2583 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On August 14, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

4:30 - Thu

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1063	Date:	8/11/2020
PIN:	9493-59-5529		
Address	2583 LAKEVIEW DRIVE	City	Fayetteville
		Zip	28308-
Subdivision:		Lot(s)	
		Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville
		Zip	28311-

Permit To Construct

Permit Issued By: *Celestine Prid*

Date: 8-13-2020

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

Date:

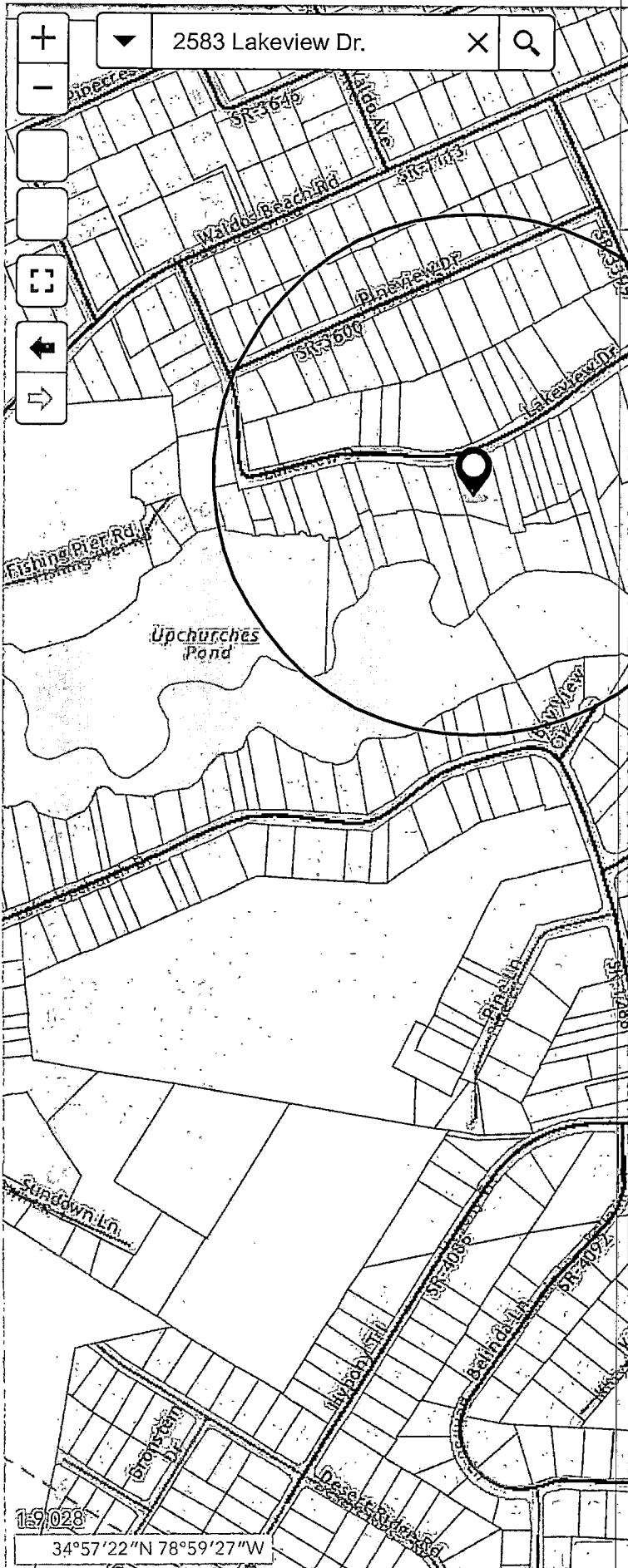
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:



Well Permit Decision Tool

How to U



Screening Report	
Back	Area : 3,134,508.67 ft ²
Known Releases of Contamination	(0)
No results found	

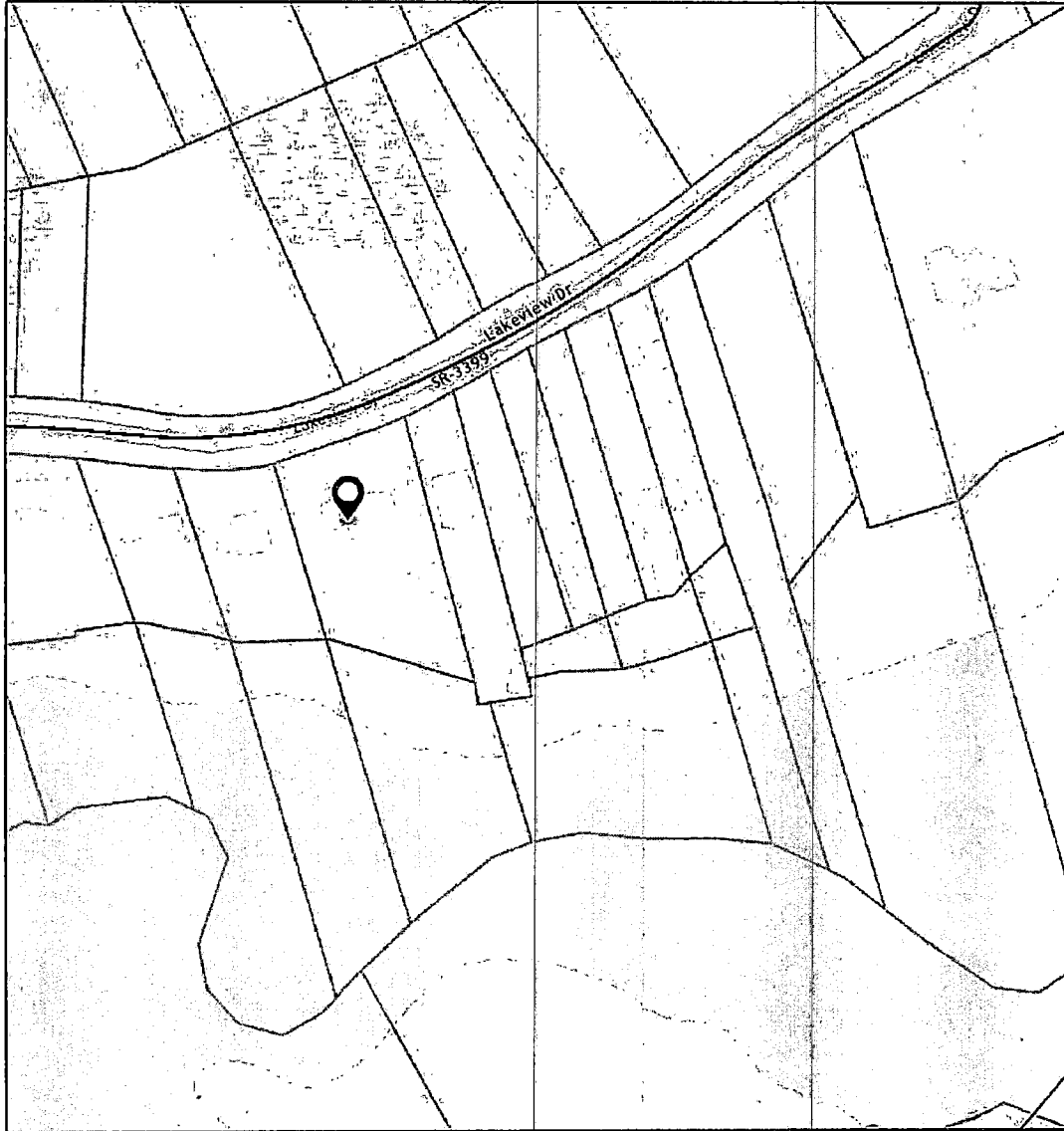


WPDT Report

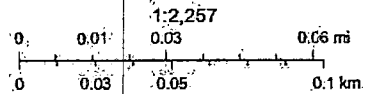
Area of Interest (AOI) Information

Area : 3,134,508.67 ft²

Aug 12 2020 9:12:15 Eastern Daylight Time



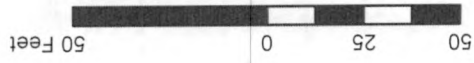
- Parcels (Polygons) - Parcels
- Non-System Roads**
 - Federal Route
 - Non-System
- Other System Roads**
 - Ramps, Rest Areas, Non-Mainline
 - Projected Route
 - Other State Agency Route
 - Secondary Route
- Primary Roads**
 - Interstate
 - US Route



© NCDOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N. Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors.

2583 Lakeview Dr

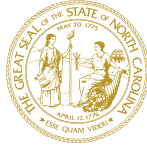
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Cumberland County Department of Public Health
Environmental Health Division

CCGIS





DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 12, 2020

Paulette Munson
2595 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1067

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2595 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On August 12, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a non-water tight sanitary sewer line less than 100' to the water supply well at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) The well shall be sampled for bacteria and inorganic analysis.
- 2) If sample results indicate contaminants, further repairs and/or treatment may be recommended.
- 3) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1351	Date:	10/27/2020		
PIN:	9493-59-3610				
Address	2603 LAKEVIEW DRIVE	City	Fayetteville	Zip	28308-
Subdivision:		Lot(s)	15-16	Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By:  Date: 11-4-2020
See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

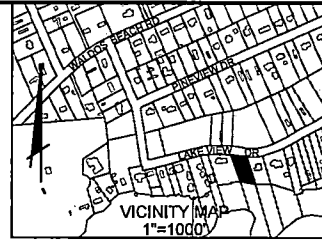
Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

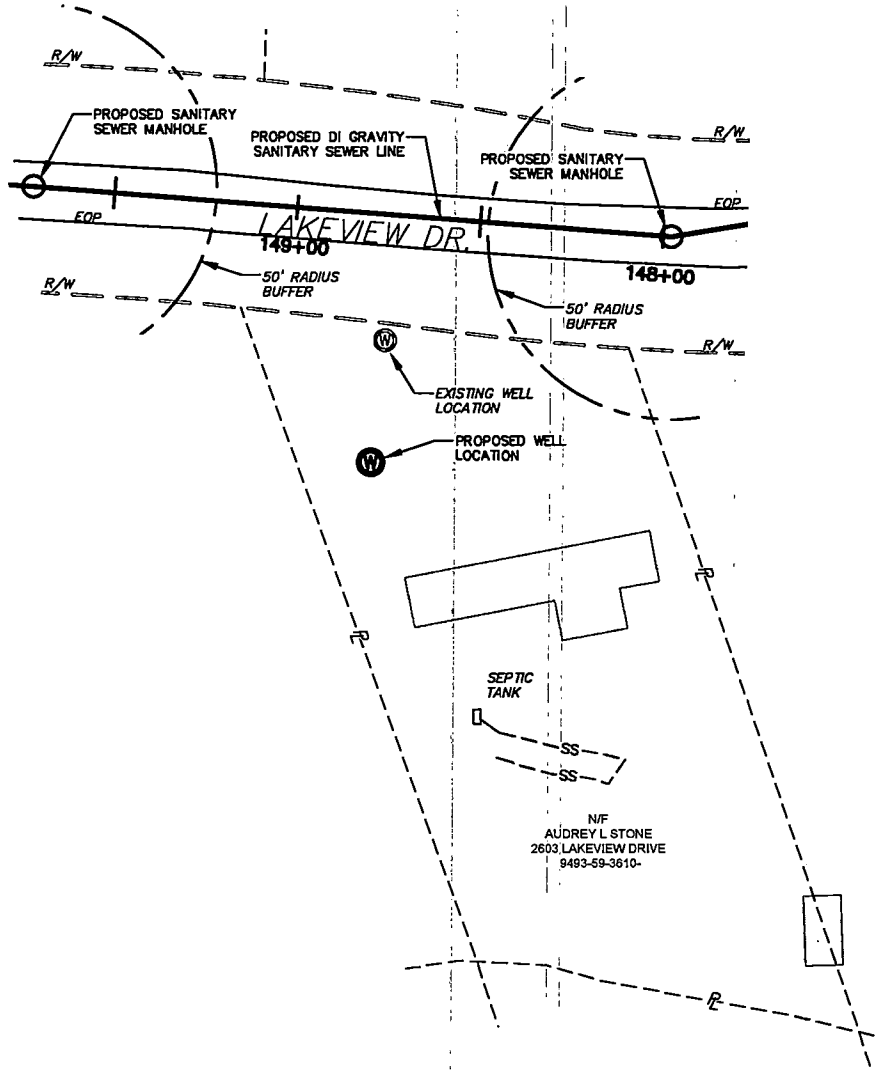
Other Information:

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
AUDREY L STONE
PIN# 9493-59-3610**



N
N.C. GRID (NAD83/01)



LEGEND

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY

SCALE: 1" = 40'



NOTES:

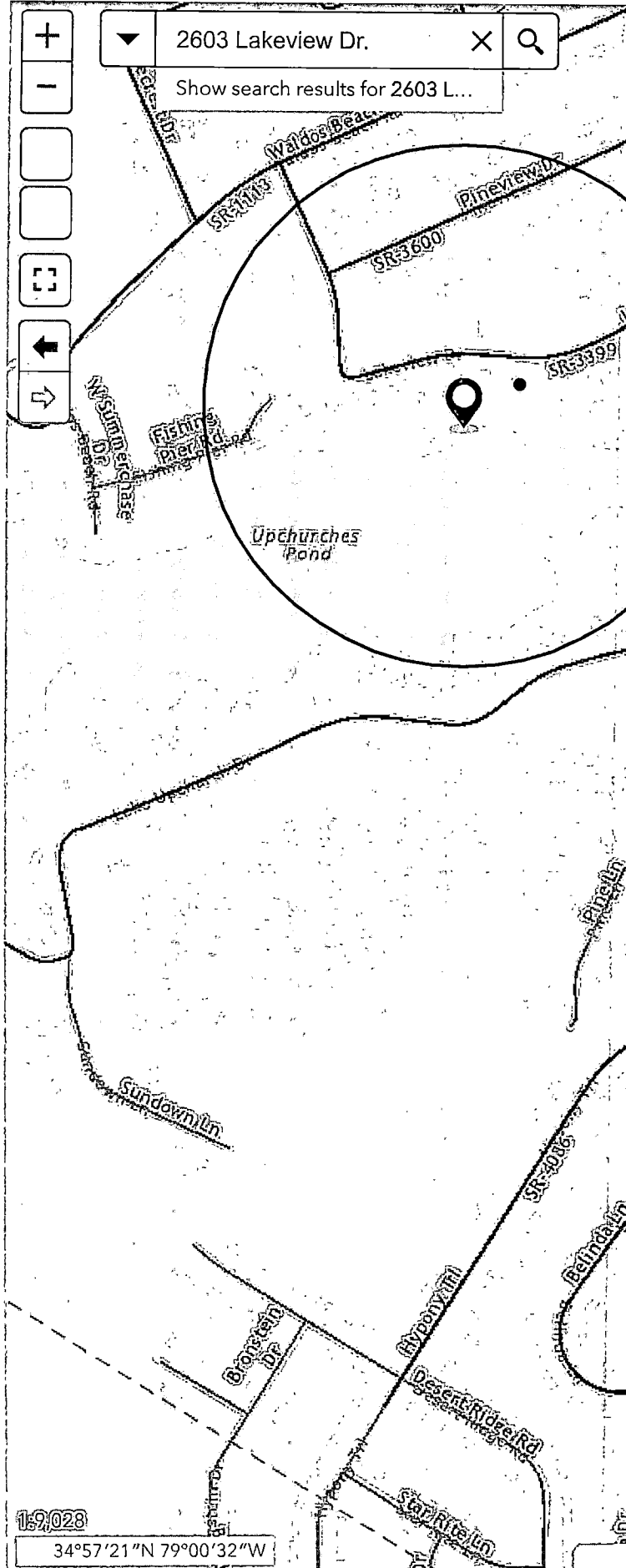
1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCK FISH CREEK OUTFALL-CONTRACT 2 DW PROJECT NO. CS370434-15/16."
5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

<p>PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING 955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730</p>	SURVEY/GPS BY:	DATE:	REVISIONS	BY
	LAYOUT BY:	DATE: 10/09/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR. DEPT			
	APPROVED BY:			
SCALE: HOR: 1"=40' VERT: 1"=		SHT: 6 OF 10		



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.61 ft ²
Known Releases of Contamination	(0)

1:9,028

34°57'21"N 79°00'32"W

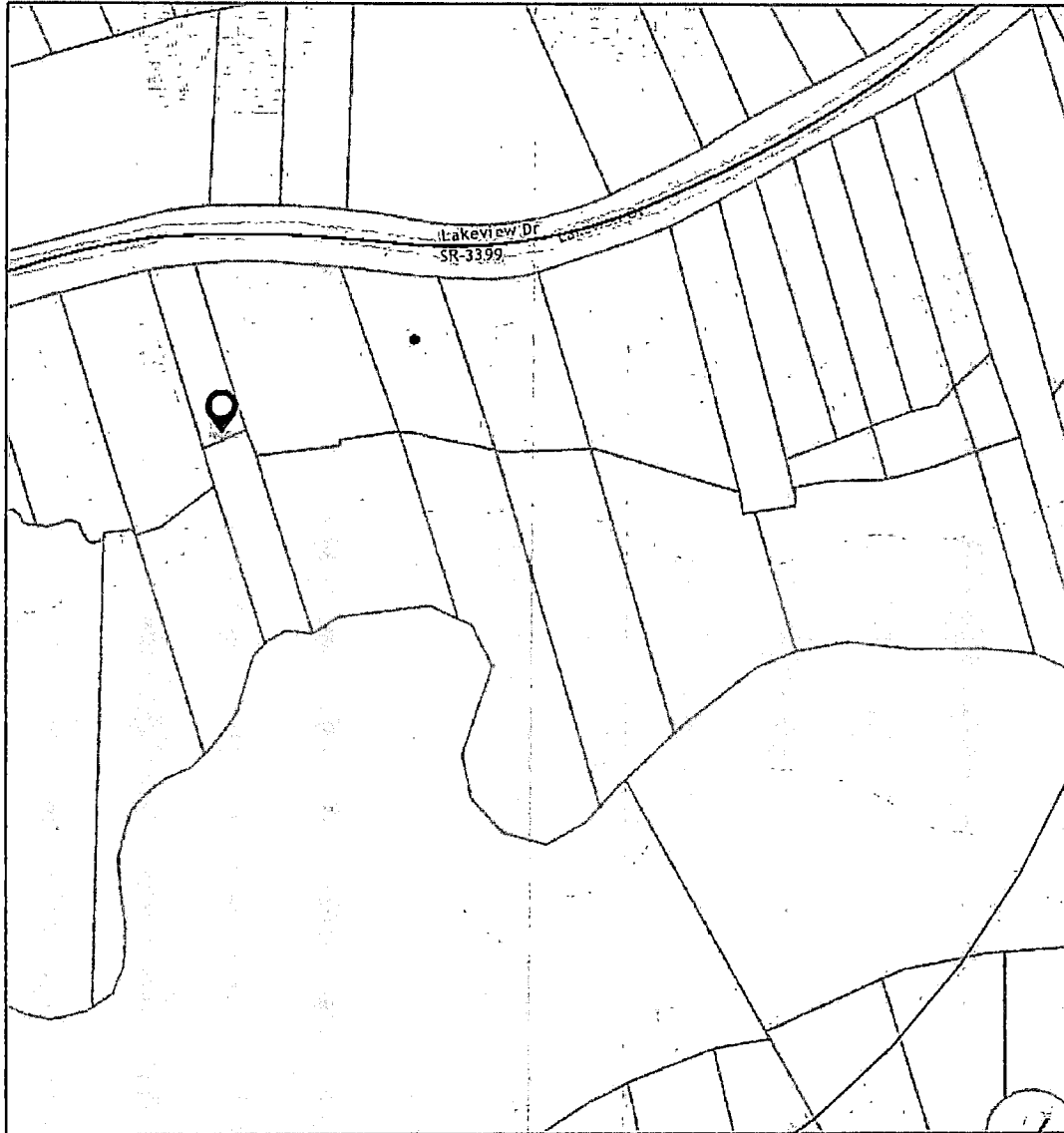


WPDT Report

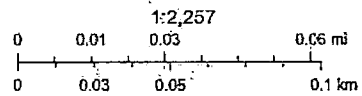
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 29 2020 8:04:36 Eastern Daylight Time



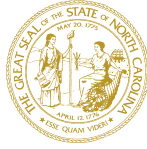
- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System Road | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NCDOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasystemen, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Map Contributors, County of Cumberland, State of North

2603 Lakeview Dr.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 12, 2020

Ellis Ehle
PO Box 48121
Cumberland, NC 28331

RE: Approval No. WWM1065

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2619 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On August 12, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a non-water tight sanitary sewer line less than 100' to the water supply well at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

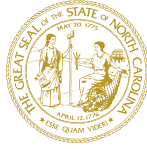
- 1) The well shall be sampled for bacteria and inorganic analysis.
- 2) If sample results indicate contaminants, further repairs and/or treatment may be recommended.
- 3) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
November 3, 2020

William Dean
5733 Rockfish Rd.
Hope Mills, NC 28346

RE: Approval No. WWM1113

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2623 Lakeview Dr., Fayetteville, NC 28306

Dear Mr. Dean:

On November 3, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2623 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health
Permit to Construct a Water Supply Well

2020	1347	Date:	10/27/2020		
PIN:	0493-49-0569				
Address	2623 LAKEVIEW DRIVE	City	Fayetteville	Zip	28306-
Subdivision:		Lot(s)	11	Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By: *Celestine Raines* Date: 11-3-2020
See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

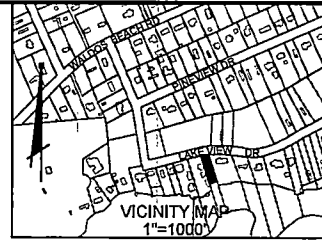
Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

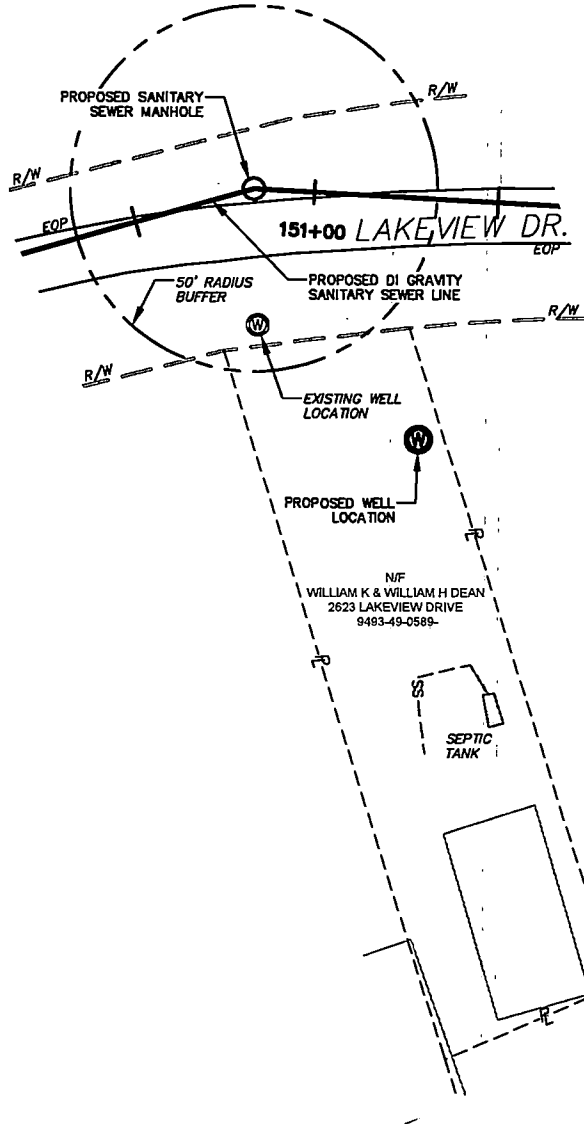
Other Information:

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
WILLIAM K &
WILLIAM H DEAN
PIN# 9493-49-0589**



N
N.C. GRID (NAD83/01)



LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY

SCALE: 1" = 40'



NOTES:

1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCK/FISH CREEK OUTFALL-CONTRACT 2 DMI PROJECT NO. CS370434-15/16."
5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

FWC PUBLIC WORKS COMMISSION
OF THE CITY OF FAYETTEVILLE
WATER RESOURCES ENGINEERING
955 OLD WILMINGTON RD.
FAYETTEVILLE, N.C. 28301
(910) 223-4730

SURVEY/GPS BY:	DATE:	REVISIONS	BY
LAYOUT BY:	DATE: 10/09/20		
PLAN/PROF. BY: DWH			
DESIGN REVIEW BY: W/R ENGR. DEPT.			
APPROVED BY:			
SCALE: HOR: 1"=40' VERT: 1"=		SHT: 5 OF 10	

VARIANCE APPLICATION FOR 2C .0100 WELL CONSTRUCTION STANDARDS:

PRIVATE DRINKING WATER WELLS UNDER 15A NCAC 02C .0300

WATER SUPPLY WELLS UNDER 15A NCAC 02C .0107

All water supply wells not considered "Private Drinking Water Wells" and including irrigation, industrial, and commercial wells.

WELLS OTHER THAN WATER SUPPLY UNDER 15A NCAC 02C .0108

Including monitoring and recovery wells.

Print clearly or type information. Illegible submittals will be returned as incomplete.

DATE: November 3, 2020 PERMIT NO.: 2020-1347 (to be completed by DWQ/DPH)

A. WELL OWNER – For single family residences list the property owner(s). For all others, list name of the business, organization, or government agency and person delegated signature authority:

William Dean

Mailing Address: 5733 Rockfish rd
City: Hope Mills State: NC Zip Code: 28348 County: Cumberland
Day Tele No.: 624-8691 Cell No.: _____
EMAIL Address: _____ Fax No.: _____

B. PHYSICAL LOCATION OF WELL SITE

(1) Parcel Identification Number (PIN) of well site: 9493-49-0589
County: Cumberland
(2) Physical Address (if different than mailing address): 2623 Lakeview Dr
City: Fayetteville State: NC Zip Code: 28306

C. WELL DRILLER INFORMATION (if known)

Well Drilling Contractor's Name: Jonathan Kamionka
NC Well Drilling Contractor Certification No.: 3465-A
Company Name: Bill's Well Drilling Co Contact Person: _____
City: Fayetteville State: NC Zip Code: 28311 County: Cumberland
Day Tele No.: 9104893740 Cell No.: 9108508754
EMAIL Address: office@billswelldrilling.com Fax No.: _____

D. **REASON FOR VARIANCE REQUEST** – Include type of well(s) to be constructed; rule for which the variance is being requested; description of how the alternate construction will not endanger human health and welfare and the environment; and reason why construction and/or operation in accordance with the standards is not technically feasible and/or provides equal or better protection of the groundwater.

New Rockwell will be less than 100' from
manhole

E. **ATTACHMENTS** – Provide the following information as attachments to this application:

- (1) A map showing general location of the property (including road names, NC State Route Number, distances, any key landmarks, etc.) sufficient for finding the well location.
- (2) Detailed site map with scale showing location of proposed well relevant to septic system(s), building foundations, property lines, water bodies, potential sources of contamination, other wells, etc.
- (3) Submit a copy of the local well permit application and site evaluation map (if applicable).
- (4) Any other information relevant to the variance request such as a well construction diagram showing proposed well liner or atypical construction materials/methods.

F. **OTHER MINIMUM CONSTRUCTION REQUIREMENTS**

For water supply wells, approval of a variance will require that additional construction requirements beyond those specified in 15A NCAC 02C .0107 be met. Minimum additional construction requirements for Coastal Plain and Piedmont and Mountain region wells are referenced on Attachments A and B on pages 4 and 5 of this application. Approval of a variance will not be considered in cases where the specified minimum additional construction requirements cannot be met.

G. **SIGNATURES**


Signature of Person Responsible for Well Construction (typically the well driller)

Jonathon Kamionka
Print or Type Full Name of Person Responsible for Well Construction
(typically the well driller)


Signature of County Environmental Health Specialist

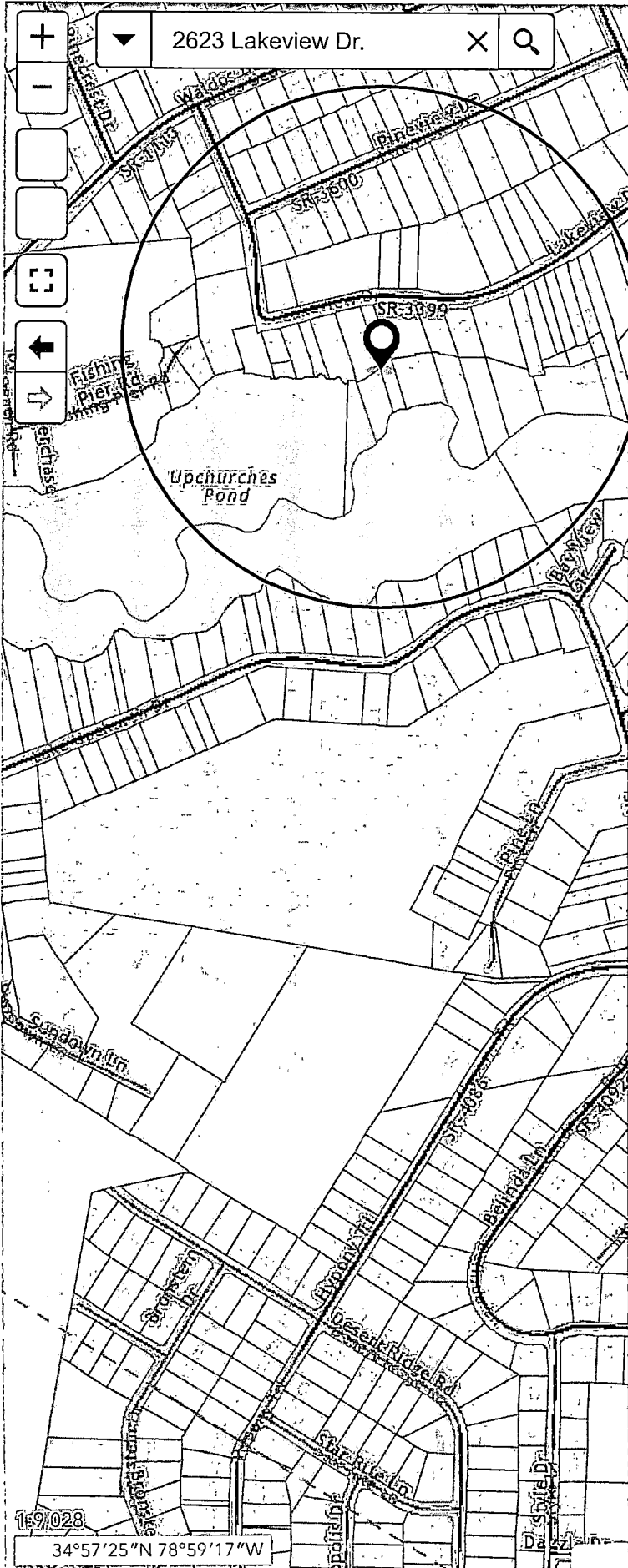
Celestine Raineri-Smith
Print or Type Full Name of County Environmental Health Specialist

Per 15A NCAC 02C .0118 the Secretary of the Division of Water Quality or the Division of Public Health may require submittal of information deemed necessary to make a decision on the variance, may impose conditions as part of the decision, and shall respond in writing to the request within 30 days of receipt of the variance request. A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition as described in G.S. 150B-23 within 60 days after receipt of the decision.



Well Permit Decision Tool

How to U



Screening Report	
Back	Area : 3,134,508.61 ft ²
Known Releases of Contamination	(0)
No results found	

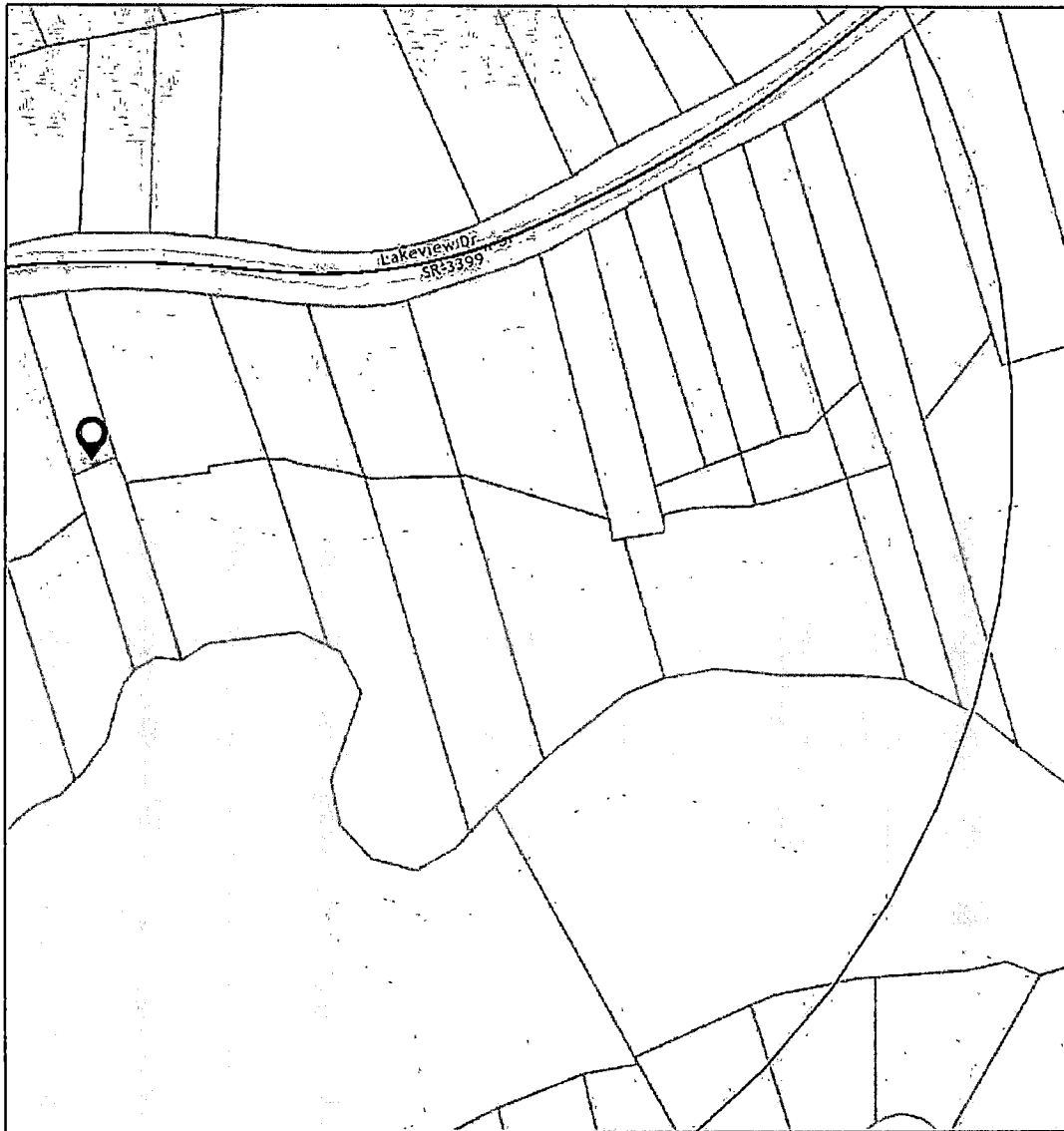


WPDT Report

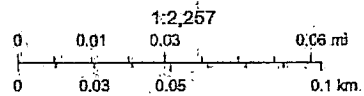
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 29 2020 7:46:21 Eastern Daylight Time



- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NCDOT GIS Unit, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodanystreken, Rijkswaterstaat, GSA, Geoland, FEMA, Interimg and the GIS user community, Esri Community Maps Contributors, County of Cumberland, State of North

2623 Lakeview Dr.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
November 3, 2020

William Dean
5733 Rockfish Rd.
Hope Mills, NC 28346

RE: Approval No. WWM1113
Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2623 Lakeview Dr., Fayetteville, NC 28306

Dear Mr. Dean:

On November 3, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2623 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

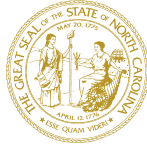
The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

A handwritten signature in cursive script that reads "Wilson Mize".

Wilson Mize R.E.H.S.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 12, 2020

Dagmar Voss
2633 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1068

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2633 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On August 12, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a non-water tight sanitary sewer line less than 100' to the water supply well at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

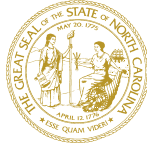
- 1) The well shall be sampled for bacteria and inorganic analysis.
- 2) If sample results indicate contaminants, further repairs and/or treatment may be recommended.
- 3) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 12, 2020

Rosina Newton
PO Box 48084
Cumberland, NC 28331

RE: Approval No. WWM1066

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2643 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On August 12, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a non-water tight sanitary sewer line less than 100' to the water supply well at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) The well shall be sampled for bacteria and inorganic analysis.
- 2) If sample results indicate contaminants, further repairs and/or treatment may be recommended.
- 3) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

Cumberland County Department of Public Health
Permit to Construct a Water Supply Well

2020	1348	Date:	10/27/2020		
PIN:	9493-49-8544				
Address	2653 LAKEVIEW DRIVE	City	Fayetteville	Zip	28306-
Subdivision:		Lot(s) ^B		Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By:  Date: 10-29-2020
See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft.

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.61 ft ²
Known Releases of Contamination	(0)

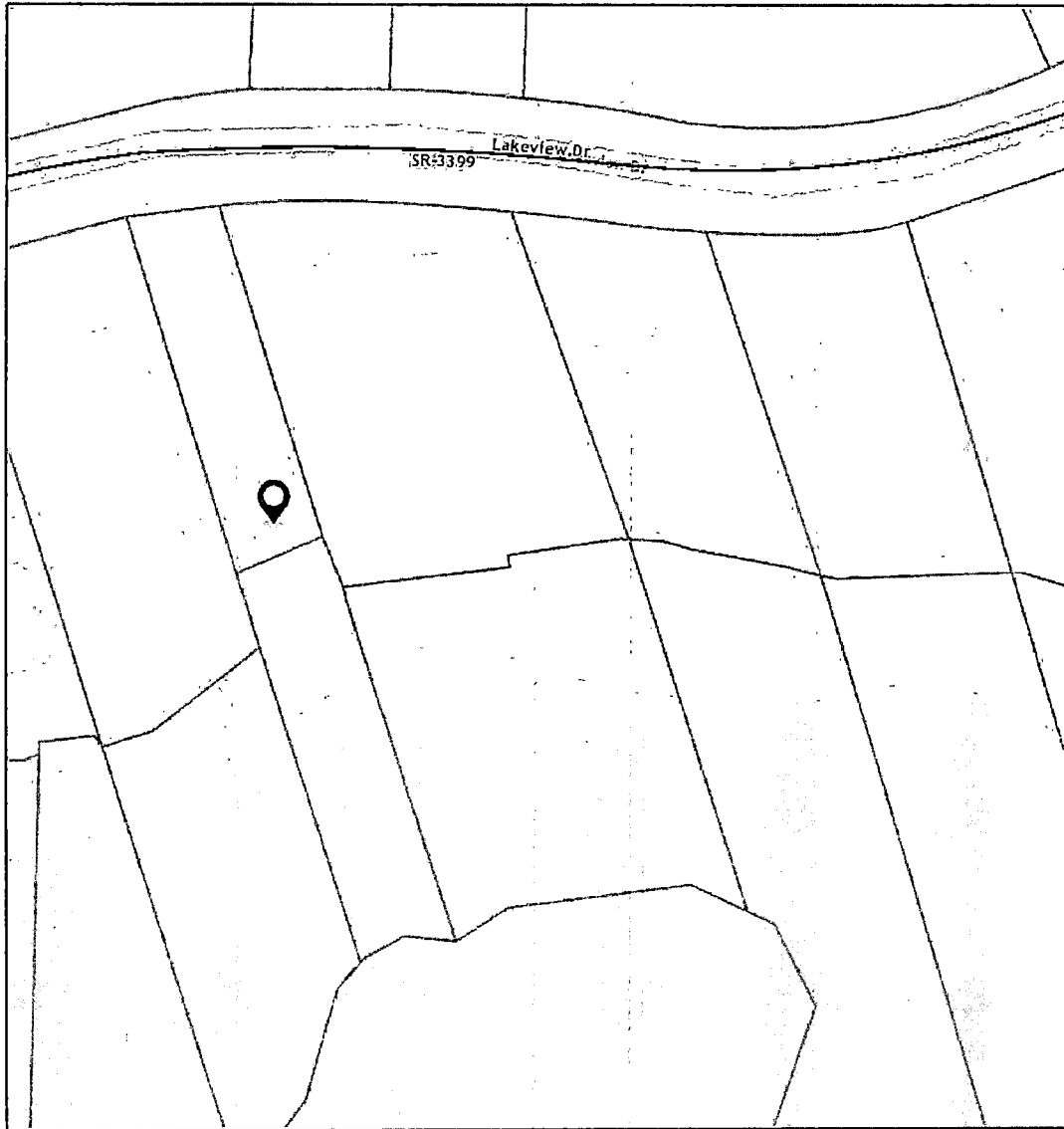


WPDT Report

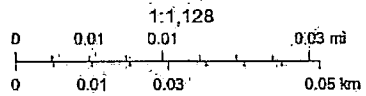
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 29 2020 7:49:33 Eastern Daylight Time



- Parcels (Polygons) - Parcels
- Non-System Roads
 - Federal Route
 - Non-System
- Other System Roads
 - Ramps, Rest Areas, Non-Mainline
 - Projected Route
 - Other State Agency Route
 - Secondary Route
 - Primary Roads
 - Interstate
 - US Route



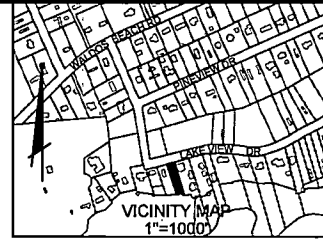
NCDOT GIS Unit, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geonames, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cumberland, State of North

2653 Lakeview Dr.

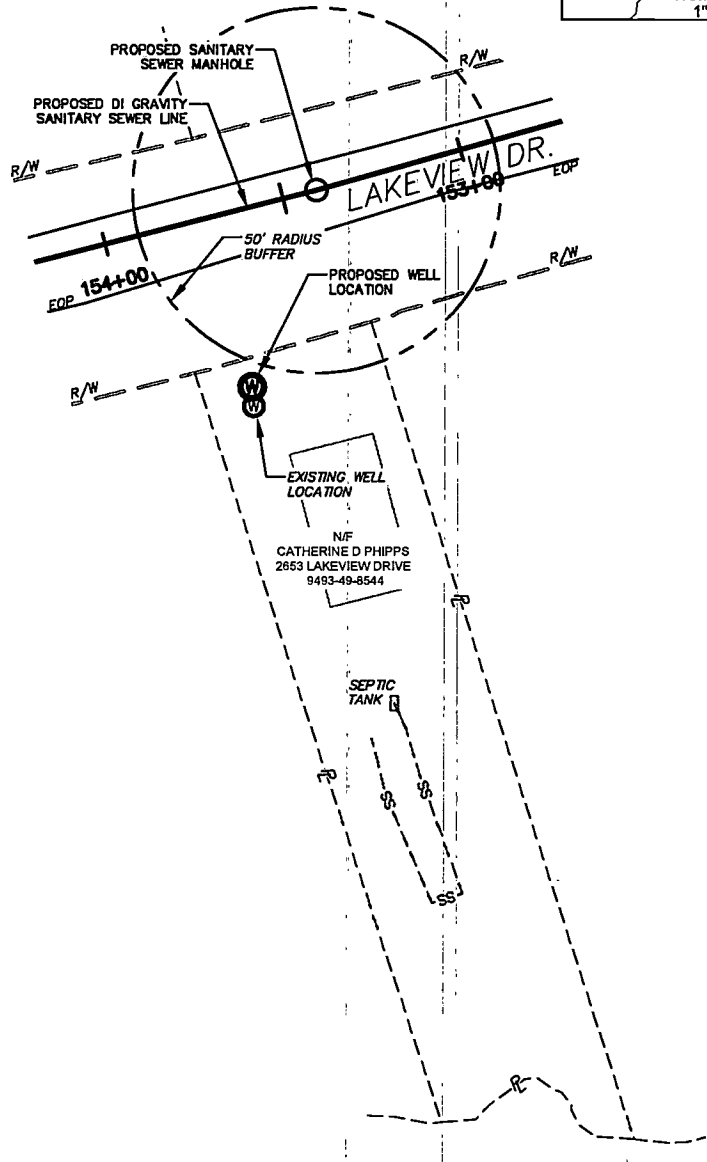
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THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

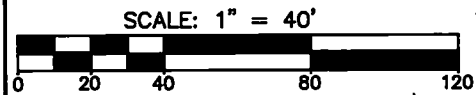
EXHIBIT MAP 1 WELL RELOCATION ON THE LANDS OF CATHERINE D PHIPPS PIN# 9493-49-8544



N
N.C. GRID (NAD83/10)

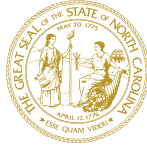


LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY



- NOTES:
1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
 2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
 3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
 4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/16.
 5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
 6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

 PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING 955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730	SURVEY/GPS BY:	DATE:	REVISIONS	BY
	LAYOUT BY:	DATE: 10/09/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR DEPT			
	APPROVED BY:			
SCALE: HOR: 1"=40' VERT: 1"=		SHT: 4 OF 10		



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 17, 2020

Jeffrey Bryant
2659 Lakeview Dr.
Fayetteville, NC 28306

RE: Approval No. WWM1070

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2659 Lakeview Dr., Fayetteville, NC 28306

Dear Mr. Bryant:

On August 17, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

F21

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1085	Date:	8/11/2020
PIN:	0493-49-7583		
Address	2659 LAKEVIEW DRIVE	City	Fayetteville
		Zip	28308-
Subdivision:		Lot(s)	5
		Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville
		Zip	28311-

Permit To Construct

Permit Issued By: 

Date: 8-14-2020

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

Date:

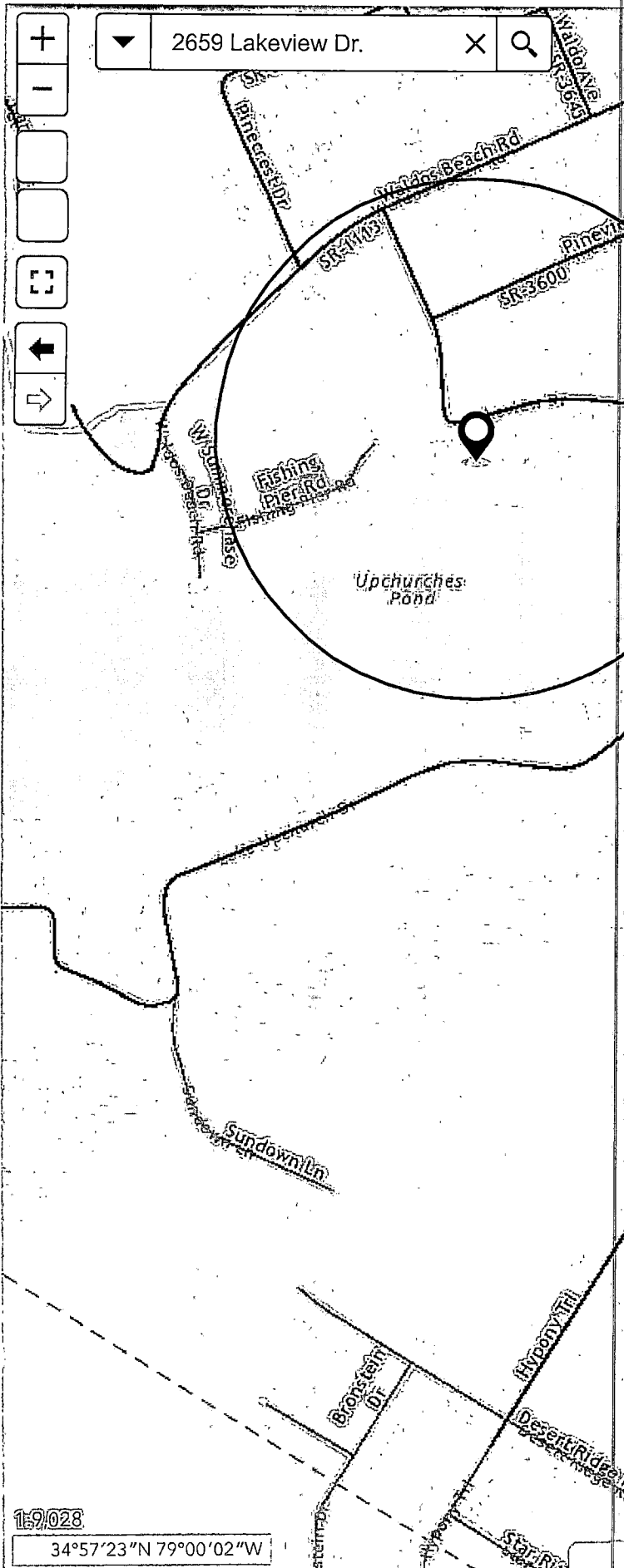
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:



Well Permit Decision Tool

How to U



Screening

Report

Back

Area : 3,134,508.65 ft²

Known Releases of Contamination

(0)

No results found



WPDT Report

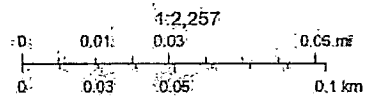
Area of Interest (AOI) Information

Area : 3,134,508.65 ft²

Aug 12 2020 9:10:26 Eastern Daylight Time



- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



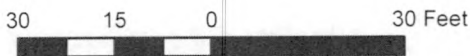
© NCDOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NIMA, Goodcityreborn, Rijksdienst voor, GSA, Gestand, FEMA, prisma and the GIS user community. Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors.

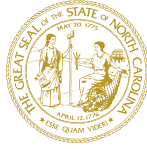
2659 Lakeview Dr.

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Cumberland County Department of Public Health
 Environmental Health Division





DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 29, 2020

Ellis Ehle
PO Box 48121
Fayetteville, NC 28331

RE: Approval No. WWM1109

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2667 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On October 29, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2667 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

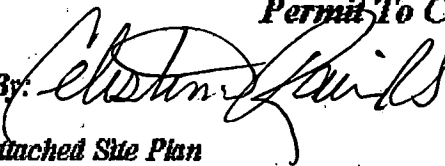
Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1349	Date:	10/27/2020		
PIN:	9493-49-7503				
Address	2667 LAKEVIEW DRIVE	City	Fayetteville	Zip	28306-
Subdivision:		Lot(s)	3	Section	
Applicant:	BILL'S WELL DRILLING CO.	Applicant Type	Contractor / Builder		
Mailing Address:	800 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By:



Date: 10-29-2020

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER- INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

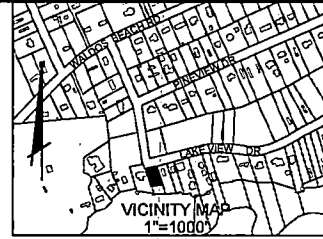
Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

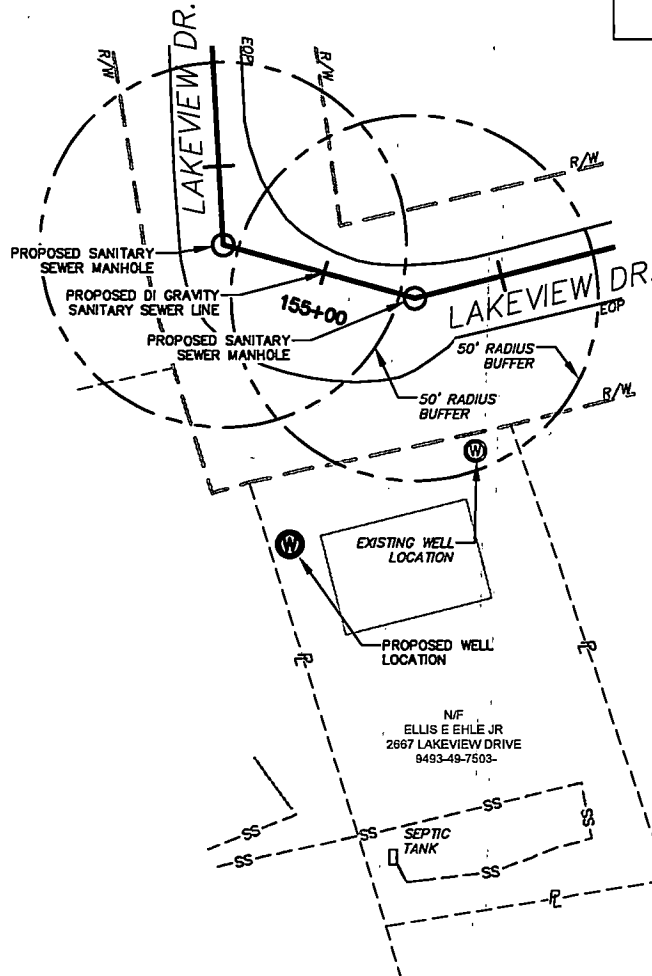
Other Information:

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
ELLIS E EHLE JR
PIN# 9493-49-7503**

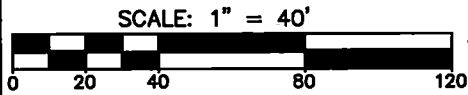


N
N.C. GRID (NAD83/01)



N/E
ELLIS E EHLE JR
2667 LAKEVIEW DRIVE
9493-49-7503

LEGEND	
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY



NOTES:

- PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
- THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
- THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
- PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM & CREED FINAL DESIGN DRAWING TITLED "SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DW PROJECT NO. CS370434-15/16.
- SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
- PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

<p>FWC PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING 955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730</p>	SURVEY/GPS BY:	DATE:	REVISIONS	BY
	LAYOUT BY:	DATE: 10/09/20		
	PLAN/PROF BY: DWH			
	DESIGN REVIEW BY: W/R ENGR DEPT			
	APPROVED BY:			
SCALE: HOR: 1"=40' VERT: 1"=		SHT: 2 OF 10		

VARIANCE APPLICATION FOR 2C .0100 WELL CONSTRUCTION STANDARDS:

PRIVATE DRINKING WATER WELLS UNDER 15A NCAC 02C .0300

WATER SUPPLY WELLS UNDER 15A NCAC 02C .0107

All water supply wells not considered "Private Drinking Water Wells" and including irrigation, industrial, and commercial wells.

WELLS OTHER THAN WATER SUPPLY UNDER 15A NCAC 02C .0108

Including monitoring and recovery wells.

Print clearly or type information. Illegible submittals will be returned as incomplete.

DATE: October 29, 20 PERMIT NO.: 2020-1349 (to be completed by DWQ/DPH)

A. **WELL OWNER** – For single family residences list the property owner(s). For all others, list name of the business, organization, or government agency and person delegated signature authority:

Ellis Ehle

Mailing Address: PO Box 48121

City: Cumberland State: NC Zip Code: 28331 County: _____

Day Tele No.: 9108507558 Cell No.: _____

EMAIL Address: eehlejr@nc.rr.com Fax No.: _____

B. **PHYSICAL LOCATION OF WELL SITE**

(1) Parcel Identification Number (PIN) of well site: 9493-49-7503

County: Cumberland

(2) Physical Address (if different than mailing address): 2667 Lakeview Dr

City: Fayetteville State: NC Zip Code: 28306

C. **WELL DRILLER INFORMATION** (if known)

Well Drilling Contractor's Name: Jonathan Kamionka

NC Well Drilling Contractor Certification No.: 3465-A

Company Name: Bill's Well Drilling Co Contact Person: _____

City: Fayetteville State: NC Zip Code: 28311 County: Cumberland

Day Tele No.: 9104893740 Cell No.: 9108508754

EMAIL Address: office@billswelldrilling.com Fax No.: _____

D. REASON FOR VARIANCE REQUEST – Include type of well(s) to be constructed; rule for which the variance is being requested; description of how the alternate construction will not endanger human health and welfare and the environment; and reason why construction and/or operation in accordance with the standards is not technically feasible and/or provides equal or better protection of the groundwater.

New Rockwell will be less than 100' from
manhole

E. ATTACHMENTS – Provide the following information as attachments to this application:

- (1) A map showing general location of the property (including road names, NC State Route Number, distances, any key landmarks, etc.) sufficient for finding the well location.
- (2) Detailed site map with scale showing location of proposed well relevant to septic system(s); building foundations, property lines, water bodies, potential sources of contamination, other wells, etc.
- (3) Submit a copy of the local well permit application and site evaluation map (if applicable).
- (4) Any other information relevant to the variance request such as a well construction diagram showing proposed well liner or atypical construction materials/methods.

F. OTHER MINIMUM CONSTRUCTION REQUIREMENTS

For water supply wells, approval of a variance will require that additional construction requirements beyond those specified in 15A NCAC 02C .0107 be met. Minimum additional construction requirements for Coastal Plain and Piedmont and Mountain region wells are referenced on Attachments A and B on pages 4 and 5 of this application. Approval of a variance will not be considered in cases where the specified minimum additional construction requirements cannot be met.

G. SIGNATURES

Joeth Kuebler

Signature of Person Responsible for Well Construction (typically the well driller)

Jonathon Kamionka

Print or Type Full Name of Person Responsible for Well Construction
(typically the well driller)

Celestine Rainey Smith

Signature of County Environmental Health Specialist

Celestine Rainey-Smith

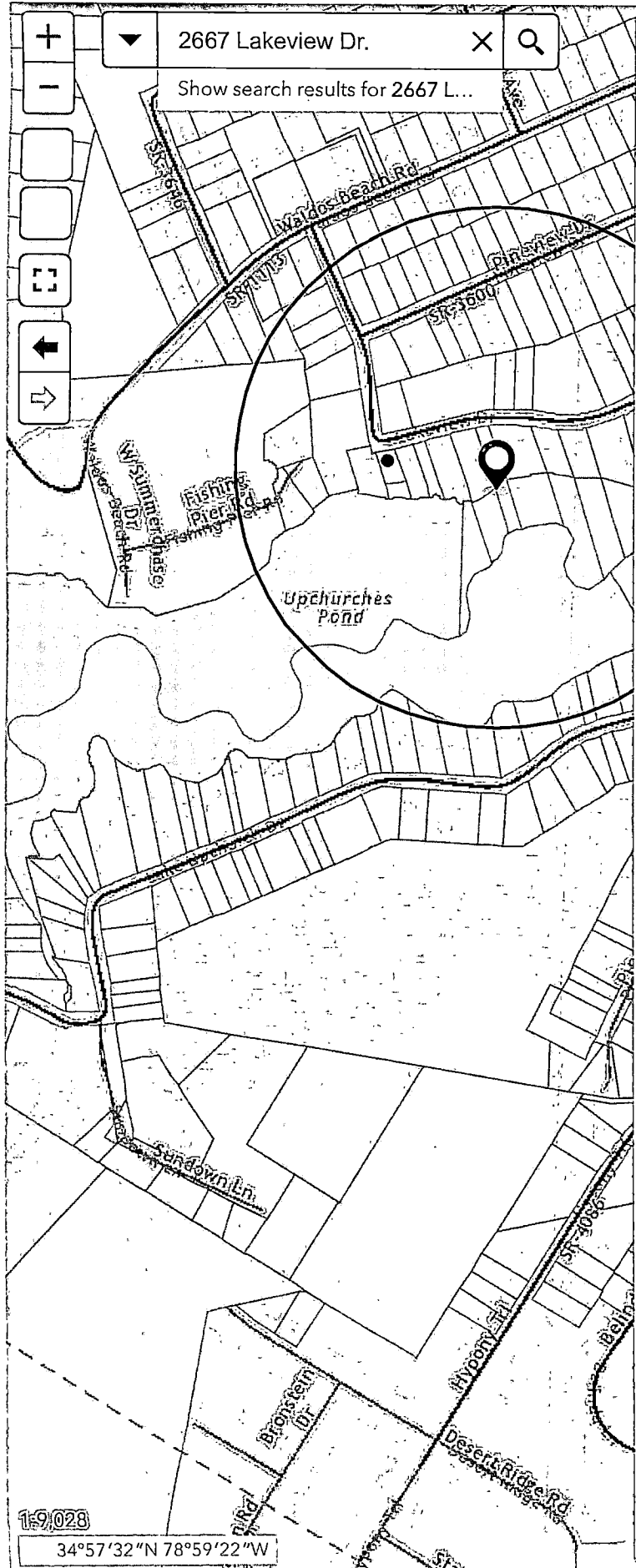
Print or Type Full Name of County Environmental Health Specialist

Per 15A NCAC 02C .0118 the Secretary of the Division of Water Quality or the Division of Public Health may require submittal of information deemed necessary to make a decision on the variance, may impose conditions as part of the decision, and shall respond in writing to the request within 30 days of receipt of the variance request. A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition as described in G.S. 150B-23 within 60 days after receipt of the decision.



Well Permit Decision Tool

How to U



Screening	
Report	
Back	Area : 3,134,508.61 ft ²
Known Releases of Contamination	(0)
No results found	

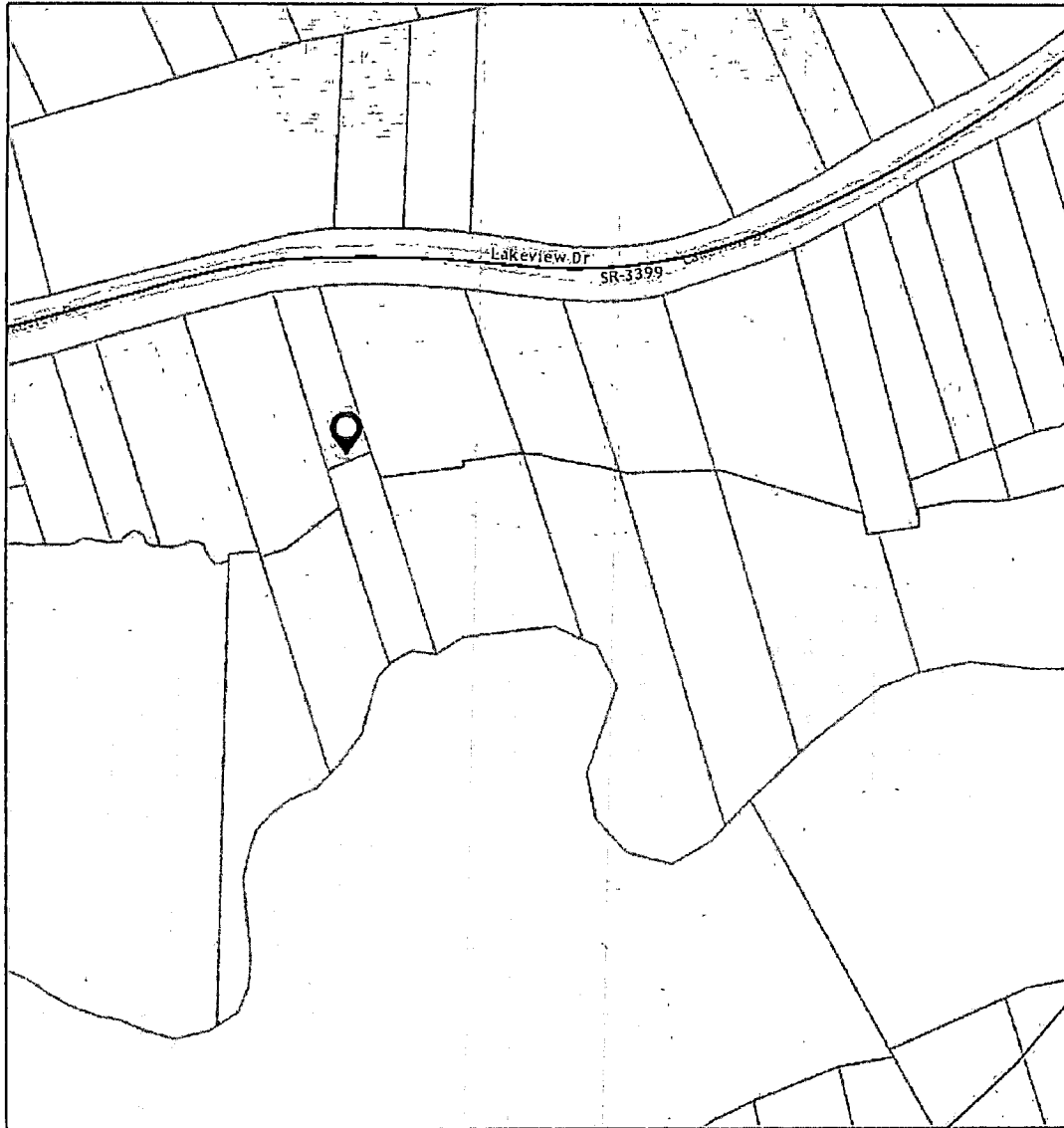


WPDT Report

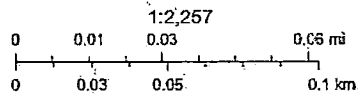
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 29 2020 7:55:13 Eastern Daylight Time



- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NCDOT GIS Unit, Sources: Esri, Airbus DS, USGS, INGA, NASA, CGIAR, N. Robinson, NCEAS, NLS, OS, NOAA, Geodanstyrelsen, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Map Contributors, County of Cumberland, State of North

2667 Lakeview Dr.

All North Carolina Department of Environmental Quality (NCDEQ) GIS data is expressly provided "AS IS" and "WITH ALL FAULTS". The NCDEQ makes no warranty of any kind, express or implied, concerning this information, including but not limited to any warranties of merchantability or fitness for any particular purpose. The NCDEQ assumes no responsibility or legal liability concerning the Data's accuracy, reliability, completeness, timeliness, or usefulness. The data is not intended to constitute advice nor is it to be used as a substitute for specific advice from a professional. Users should not act (or refrain from acting) based upon information in the Data without independently verifying the information and obtaining any necessary professional advice. Users are solely responsible for ensuring the accuracy, currency and other qualities of any products derived from or in connection with the NCDEQ's Data. The Data is collected from various sources and may be modified over time without notice to improve spatial and attribute accuracy. The NCDEQ disclaims responsibility for the spatial accuracy and attribution of GIS features and makes no warranty concerning same.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 29, 2020

Ellis Ehle
PO Box 48121
Fayetteville, NC 28331

RE: Approval No. WWM1109
Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2667 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On October 29, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2667 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

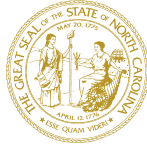
The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

A handwritten signature in cursive script that reads "Wilson Mize".

Wilson Mize R.E.H.S.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 29, 2020

Ellis Ehle
PO Box 48121
Fayetteville, NC 28331

RE: Approval No. WWM1110

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2673 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On October 29, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2673 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.


Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2020	1350	Date:	10/27/2020		
PIN:	9493-49-6511				
Address	2673 LAKEVIEW DRIVE	City	Fayetteville	Zip	28306-
Subdivision:		Lot(s)		Section	
Applicant:	BILL'S WELL DRILLING	Applicant Type	Contractor / Builder		
Mailing Address:	600 MCARTHUR ROAD	City	Fayetteville	Zip	28311-

Permit To Construct

Permit Issued By:



Date: 10-29-2020

See Attached Site Plan

Well Grout

Driller:

Date:

Grout Depth 0 Ft

Type Of Well:

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

FINAL WELL APPROVAL

Final Well Approved By:

Date:

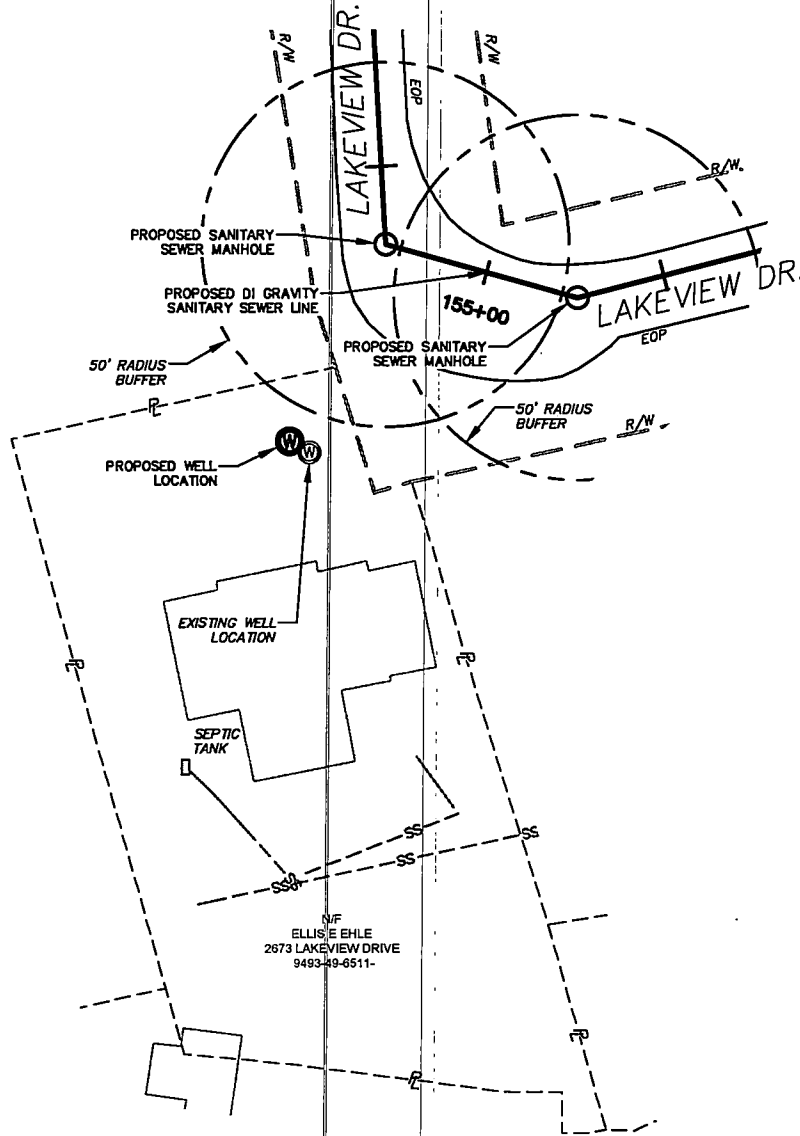
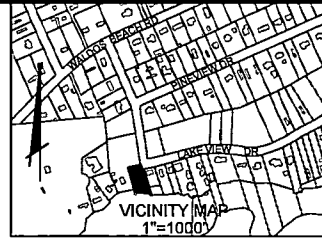
NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

N
N.C. GRID (NAD83/01)

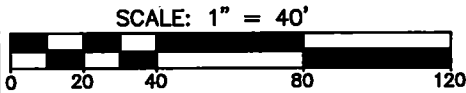
**EXHIBIT MAP 1
WELL RELOCATION
ON THE LANDS OF
ELLIS E EHLE
PIN# 9493-49-6511**



ELLIS E EHLE
2873 LAKEVIEW DRIVE
9493-49-6511

LEGEND

	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED GRAVITY SANITARY SEWER
	PROPERTY LINE
	SANITARY SEWER DRAIN LINES
	MH MANHOLE
	EOP EDGE OF PAVEMENT
	R/W RIGHT-OF-WAY



NOTES:

1. PROPERTY LINES SHOWN AS DASHED LINES ON THIS EXHIBIT WERE TAKEN FROM CUMBERLAND COUNTY GIS DATA. MCKIM & CREED, INC. HAS NOT SURVEYED ANY PROPERTY CORNERS OR PROPERTY LINES AT THIS TIME.
2. THE EXISTING WELL, PROPOSED WELL AND EXISTING SEPTIC TANK/FIELDS SHOWN ON THIS EXHIBIT WERE FIELD LOCATED BY MCKIM & CREED, INC.
3. THE PROPOSED SANITARY SEWER IMPROVEMENTS SHOWN WERE TAKEN FROM ENGINEERING DRAWINGS OF BIG ROCK FISH CREEK OUTFALL SEWER IMPROVEMENTS DATED JULY 2020 AND PREPARED BY MCKIM & CREED, INC.
4. PROPOSED SANITARY SEWER CAN BE REFERENCED ON MCKIM&CREED FINAL DESIGN DRAWING TITLED 'SANITARY SEWER IMPROVEMENTS BIG ROCKFISH CREEK OUTFALL-CONTRACT 2 DWI PROJECT NO. CS370434-15/16.
5. SEPTIC TANK AND DRAIN FIELD WAS LOCATED AND FLAGGED BY GROUND TRUTH SOIL CONSULTING, PLLC. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING FLAGGED CONDITIONS.
6. PROPOSED WELL LOCATIONS TO MAINTAIN A MINIMUM SEPARATION OF 50 FEET FROM THE PROPOSED GRAVITY SANITARY SEWER WERE MARKED BY BILLS WELL DRILLING. MCKIM&CREED WAS RESPONSIBLE FOR SURVEYING STAKED PROPOSED LOCATIONS.

<p>FWC PUBLIC WORKS COMMISSION OF THE CITY OF FAYETTEVILLE WATER RESOURCES ENGINEERING 955 OLD WILMINGTON RD. FAYETTEVILLE, N.C. 28301 (910) 223-4730</p>	SURVEY/GPS BY:	DATE	REVISIONS	BY
	LAYOUT BY:	DATE: 10/09/20		
	PLAN/PROF BY:	DWH		
	DESIGN REVIEW BY:	W/R ENGR DEPT		
	APPROVED BY:			
SCALE: HOR: 1"=40' VERT: 1"=		SHT: 1 OF 10		

VARIANCE APPLICATION FOR 2C .0100 WELL CONSTRUCTION STANDARDS:

PRIVATE DRINKING WATER WELLS UNDER 15A NCAC 02C .0300

WATER SUPPLY WELLS UNDER 15A NCAC 02C .0107
All water supply wells not considered "Private Drinking Water Wells" and including irrigation, industrial, and commercial wells.

WELLS OTHER THAN WATER SUPPLY UNDER 15A NCAC 02C .0108
Including monitoring and recovery wells.

Print clearly or type information. Illegible submittals will be returned as incomplete.

DATE: October 29, 2020 PERMIT NO.: 2020-1350 (to be completed by DWQ/DPH)

A. WELL OWNER – For single family residences list the property owner(s). For all others, list name of the business, organization, or government agency and person delegated signature authority:

Ellis Ehle

Mailing Address: PO Box 48121

City: Cumberland State: NC Zip Code: 28331 County: _____

Day Tele No.: 910 850 7558 Cell No.: _____

EMAIL Address: eehlejr@nc.rr.com Fax No.: _____

B. PHYSICAL LOCATION OF WELL SITE

(1) Parcel Identification Number (PIN) of well site: 9493-99-6511

County: Cumberland

(2) Physical Address (if different than mailing address): 2673 Lakeview Dr

City: Fayetteville State: NC Zip Code: 28306

C. WELL DRILLER INFORMATION (if known)

Well Drilling Contractor's Name: Jonathan Kamionka

NC Well Drilling Contractor Certification No.: 3465-A

Company Name: Bill's Well Drilling Co Contact Person: _____

City: Fayetteville State: NC Zip Code: 28311 County: Cumberland

Day Tele No.: 910 489 3740 Cell No.: 910 850 8754

EMAIL Address: office@billswelldrilling.com Fax No.: _____

- D. **REASON FOR VARIANCE REQUEST** – Include type of well(s) to be constructed; rule for which the variance is being requested; description of how the alternate construction will not endanger human health and welfare and the environment; and reason why construction and/or operation in accordance with the standards is not technically feasible and/or provides equal or better protection of the groundwater.

New Rockwell will be less than 100'
from man hole

- E. **ATTACHMENTS** – Provide the following information as attachments to this application:

- (1) A map showing general location of the property (including road names, NC State Route Number, distances, any key landmarks, etc.) sufficient for finding the well location.
- (2) Detailed site map with scale showing location of proposed well relevant to septic system(s), building foundations, property lines, water bodies, potential sources of contamination, other wells, etc.
- (3) Submit a copy of the local well permit application and site evaluation map (if applicable).
- (4) Any other information relevant to the variance request such as a well construction diagram showing proposed well liner or atypical construction materials/methods.

F. **OTHER MINIMUM CONSTRUCTION REQUIREMENTS**

For water supply wells, approval of a variance will require that additional construction requirements beyond those specified in 15A NCAC 02C .0107 be met. Minimum additional construction requirements for Coastal Plain and Piedmont and Mountain region wells are referenced on Attachments A and B on pages 4 and 5 of this application. Approval of a variance will not be considered in cases where the specified minimum additional construction requirements cannot be met.

G. **SIGNATURES**



Signature of Person Responsible for Well Construction (typically the well driller)

Jonathan Kamionka

Print or Type Full Name of Person Responsible for Well Construction
(typically the well driller)



Signature of County Environmental Health Specialist

Celestine Rainier Smith

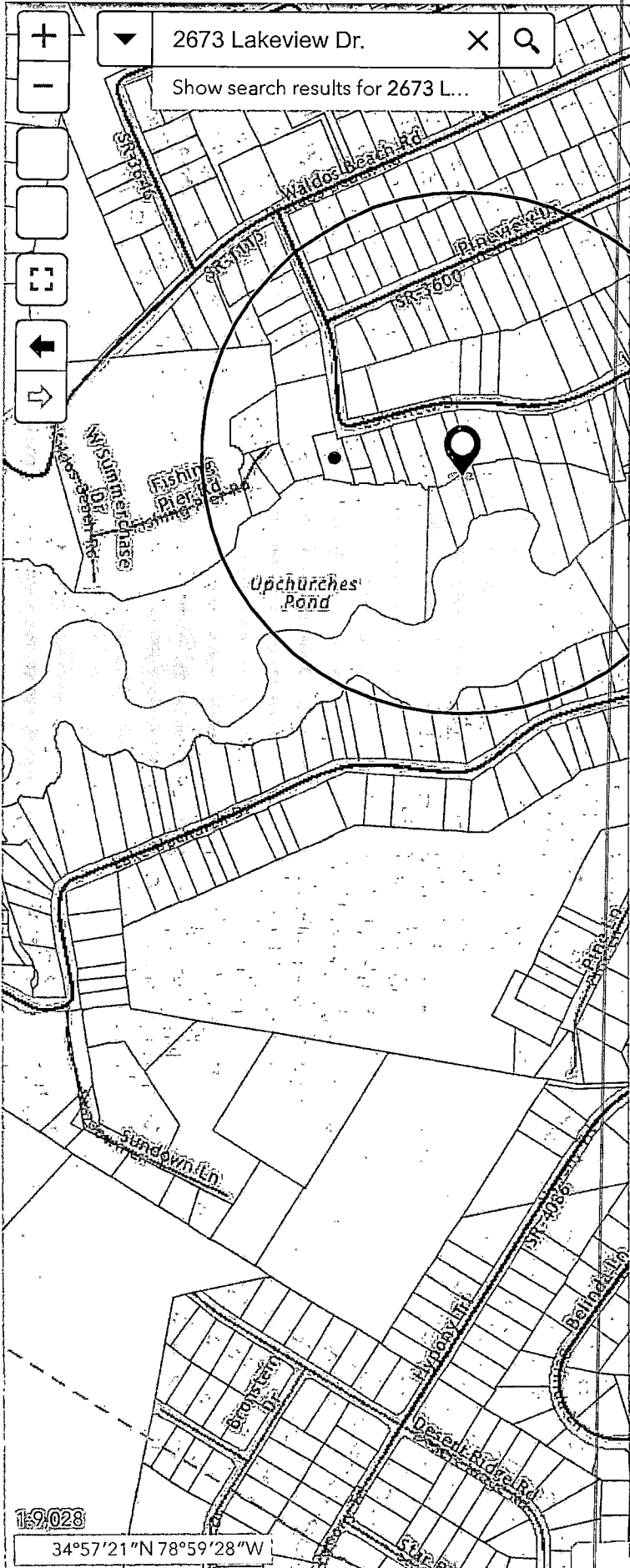
Print or Type Full Name of County Environmental Health Specialist

Per 15A NCAC 02C .0118 the Secretary of the Division of Water Quality or the Division of Public Health may require submittal of information deemed necessary to make a decision on the variance, may impose conditions as part of the decision, and shall respond in writing to the request within 30 days of receipt of the variance request. A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition as described in G.S. 150B-23 within 60 days after receipt of the decision.



Well Permit Decision Tool

How to U



Screening

Report

Back

Area : 3,134,508.61 ft²

Known Releases of Contamination

(0)

No results found



WPDT Report

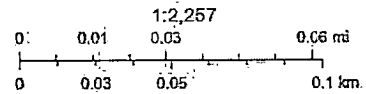
Area of Interest (AOI) Information

Area : 3,134,508.61 ft²

Oct 29 2020 7:57:05 Eastern Daylight Time



- | | |
|---------------------------------|--------------------------|
| Parcels (Polygons) - Parcels | Projected Route |
| Non-System Roads | Other State Agency Route |
| Federal Route | Secondary Route |
| Non-System | Primary Roads |
| Other System Roads | Interstate |
| Ramps, Rest Areas, Non-Mainline | US Route |



NC DOT GIS Unit. Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasystems, Rijswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Cumberland, State of North

2673 Lakeview Dr.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
October 29, 2020

Ellis Ehle
PO Box 48121
Fayetteville, NC 28331

RE: Approval No. WWM1110
Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
2673 Lakeview Dr., Fayetteville, NC 28306

To Whom it May Concern:

On October 29, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a water supply well to be located less than 100' from a non-water tight sanitary sewer line at 2673 Lakeview Dr., Fayetteville, NC.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) Grout will be required the **entire length** of the casing from land surface into gravel pack/confining layer.
- 2) The well shall be sampled for bacteria and inorganics.
- 3) No potential sources of groundwater contamination shall be stored near the well-head.
- 4) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK BENTON
DIRECTOR

Onsite Water Protection Branch
August 12, 2020

Roy Dean
6742 Waldos Beach Rd.
Fayetteville, NC 28306

RE: Approval No. WWM1064

Water Supply Well Less than 100' from a Manhole 15A NCAC 02C. 107(a)(2)(E)
6745 Waldos Beach Rd., Fayetteville, NC 28306

Dear Mr. Dean:

On August 12, 2020, the On-Site Water Protection Branch received your request for a variance to rule 15A NCAC 02C. 107(a)(2)(E) to allow the installation of a non-water tight sanitary sewer line less than 100' to the water supply well at the subject site.

Based upon information provided by the Cumberland County Environmental Health Department and the property owner, it is my finding that based on current conditions as the site exists today, you meet the conditions necessary for approval of a variance as specified by 15A NCAC 2C .0118 (a) (1) and (2). On that basis and provided that the following conditions are met, the requested variance is approved:

- 1) The well shall be sampled for bacteria and inorganic analysis.
- 2) The water sample results may indicate whether there are any pre-existing (prior to sewer line installation) water quality concerns that you may not be aware of and the Division of Public Health can provide guidance should you have questions concerning your well water quality.
- 3) The well shall meet current 2C. 0100 rules, including but not limited to being 12" above land surface, properly sealed, and adequately vented.

The approval of this variance does not affect any of the other requirements or limitations of the Well Construction Standards, including but not limited to the requirements in 15A NCAC 2C .0113(b) to repair or to abandon any well which acts as a source or channel for the migration of contamination or to your responsibility to comply with any other applicable Federal, State, or local laws or regulations. Furthermore, the granting of this approval is for the well location only, and in no way relieves the owner or agent from other requirements of the North Carolina Well Construction Standards, or any other applicable law, rule, or regulation that may be regulated by other agencies, nor does it imply sufficient water quality.

If you have any questions regarding this variance, please contact Wilson Mize at (919) -270-9665

Sincerely,

Wilson Mize R.E.H.S.

SCANNED

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2010	158	Date:	2/15/2010
PIN:	9493-69-1976		
Address	2511 Lakesview Dr. 2507	City	Fay Hopewell
Subdivision:	Waldo's Beach Estates	Zip	38348 28306
Applicant:	Lance, Scott Ray	Lat(s)	Section
Mailing Address:	238 North Fayetteville St.	Applicant Type	Owner
		City	Parkton
		Zip	28371-

Permit To Construct

Permit Issued By:

Date:

2/15/10

See Attached Site Plan

Driller: *Bills wells* Well Grout
 Grout Depth *20'* Date: *3/1/10*
 Type Of Well: *Drilled*

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL, INORGANIC AND NITRATE WATER SAMPLE.

****OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3668****

Well Grout Approved By:

Date:

3/1/10

FINAL WELL APPROVAL

Final Well Approved By:

Date:

NOTE: WELL LOG AND WATER SAMPLES ATTACHED

Other Information:

*well kit ✓
8/23/10
Back 9/15/10*

2507
25H Lakeview



RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environmental and Natural Resources - Division of Water Quality

SCANNED

CERTIFICATION 3092

1. WELL CONTRACTOR:

Bill's Well Drilling

WELL CONTRACTOR (Individual) NAME:

John Garcia

STREET ADDRESS 800 McArthur Rd

Fayetteville, NC 28311

(910) 488-3740

2. WELL INFORMATION:

WELL ID #

State Well Permit # 2010-158

Other Permit

WELL USE Residential

DATE DRILLED 9/1/2010

TIME COMPLETED 4:30 PM

3. WELL LOCATION:

City Hope Mills County Cumberland

2511 Lakeview Dr Hope Mills 28346 Lot

Street Name, Numbers, Community, Subdivision, Lot No, Zip Code

TOPOGRAPHIC / LAND SETTING

Flat

LATITUDE / LONGITUDE OF WELL LOCATION:

Latitude/Longitude Source: Topographic Map

(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

4. WELL OWNER:

OWNER'S NAME Scott Lence

STREET ADDRESS 238 North Fayetteville St

Parkton NC 28371

Area code- Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 31

b. DOES WELL REPLACE EXISTING WELL? No

c. WATER LEVEL Below top of casing: 7

d. TOP OF CASING IS 1 FT. Above Land Surface*

(Use "+" if Above Top of Casing)

* Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C.01.18.

e. YIELD (gpm): 15 METHOD OF TEST Boiler

f. DISINFECTION: Type MTH Amount 2

g. WATER ZONES (Depth)

From 21 To 27 From To

From To From To

From To From To

6. CASING:

From	To	Depth	Diameter	Thickness/Weight	Material
From	1 To	21 Ft.	4	sch 40	PVC plastic
From	27 To	31 Ft.	4	sch 40	PVC plastic
From	To	Ft.			

7. GROUT:

From	To	Depth	Material	Method
From	0 To	20 Ft.	Cement	Poured
From	To	Ft.		
From	To	Ft.		

8. SCREEN:

From	To	Depth	Diameter	Slot Size	Material
From	21 To	27 Ft.	4 in.	10 in	PVC slotted
From	To	Ft.	in.	in	
From	To	Ft.	in.	in	

9. SAND/GRAVEL PACK:

From	To	Depth	Size/ Material
From	20 To	36 Ft.	Gravel
From	To	Ft.	
From	To	Ft.	

10. DRILLING LOG

From To Formation description

0	2	Orange & brown Sandy Clay
2	6	Black & Gray Clay
6	13	White Sand
13	14	Gray Clay
14	26	Tan Wood Sand
26	29	Gray Clay
29	35	Gray Sandy Clay

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

John Garcia
SIGNATURE
John Garcia

7/9/2010
DATE

Submit the original to the Division of Water Quality within 30 days

Attn: Information Mgt.; 1617 Mail Service Center -- Raleigh, NC 27699-1617 Phone No. (919) 733-7015 ext 568.

Cumberland County Department of Public Health

130 Gillespie Street
Fayetteville NC 28301-5417
(910) 433-3668

Improvement Permit

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Date: **7/11/2014**

REPAIR PERMIT SEPTIC

Permit #: **2014 - 950**

Private well to be installed prior to wastewater system installation.

Pin Number: 9493-69-2951

Date purchased: 7/10/2014

Expiration date: 7/10/2019

Applicant Name: **AAA Backhoe & Septic**

Zoning Permit Number 0

Site Address: 2507 Lakeview Dr Lot:
Fayetteville NC 28306-
Stoney Point

Directions:

Type of Establishment: Residential Design Flow 480 gpd Site Classification: Provisionally Suits

Repairs: 2 LINES @ 110' CONVENTIONAL, 12" MAX

WASTEWATER SYSTEM: The attached plot plan cannot be changed

Tank Capacity: 1000 gallons Pump tank reserve capacity: 1000 gallons

NITRIFICATION FIELD: Type: Other No Bedrooms: 3

No. Lines: Length of Each Line: Width of Each Line: Maximum Trench Bottom Depth:

Conditions: MOVE SITS & P/T TO COMPLY WITH SETBACKS DUE TO GARAGE ADDITION

Plat Provided - When a PLAT is provided, the Improvement Permit is valid without expiration

Site Plan Provided - When a SITE PLAN is provided, the Improvement Permit is valid for five (5) years

Improvement Permit Expiration Date: _____

Improvement Permit Approved By: CELESTINE RAINERI *CR*

Date: 7/10/2014

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

ATC Expiration Date: _____

ATC Approved By: CELESTINE RAINERI *CR*

Date: 7/11/2014

OPERATIONS PERMIT

Contractor _____ Pump Information: _____

This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section .1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions

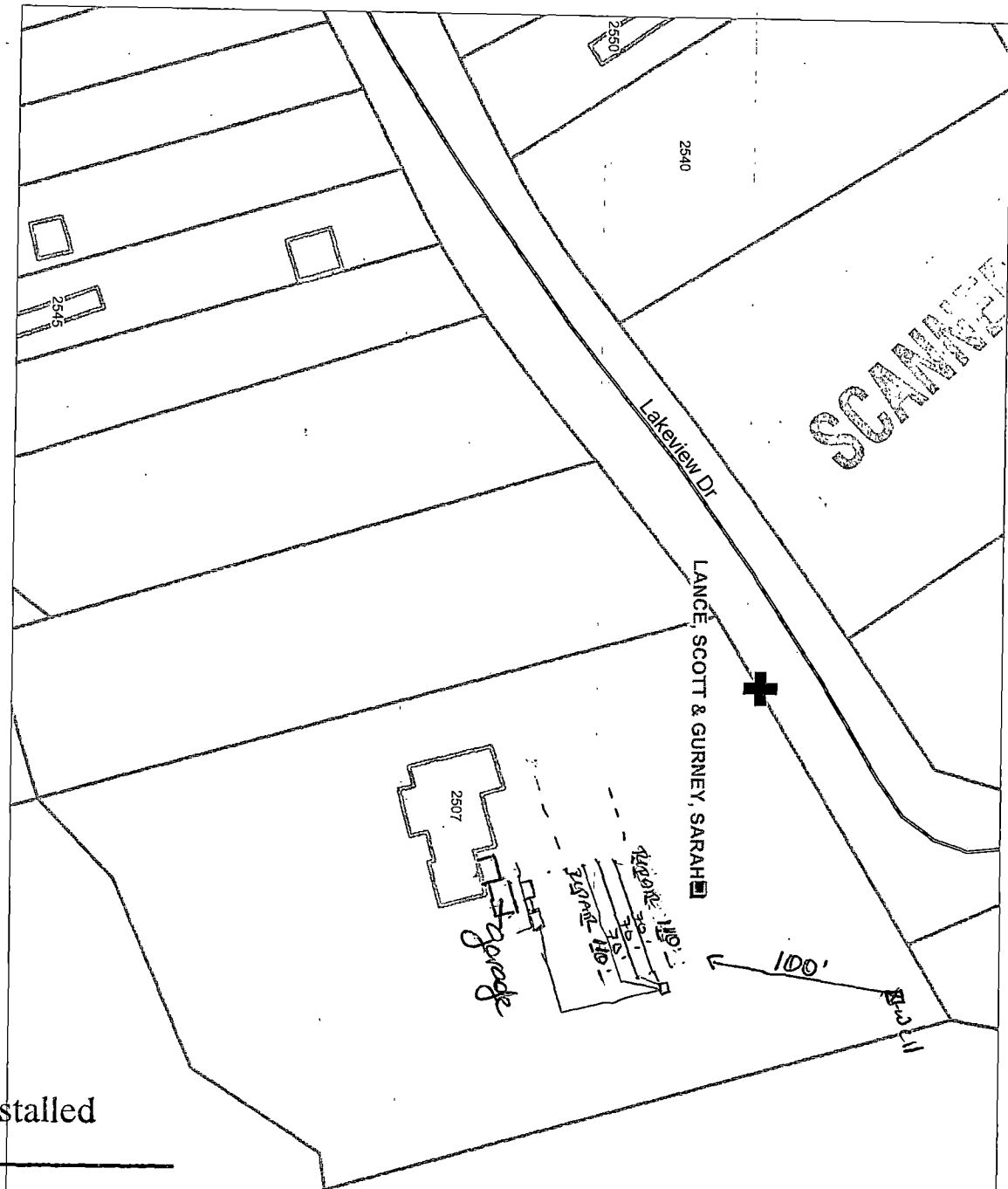
Operations Permit Approved By: _____

Date: _____

Inspection of sewer line between house and septic tank connection thereto is the responsibility of Cumberland County Inspection Dept. (910) 321-6636

System Type _____ Manufacturer _____ Model _____

Tank Information _____



SCANNED

As Installed

Date: _____

Sanitarian: _____

Conventional Innovative

- Septic Tank — Pump Tank
- Drain lines — Length — Width
- Trench depth max.

Comments People 3 move septic tank
3 pump tank to comply w/ new
setbacks due to garage addition.

CALL NO CUTS
 Before you dig
 1-800-632-4949

100 scale

Cumberland County Department of Public Health
227 Fountainhead Lane
Fayetteville NC 28301-5417
(910) 433-3660

SCANNED

Improvement Permit

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Date: **8/31/2009**

NEW SYSTEM/SOIL EVAL

Permit #: **2009 - 1194**

Private well to be installed prior to wastewater system installation.

Pin Number: 9493-69-1976

Date purchased: 8/12/2009

Expiration date: 8/12/2014

Applicant Name: **Lance, Scott**

Zoning Permit Number 0

Site Address: ²⁵⁰⁹
~~2571~~ Lakeview Dr. Lot:
~~Hope Mills~~ NC ~~28342~~ 28306

Subdivision: **Fay**

Township:

Directions:

Type of Establishment: Residential Design Flow: 480 gpd Site Classification: Provisionally Suitab

Repairs: Pump to conventional sys.- 3 - 3' x 70' (6" of fill cover required).

WASTEWATER SYSTEM: The attached plot plan cannot be changed.

Tank Capacity: 1000 gallons Pump tank reserve capacity: 1000 gallons

NITRIFICATION FIELD: Type: ^{Other} ~~Conventional~~ Other: Rock or Tire chips No. Bedrooms: 4
No. Lines: 3 Length of Each Line: 70' Width of Each Line: 3' Maximum Trench Bottom Depth: 12max

Conditions: Comply with attached conditions. Well permit required. Tree removal required. Septic tank contractor must meet with inspector on-site before installation.

- Plat Provided - When a PLAT is provided, the Improvement Permit is valid without expiration.
- Site Plan Provided - When a SITE PLAN is provided, the Improvement Permit is valid for five (5) years.

Improvement Permit Expiration Date: 8/28/2014

Improvement Permit Approved By: Ajmal Hashaam AAH

Date: 8/28/2009

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

ATC Expiration Date: 8/31/2014

ATC Approved By: Ajmal Hashaam AAH

Date: 8/31/2009

OPERATIONS PERMIT

Contractor: Cecma Septic Pump Information: _____

This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section 1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

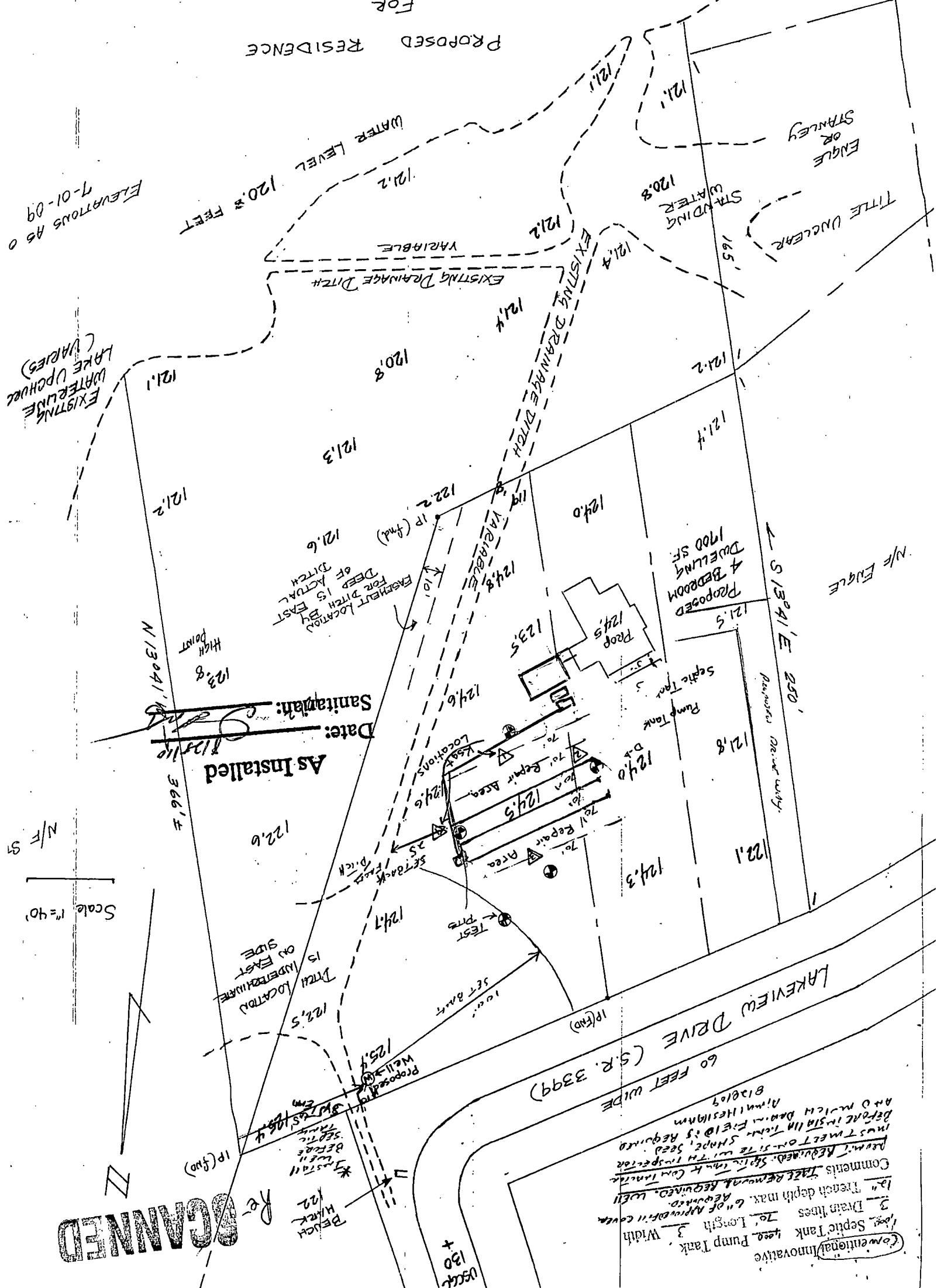
Operations Permit Approved By: [Signature]

Date: 8/25/10

Inspection of sewer line between houses and septic tank connection thereto is the responsibility of Cumberland County Inspection Dept. (910) 321-5636

Trenches
Septic Tank ok
Drain Lines ok
8/10/10
20

Comments: Innovative
 1. Septic Tank 400 Pump Tank
 2. Drain lines 70' Length 3" Width
 3. Trench depth max. 6" of approved cover
 4. Trench depth max. 6" of approved cover
 Comments: TAKE REQUIRED. See with Inspector
 MUST MEET ON-SITE WITH INSPECTOR
 BEFORE INSTALLATION. FIELD IS REQUIRED
 AND MUST BE IN TIGHT SHAPE, SEED
 AND MULCH DAMM FIELD IS REQUIRED
 8120109



ELEVATIONS AS OF
 7-01-09

EXISTING
 LAKE UPRIVER
 WATER (VARIES)

N/E S

Scale 1"=40'

As Installed
 Date: _____
 Sanitarian: _____

SCANNED

Cumberland County Department of Public Health
130 Gillespie Street
Fayetteville NC 28301-5417
(910) 433-3668

SCANNED

Improvement Permit

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Date: 2/20/2012

OCCUPANCY/CHANGE OF USE

Permit #: 2007 - 104

Private well to be installed prior to wastewater system installation.

Pin Number: 9493-59-5529

Date purchased: 1/23/2007

Expiration date: 1/23/2012

Zoning Permit Number 0

Applicant Name: **BRYANT, ELLIF M.**

Site Address: 2583 Lakeview Blvd
~~6500 WALTON'S BEACH RD~~ Lot:
Fayetteville NC 28306

Subdivision:

Township:

Directions:

Type of Establishment: Residential

Design Flow: 0 gpd

Site Classification:

Repairs:

WASTEWATER SYSTEM: The attached plot plan cannot be changed.

Tank Capacity: gallons

Pump tank reserve capacity: gallons

NITRIFICATION FIELD: Type: Conventional Other:

No. Bedrooms: 3

No. Lines: Length of Each Line:

Width of Each Line:

Maximum Trench Bottom Depth:

Conditions: TANK, LYBOX, DRAINLINE - APPROVED FOR OCCUPANCY

Plat Provided - When a PLAT is provided, the Improvement Permit is valid without expiration.

Site Plan Provided - When a SITE PLAN is provided, the Improvement Permit is valid for five (5) years.

Improvement Permit Expiration Date: 2/16/2017

Improvement Permit Approved By: AJMAL HESHAAM

Date: 2/16/2012

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

ATC Expiration Date: 2/20/2012

ATC Approved By: AJMAL HESHAAM

Date: 2/20/2012

OPERATIONS PERMIT

Contractor: _____ Pump Information: _____

This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section 1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

Operations Permit Approved By: AJMAL HESHAAM *AAB*

Date: 2/20/2012

Inspection of sewer line between house and septic tank connection thereto is the responsibility of Cumberland County Inspection Dept. (910) 321-6636

SCANNED

2870

CUMBERLAND COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH
Phone (910) 433-3660

Permit No. 23649

IMPROVEMENT PERMIT

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Private well to be installed prior to wastewater system installation.

Property/Site Information:

PIN #: 00000 Township: LAKE UPCHURCH Zoning Permit: Z0000
Site Address: ~~2505 LAKEVIEW DRIVE~~ RD.

Subdivision: LAKE UPCHURCH Lot #: SR:
Applicant: CASTLE, BOBBY ACCOUNT #: CAS6373
House [] Manufactured Home [X] Other (Specify)

Area #: 12
Design Daily Flow: 0
Site Classification:
Waste Water System: The attached plot plan cannot be changed.
Septic Tank 0 gallons Pump Tank 0 gallons
Nitrification Field:
Type: Conventional [X] Alternative: Specify:
No. of Bedrooms: 3
No. of Lines: 0 Length of Each Line: .00 Width of Each Line: 0
Maximum Trench Bottom Depth:
Conditions: OKAY FOR BUILDING AS PLANNED.

Repair: type & amount

SITE PLAN: PLAT: RLS:
When a plat is provided the Improvement Permit is valid without expiration.
When a site plan is provided the Improvement Permit is valid for five (5) years.

IMPROVEMENT PERMIT EXPIRATION DATE: 04/10/2005

IMPROVEMENT PERMIT BY: KAUFMAN, MARK DATE: 04/12/2000

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction, or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

EXPIRATION DATE:
APPROVED BY: *Mark A. Kaufman* DATE: 4-13-00

OPERATIONS PERMIT

CONTRACTOR:

Pump Information:

This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAE, Subchapter 10A, Section. 1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment, and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

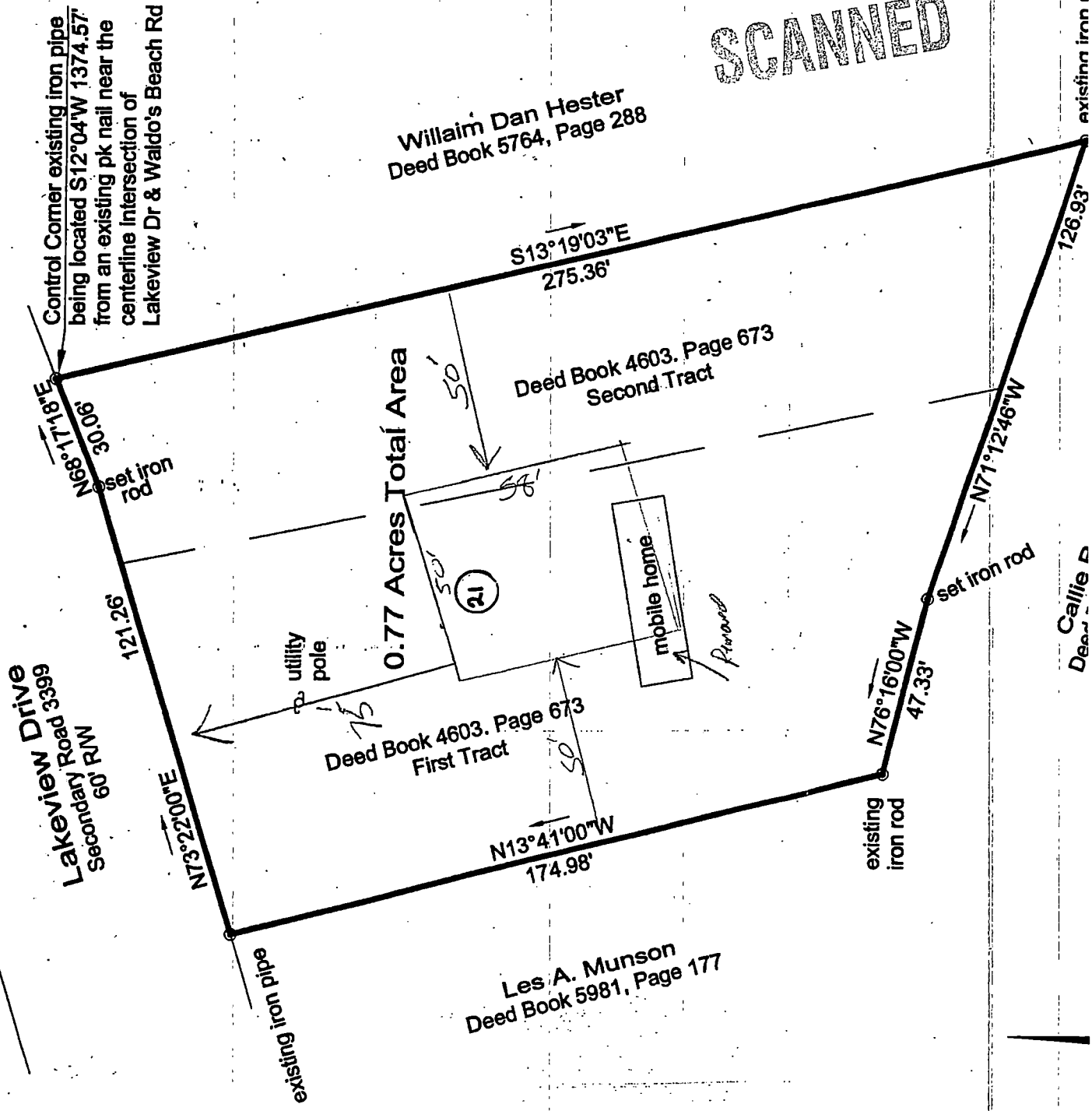
APPROVED BY: *Mark A. Kaufman* DATE: 4-13-00

Inspection of sewer line between house and septic tank connection thereto is the responsibility of Cumberland County Inspection Department - Telephone (910) 483-0113.

11-30

2-15-12

SCANNED



STATE OF CALIFORNIA COUNTY OF SAN DIEGO

FILED THIS IN MAP

REGISTERED CLUMBER

Cur

existing iron rod
Callie D Deed

WALDOS ROAD

CPC CONSTRUCTION

2583 LAKEVIEW DR
FAYETTEVILLE NC
28306

LAKEVIEW DR



LAKE UPCHURCH

I AUTHORIZE BOBBY CASTLE OWNER OF
 CPC CONSTRUCTION CO TO BUILD 20X20
 STORAGE BUILDING ON MY PROPERTY AT 2583
 LAKEVIEW DR FAYETTEVILLE NC 28306. NO ELECTRICAL
 OR PLUMBING IS REQUIRED

Signature before me
 04/05/00

Bill H. [unclear] Expires
 04/18/01

Signature

CUMBERLAND COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH
Phone (910) 433-3660

1324

Permit No. 22630

IMPROVEMENT PERMIT

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Private well to be installed prior to wastewater system installation.

Property/Site Information:

PIN #: 9493-59-3553 Township: HOPE MILLS Zoning Permit: Z0000
Site Address: 2595 LAKEWIVEW DR

Subdivision: WALDOS BEACH EST Lot #: 17-1 SR:
Applicant: MUNSON, LES ACCOUNT #: MUN5614

House [X] Manufactured Home [] Other (Specify)

Area #: 12

Design Daily Flow: 0

Site Classification:

Waste Water System: The attached plot plan cannot be changed.

Septic Tank 0 gallons Pump Tank 0 gallons

Nitrification Field:

Type: Conventional [X] Alternative: Specify:

No. of Bedrooms: 3

No. of Lines: 0 Length of Each Line: .00 Width of Each Line: 0

Maximum Trench Bottom Depth:

Conditions: OK FOR REUSE OF SEPTIC TANK FOR A 3 BEDROOM HOUSE.

Repair: type & amount

SITE PLAN: PLAT: RLS: N

When a plat is provided the Improvement Permit is valid without expiration.

When a site plan is provided the Improvement Permit is valid for five (5) years.

IMPROVEMENT PERMIT EXPIRATION DATE: 08/05/2004

IMPROVEMENT PERMIT BY: DANIEL ORTIZ, R.S.

DATE: 08/09/1999

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction, or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

EXPIRATION DATE:
APPROVED BY:

Daniel Ortiz, R.S.

DATE: 8/9/99

OPERATIONS PERMIT

CONTRACTOR:

Pump Information:

This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section. 1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment, and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

APPROVED BY:

DATE:

Inspection of sewer line between house and septic tank connection thereto is the responsibility of Cumberland County Inspection Department - Telephone (910)483-0113.

Duplicate
DJS

CUMBERLAND COUNTY HEALTH DEPARTMENT
APPLICATION FOR PERMIT TO CONSTRUCT A WATER SUPPLY WELL

PIN: 9493-59-3553

DATE: 17-Feb-04

ADDRESS: 2595 LAKEVIEW DRIVE CITY HOPE MILLS, NC ZIP 28348

SUBDIVISION: _____ LOT(S): _____ SEC: _____

APPLICANT: CAPE FEAR WELL Owner Builder Representative

MAILING ADDRESS: 2702 THROWER ROAD CITY HOPE MILLS, NC ZIP 28348

PERMIT TO CONSTRUCT

PERMIT ISSUED BY: 

DATE: 2/18/04

WELL GROUT


DRILLER: Ccm Fer

DATE: 2/19/04

GROUT DEPTH: 20 TYPE OF WELL: D Driller

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL WATER SAMPLE. AN ACCEPTABLE BACTERIA ANALYSIS MUST BE RECEIVED BEFORE FINAL APPROVAL OF THIS WATER SUPPLY.

**** OWNER OR WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3660 ****

WELL GROUT APPROVED BY: 

DATE: 2/19/04

FINAL WELL APPROVAL

APPROVED BY: Ronald K Hill

DATE: 17 MAR 04

**NOTE:
WELL LOG AND BACTERIOLOGICAL SAMPLE ATTACHED**

DJS

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME James A. Bill CERTIFICATION # 2122

WELL CONTRACTOR COMPANY NAME Cape Fear Well & Pump PHONE # (910) 923-3411

STATE WELL CONSTRUCTION PERMIT# _____ ASSOCIATED WQ PERMIT# _____
(if applicable) (if applicable)

1. WELL USE (Check Applicable Box): Residential Municipal/Public Industrial Agricultural
Monitoring Recovery Heat Pump Water Injection Other If Other, List Use _____

2. WELL LOCATION:
Nearest Town: Hope Mills County Camden
(Street Name, Number, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
 Ridge Slope Valley Flat
(check appropriate box)
Latitude/longitude of well location _____

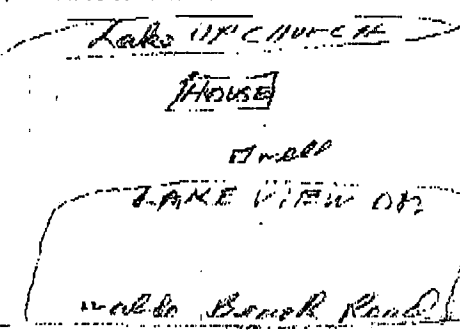
3. OWNER: Lee Wilson
Address 2595 Lake View Dr.
(Street or Route No.)
City or Town _____ State _____ Zip Code _____

(degrees/minutes/seconds)
Latitude/longitude source: GPS Topographic map
(check box)

DEPTH	DRILLING LOG
From To	Formation Description
0' - 1'	TOP SOIL
1' - 3'	yellow S
3' - 11'	Brown S
11' - 13'	Green S
13' - 49'	gray S & C
49' - 190'	gray foam & brown S & C
190' - 212'	Green S with C mudstone
212' - 230'	Green S with C

4. DATE DRILLED 2-17-04
5. TOTAL DEPTH: 230
6. DOES WELL REPLACE EXISTING WELL? YES NO
7. STATIC WATER LEVEL Below Top of Casing: 190 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS 1 FT. Above Land Surface*
*Top of casing terminated at or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): 8 METHOD OF TEST Large
10. WATER ZONES (depth): 190 - 212

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.



11. DISINFECTION: Type II-F II Amount 100 PPM

12. CASING:

Depth	Diameter	Weight/FT	Material
From 0 To 192 Ft.	4"	40	PVC
From 212 To 220 Ft.	4"	40	PVC

13. GROUT:

Depth	Material	Method
From 0 To 20' Ft.	Concrete	Poured

14. SCREEN:

Depth	Diameter	Slot Size	Material
From 192 To 212 Ft.	4" in.	18 in.	PVC

15. SAND/GRAVEL PACK:

Depth	Size	Material
From 187 To 220 Ft.	28M	Red Gravel

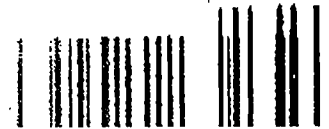
16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

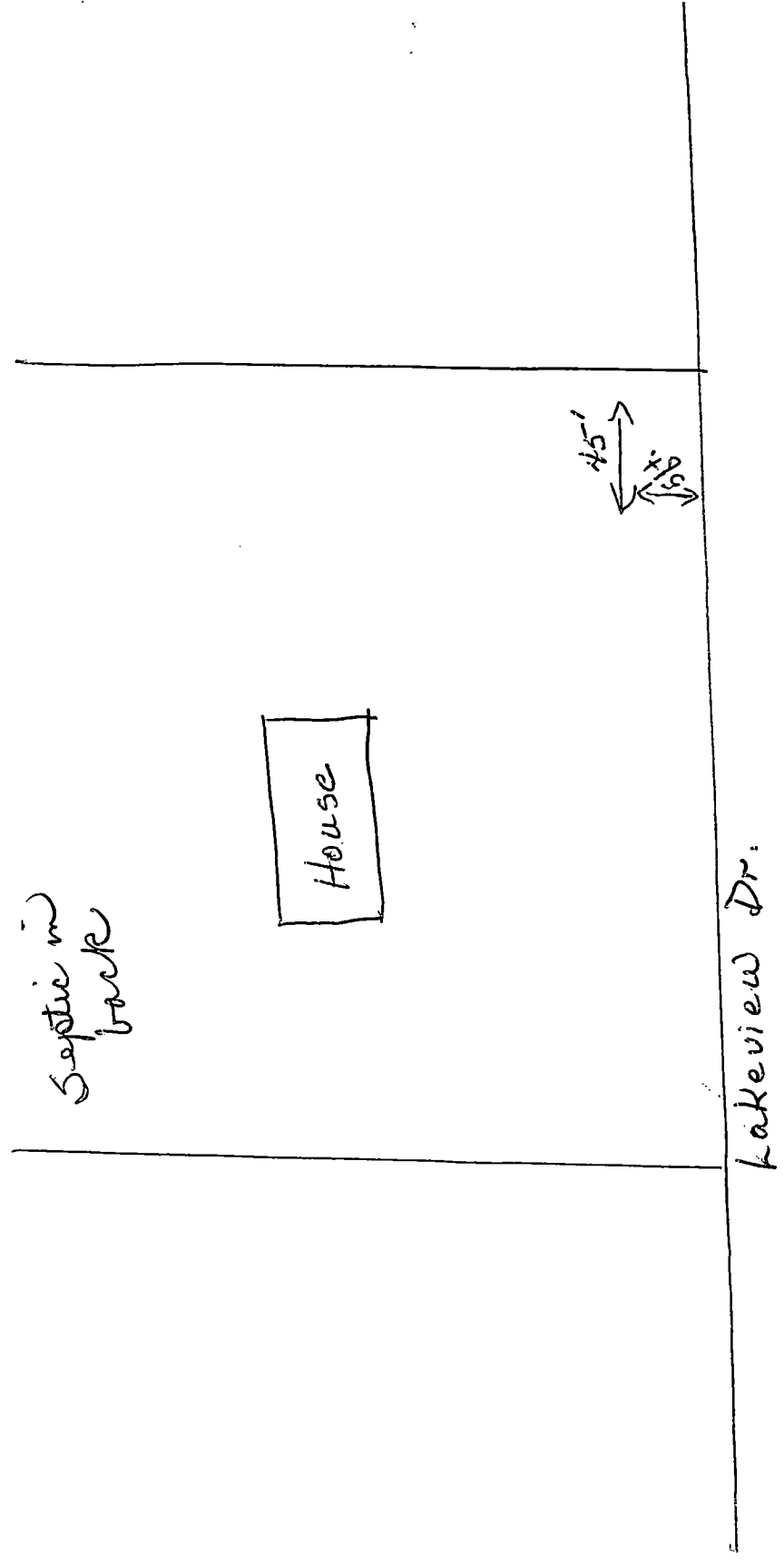
SIGNATURE OF PERSON CONSTRUCTING THE WELL

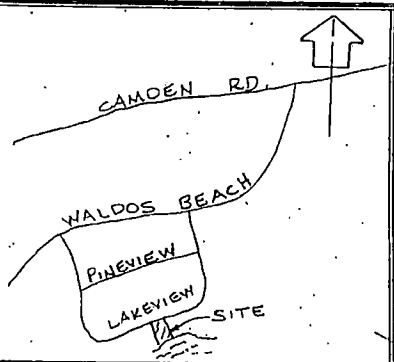
2/17/04
DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC



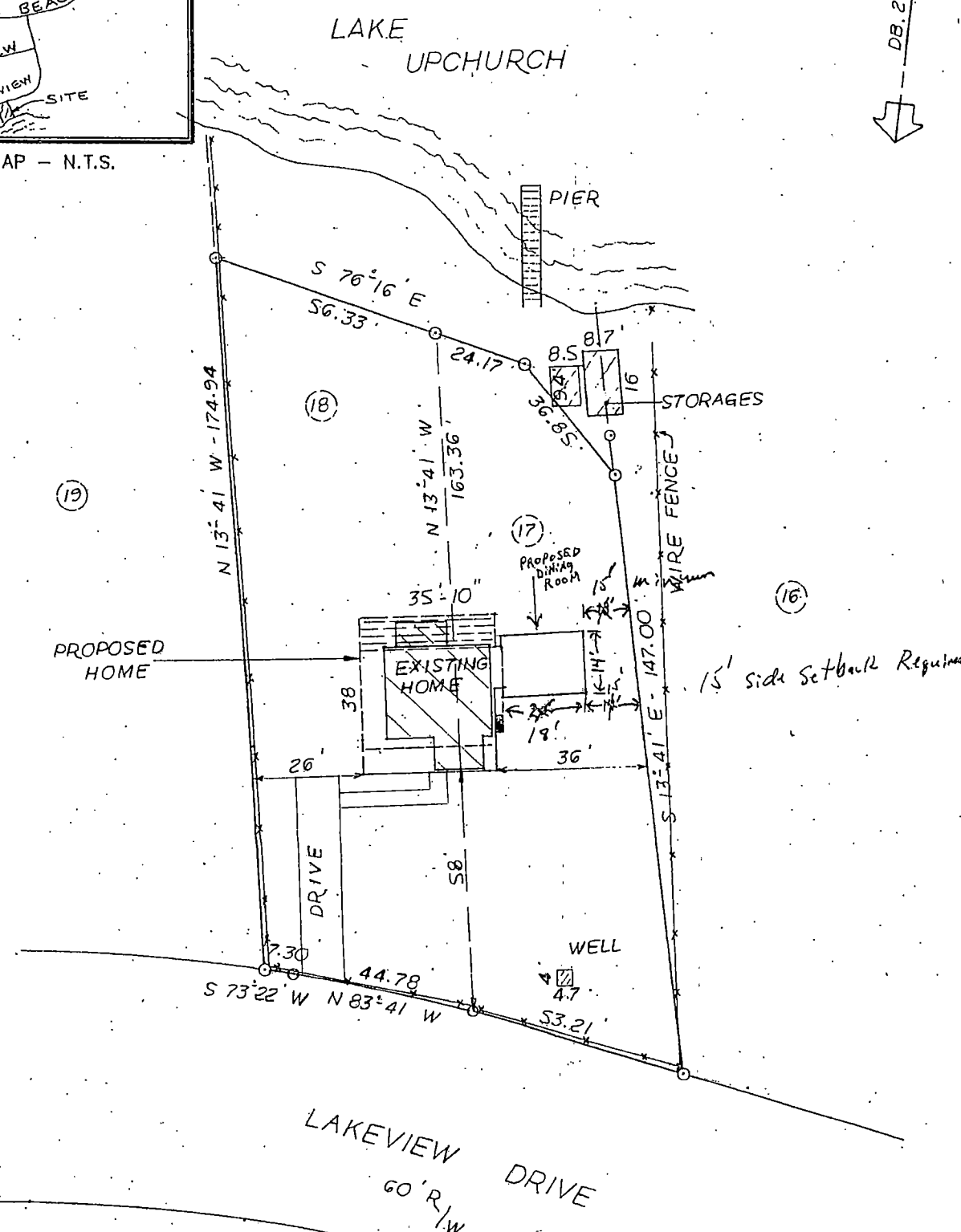
Lee Munson
2595 Lakeview Dr.
Fayetteville, N.C. 28306





NOTE:
 This property is located in Zone "A3",
 (100-yr) Flood Hazard Area, per Flood
 Insurance Rate Map, Community Panel
 Number 370076 0185 B, Panel 185 of 295.

DB. 2634 PG. 317
 1977



PLOT PLAN

OWNERS: LES MUNSON

SUBDIVISION: WALDO BEACH ESTATES SECTION D

PLAT BOOK UNRECORDED PAGE

DEED BOOK 2634 PAGE 317

LOT 17 & 18

PN 9493:07-59-3553

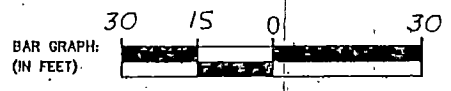
DATE SURVEYED 8-4-99

FAYETTEVILLE CUMBERLAND COUNTY NORTH CAROLINA

HOUSE NUMBER 2595

TOWNSHIP Rockfish

SCALE: 1" = 30'



NOTE:
 This is a Drawing Only, copied from a Plat or Deed, not an actual

DOS

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2007	1794	Date:	10/10/2007
PIN:	9493-59-3610		
Address	2603 Lakeview Drive	City	Fayetteville
		Zip	28306-
Subdivision:		Lot(s)	
		Section	
Applicant:	Cape Fear Well & Pump Co.	Applicant Type	Contractor / Builder
Mailing Address:	2702 Thrower Road	City	Hope Mills
		Zip	28348-

Permit To Construct

Permit Issued By

[Signature] Date: 10/15/07

See Attached Site Plan

50' min From Septic + 25' from Building Foundation

Well Grout

Driller: Cape Fear

Date: 11/20/07

Grout Depth: 0 FT 20

Type Of Well: Drilled

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL WATER SAMPLE. AN ACCEPTABLE BACTERIA ANALYSIS MUST BE RECEIVED BEFORE FINAL APPROVAL OF THIS WATER SUPPLY.

****OWNER OF WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3660****

Well Grout Approved By:

[Signature] Date: 11/20/07

FINAL WELL APPROVAL

Final Well Approved By:

Date:

NOTE: WELL LOG AND BACTERIOLOGICAL SAMPLE ATTACHED

Other Information:

DD

Cumberland County Department of Public Health

Permit to Construct a Water Supply Well

2007	1105	Date:	6/12/2007
PIN:	9493-59-1589		
Address	2619 LAKEVIEW DR.	City	Fayetteville
		Zip	28306-
Subdivision:		Lot(s)	
		Section	
Applicant:	ELLIS E. EHLE JR.	Applicant Type	Owner
Mailing Address:	2619 LAKEVIEW DR.	City	Fayetteville
		Zip	28306-

Permit To Construct

Permit Issued By *Fred Th* Date: *6/14/07*
 See Attached Site Plan

Well Grout
 Driller: *Cape Fear well* Date: *7/19/07*
 Grout Depth *0 Ft 20* Type Of Well: *Drilled*

NOTE TO OWNER: INCLUDES ONE (1) BACTERIOLOGICAL WATER SAMPLE. AN ACCEPTABLE BACTERIA ANALYSIS MUST BE RECEIVED BEFORE FINAL APPROVAL OF THIS WATER SUPPLY.

****OWNER OF WELL DRILLER MUST CALL FOR WATER SAMPLE 433-3660****

Well Grout Approved By: *[Signature]* Date: *7/19/07*

FINAL WELL APPROVAL

Final Well Approved By: _____ Date: _____

NOTE: WELL LOG AND BACTERIOLOGICAL SAMPLE ATTACHED

Other Information:
Brwt. H₂O sample collected 7/19/07. -MAH

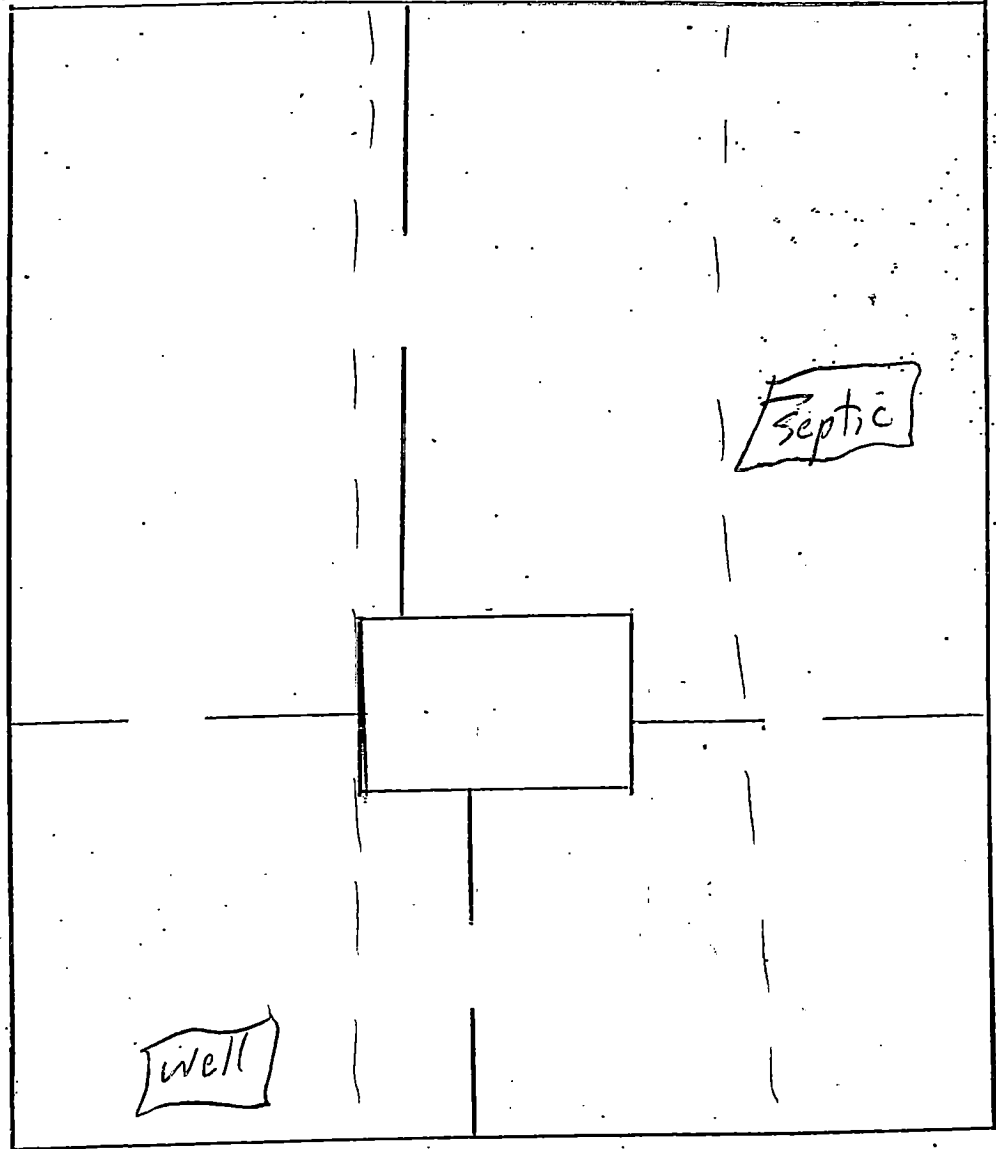
Scale 1"=40'

lot # _____

Sq Ft-house _____

Address _____

Septic



well

well

Cumberland County Public Health Department
227 Fountainhead Lane
Fayetteville NC 28301-
(910) 433-3660

P

DS

Improvement Permit

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Date: **1/20/2004**

INSPECT-EXISTING SYSTEM

Permit #: **2004 - 45**

Private well to be installed prior to wastewater system installation.

Pin Number: 9493-49-9524

Date purchased: 1/12/2004

Expiration date: 1/12/2009

Applicant Name: **ROSINA RAUER NEWTON**

Zoning Permit Number 0

Site Address: 2643 LAKEVIEW DRIVE Lot:
Fayetteville NC 28306-

Subdivision:

Township:

Directions:

Type of Establishment: Residential

Design Flow: 480 gpd

Site Classification: Provisionally Suite

Repairs:

WASTEWATER SYSTEM: The attached plot plan cannot be changed.

Tank Capacity: 0 gallons

Pump tank reserve capacity: 0 gallons

NITRIFICATION FIELD: Type: Conventional

Other:

No. Bedrooms: 4

No. Lines: 1 Length of Each Line: 100

Width of Each Line: 6

Maximum Trench Bottom Depth: 18-24

Conditions: EXISTING SEPTIC TANK OK

Plat Provided - When a PLAT is provided, the Improvement Permit is valid without expiration.

Site Plan Provided - When a SITE PLAN is provided, the Improvement Permit is valid for five (5) years.

Improvement Permit Expiration Date: _____

Improvement Permit Approved By: DANIEL ORTIZ

Date: 1/16/2004

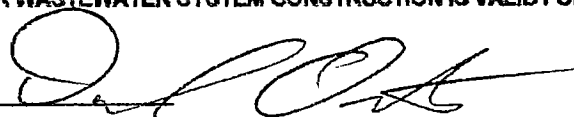
AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

ATC Expiration Date: _____

ATC Approved By: DANIEL ORTIZ



Date: 1/16/2004

OPERATIONS PERMIT

Contractor: CJC

Pump Information: _____

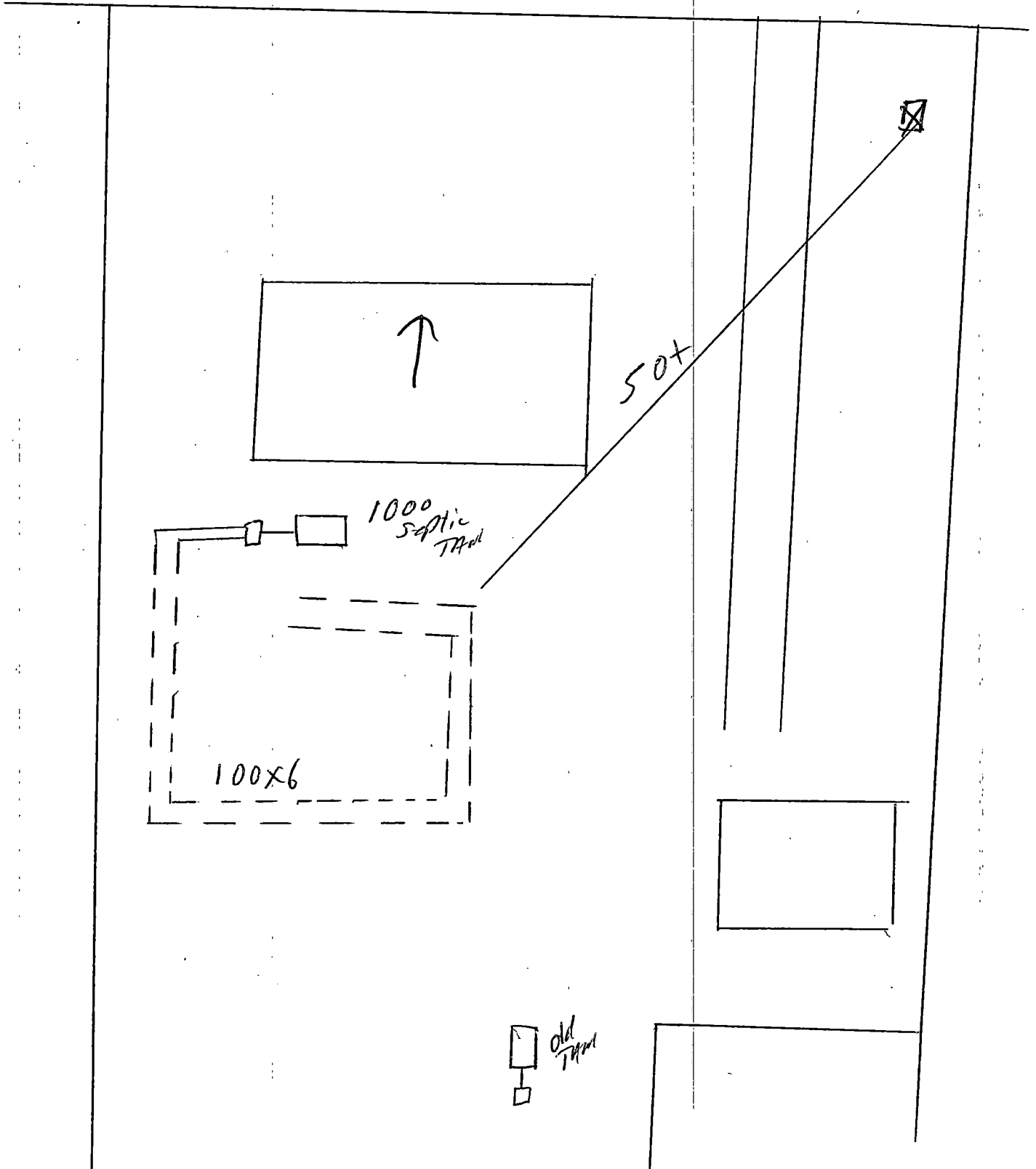
This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section .1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

Operations Permit Approved By: 

Date: 1/22/04

Inspection of sewer line between house and septic tank connection thereto is the responsibility of Cumberland County Inspection Dept. (910) 321-6636

Conventional
1000g Septic Tank
1 Line at 100x6
D-Box
T + Filter



Cumberland County Department of Public Health
130 Gillespie Street
Fayetteville NC 28301-5417
(910) 433-3668

SC-ANNEXED

Improvement Permit

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Date: 10/2/2014

SEP SYS EXPAN W/POOL ROOM

Permit #: 2014 - 1234

Private well to be installed prior to wastewater system installation.

Pin Number 9403-49-7583

Date purchased 10/1/2014

Expiration date 10/1/2019

Applicant Name Bryant, Bryan

Zoning Permit Number 0

Site Address 2659 Lakewood Cir Lot 4 5
Fayetteville NC 28306

Directions

Type of Establishment Residential Design Flow 480 gpd Site Classification Provisionally Suits
Repairs

WASTEWATER SYSTEM The attached plat plan cannot be changed

Tank Capacity gallons Pump tank reserve capacity gallons

NITRIFICATION FIELD Type Innovative Other 25% Reduction No Bedrooms 4

No Lines 1 Length of Each Line 100' Width of Each Line 3' Maximum Trench Bottom Depth 18'

Conditions Install at least 100' of drain line Comply with attached conditions

- Plat Provided - When a PLAT is provided, the improvement Permit is valid without expiration.
- Site Plan Provided - When a SITE PLAN is provided, the improvement Permit is valid for five (5) years

improvement Permit Expiration Date 10/2/2019

improvement Permit Approved By Ajmal Hesnaam AAH

GRADE
TRENCH
BOTTOM
NEW BOX
Date: 10/2/2014

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

EXISTING DRAIN
LINES TO
CONNECTED

ATC Expiration Date 10/2/2019

ATC Approved By Ajmal Hesnaam AAH

Date 10/2/2014

OPERATIONS PERMIT

Contractor D.C. CARTER Pump Information

The septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section .1903 and "Regulations Governing Sanitary Sewage, Collection, Treatment and Disposal in Cumberland County, NC", however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

Operations Permit Approved By Ajmal Hesnaam

Date 10/8/14

Inspection of sewer line between house and septic tank connection therein is the responsibility of Cumberland County Inspection Dept. (910) 321-6636

System Type 30 Manufacturer INFILTRATOR Model E-2 FLOW

Tank Information EXISTING

Poly Loh EFFILTRATOR INSTALLED

C1301
CD43
5

77 74
7 10

CUMBERLAND COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
227 Fountainhead Lane
Fayetteville, NC 28301
Phone (919) 433-3660

SCANNED

(SEPTIC TANK) IMPROVEMENTS PERMIT AND CERTIFICATE OF COMPLETION

PERMIT VALID FOR 60 MONTHS FROM DATE OF ISSUANCE. DATE: 06/24/93

OWNER/OCCUPANT KING, W. R. PERMIT NO. 8824
ADDRESS RT. 12, BOX 624 INSP.START DT: 06/30/93
FAYETTEVILLE NC 28306 INSP.COMP. DT: 12/01/93
ACCOUNT NUMBER: 1182

REMARKS

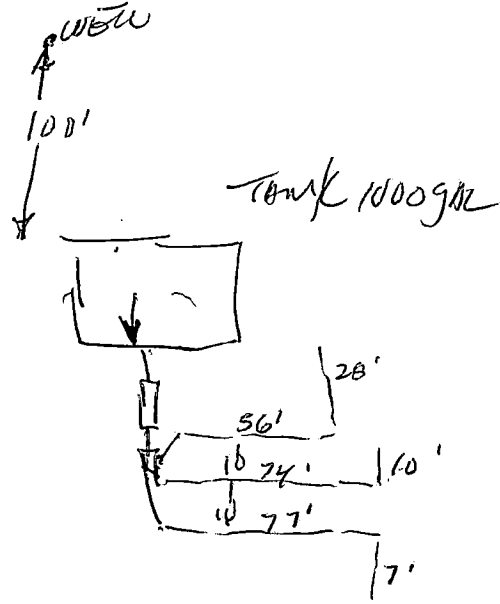
LOCATION LOT 7, SAVANNAH DRIVE

S.R.NO.
SUBDIVISION NAME KINGS LAKE

PIN NO. 9484-67-2351

HOUSE [X] MOBILE HOME [] BUSINESS [] OTHER []
NO.BEDROOMS/FLOW 3
Soil Group LOAM
Seasonal Water Table PROVISIONALLY SUITABLE
Site Classification PROVISIONALLY SUITABLE
NEW/EXISTING PLOT PLAN
Size of Septic Tank 1000 Gal.
Nitrification Lines 750.00 sq.ft.
No. of Lines 3X84X3'
Water Supply: Installed Yes Approved Yes
No X No
Repair Lines/Length

THIS PERMIT IN NO WAY
GUARANTEES THE
PERFORMANCE OR
FUNCTIONING OF THIS
SEWAGE DISPOSAL SYSTEM.



WELL MUST BE INSTALLED BEFORE SEWAGE SYSTEM.
ALL PARTS OF SEWAGE SYSTEM MUST BE AT LEAST 100'
FROM ANY WELL.

ENV.HLTH.SPECIALIST: DANNY SOLES, R.S.

THE LAYOUT, PROPOSED BY THE OWNER TO REPAIR OR TO
PROVIDE THE SEPTIC TANK SYSTEM, APPEARS TO CONFORM
TO THE PROVISIONS OF THE CUMBERLAND COUNTY BOARD OF
HEALTH SEWAGE REGULATIONS.

INSTALLED BY: Frankie Jones

CERTIFICATE OF COMPLETION BY Helbert Oler DATE 12-01-93

Pursuant to Article 11 of Chapter 130A of the General Statutes of North Carolina, "Sanitary Sewage Systems", and Sanitary Collection, Treatment, and Disposal Systems Rules 10 NCAC 10A Section. 1900 and Cumberland County Board of Health regulations governing same.

REMARKS: 18" TO TRENCH BOTTOM MAX. SEE PLOT PLAN.

Cumberland County Department of Public Health
130 Gillespie Street
Fayetteville NC 28301-5417
(910) 433-3668

RE SCANNED

Improvement Permit

This permit is subject to revocation if the site plan or plat, whichever is applicable, or the intended use changes.

Date: 1/26/2018

REPAIR PERMIT SEPTIC

Permit #: 2018 - 67

Private well to be installed prior to wastewater system installation.

Pin Number: 9493-39-9936

Date purchased: 1/23/2018

Expiration date: 1/23/2023

Applicant Name: **JONES SEPTIC TANK SERVICE**

Zoning Permit Number: 0

Max Occupancy: 6

Site Address: 6663 WALDOS BEACH ROAD Lot.
Fayetteville NC 28308

Directions:

Type of Establishment: Residential Design Flow: 360 gpd Site Classification: Provisionally Suits
Repairs.

WASTEWATER SYSTEM: The attached plot plan cannot be changed.

Tank Capacity: gallons Pump tank reserve capacity: gallons

NITRIFICATION FIELD: Type: Innovative Other: 25% REDUCTION No. Bedrooms: 3
No. Lines: 1 Length of Each Line: 123' Width of Each Line: 3' Maximum Trench Bottom Depth: 36MAX
Conditions: REPLACE TEE DO NOT EXCEED 36" MTD. STAY 50' FROM ANY WELL.

New tee ✓

- Plat Provided - When a PLAT is provided, the Improvement Permit is valid without expiration.
- Site Plan Provided - When a SITE PLAN is provided, the Improvement Permit is valid for five (5) years

Improvement Permit Expiration Date: _____

Improvement Permit Approved By: CELESTINE RAINERI *CR*

Date: 1/25/2018

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION (ATC)

An Authorization for Wastewater System Construction is required before any person shall commence or assist in the installation, construction or repair of a wastewater system and before any other permits (electrical, plumbing, heating, air conditioning or other construction) can be issued.

AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION IS VALID FOR FIVE (5) YEARS.

ATC Expiration Date: _____

ATC Approved By: CELESTINE RAINERI *CR*

Date: 1/25/2018

OPERATIONS PERMIT

Contractor: Jones

Public Information: _____ *97*

This septic tank and this nitrification field have been inspected and meet the requirements as set forth by Article 11 of Chapter 130A of the General Statutes of North Carolina, "Wastewater Systems" "Laws and Rules for Sewage Treatment and Disposal Systems" Title 10 NCAC, Subchapter 10A, Section 1900 and "Regulations Governing Sanitary Sewage, Collection, Treatment and Disposal in Cumberland County, NC"; however, the signing of this form in no way guarantees the life of the system or that it will function under any or all conditions.

Operations Permit Approved By: Celestine Raineri *CR*

Date: 2-16-18

Inspection of sewer line between house and septic tank connection thereto is the responsibility of Cumberland County Inspection Dept. (910) 921-6636

System Type: Approved Manufacturer: Infiltrator Model: 104

Tank Information: _____

Approved

Conventional Innovative

Septic Tank Pump Tank

30" Trench depth
30" Length 3' Width

Comments: Replace Fu. Do not exceed 60' m.p. stay 50' from my cell.

RE SCANNED

40 scale



As Installed

Date: 2-6-18

Sanitarian: [Signature]

CALL NO CUTS
Before you dig
1-800-632-4949

ATTACHMENT 7

CONTACT INFORMATION

If you have any questions about abandoning your well, please call your regional DENR Aquifer Protection Section for more information.

Asheville Regional Office
2090 U.S. Highway 70
Swannanoa, NC 28778
Phone: (828) 296-4500

Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301-5043
Phone: (910) 433-3300

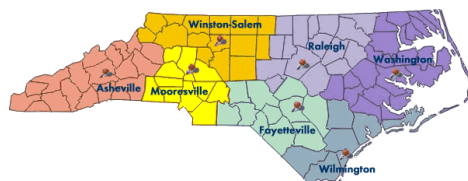
Mooresville Regional Office
610 East Center Avenue, Suite 301
Mooresville, NC 28115
Phone: (704) 663-1699

Raleigh Regional Office
3800 Barrett Drive
Raleigh, NC 27609
Phone: (919) 791-4200

Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
Phone: (252) 946-6481

Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405-2845
Phone: (910) 796-7215

Winston-Salem Regional Office
585 Waughtown Street
Winston-Salem, NC 27107
Phone: (336) 771-5000



North Carolina

WELL

ABANDONMENT



Presented by:
Division of Water Quality
Aquifer Protection Section



Responsibility for Well Abandonment

A well must be permanently abandoned or repaired if it acts as a source or channel of contamination. If a well is required to be abandoned, the well owner is responsible for having the well permanently abandoned except in the following situations:

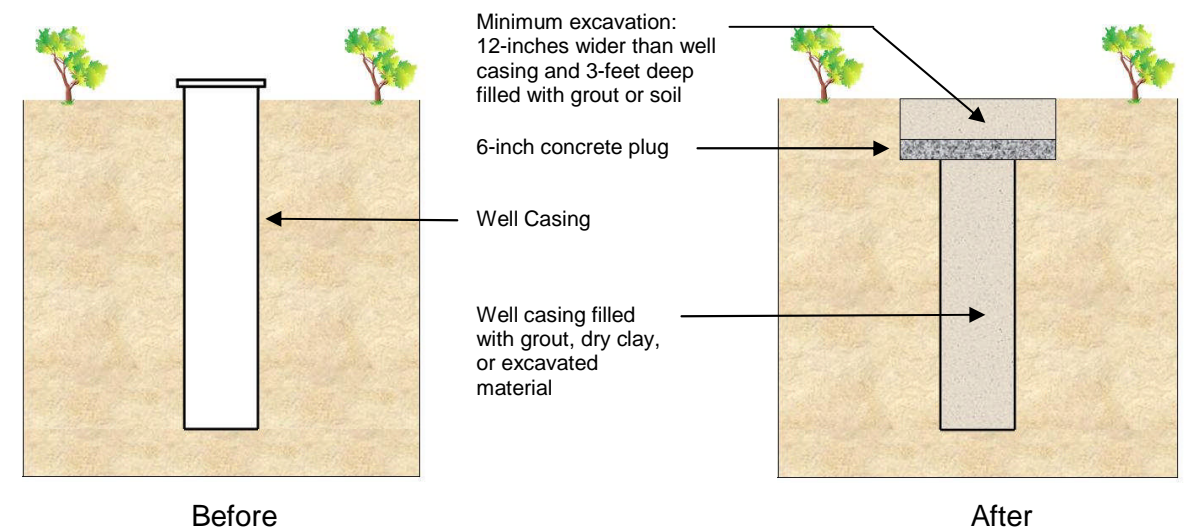
- (1) the well contractor is responsible for well abandonment if abandonment is required because the well contractor improperly locates, constructs, repairs, or completes the well; and
- (2) the person who installs, repairs, or removes the well pump is responsible for well abandonment if that abandonment is required because of improper well pump installation, repair, or removal.

Any person abandoning a well must submit a record of abandonment (form GW-30) to the Division of Water Quality within 30 days after completion.

There are two major categories of wells: Drilled and Bored.

- 1) Drilled Wells are usually 2-10 inches in diameter, have steel or thermoplastic casing and are typically “punched” or drilled into unconsolidated sediments or consolidated bedrock.
- 2) Bored Wells are usually 18-36 inches in diameter, have clay or concrete casings and usually are hand dug, or bored with a large diameter power auger into unconsolidated sediments or weathered bedrock. The requirements for well abandonment are different for these two well types.

Bored Well Abandonment Example:



Bored Well Abandonment

The following is the generalized process for abandoning bored wells:

- 1) The well should be disinfected in accordance with the procedures found in Title 15A NCAC 02C .0111.
- 2) Remove all plumbing or piping, along with any obstructions in the well.
- 3) Remove as much of the well casing as possible, but no less than 3 feet below land surface.
- 4) Remove all soil or other subsurface material present down to the top of the remaining well casing and extending to a width of at least 12 inches outside of the well casing;
- 5) Fill the entire well up to land surface with grout, dry clay, or material excavated during construction of the well. If dry clay or material excavated during the construction of the well is used, it shall be emplaced in lifts no more than 5 feet thick and then compacted in place prior to emplacement of the next lift.
- 6) Pour a 6-inch concrete plug that covers the entire excavated area above the top of the casing, including the area extending on all sides of the casing out to a width of at least 12 inches on all sides.

7) Complete the abandonment process by filling the remainder of the well above the plug with additional grout or soil.

Drilled Well Abandonment

Any casing not grouted must be removed or properly grouted. Casing that is grouted can be removed if such removal does not contribute to contamination of the groundwater.

The entire depth of the well has to be sounded to ensure freedom from obstructions that may interfere with sealing operations.

The well should be disinfected using a solution made from calcium hypochlorite containing 65% - 75% available chlorine, such as HTH. Do not use calcium hypochlorite products containing fungicides, algicides, or other disinfectants. Do not use a common household bleach, as it is too weak. A complete description of disinfection procedures can be found in Title 15A NCAC 02C .0111.

If the well is gravel-packed and the casing and screen have not been removed, neat cement or bentonite grout must be injected into the well, completely filling it from the bottom of the casing to the top of the well.

Wells constructed in unconsolidated formations shall be completely filled with grout by introducing it through a pipe extending to the bottom of the well. The pipe is then raised as the well is filled (commonly called a tremmie pipe).

Wells constructed in consolidated formations may be filled with grout, sand, gravel, or drilling cuttings opposite the zones of consolidated rock. The top of any sand, gravel, or cutting fill shall terminate at least 10 feet below the top of consolidated rock or 5 feet below the bottom of the casing. Grout shall be placed beginning 10 feet below the top of the consolidated rock or five feet below the bottom of the casing in a manner to ensure complete filling of the casing, and extending up to the land surface.

Other Wells

This pamphlet has summarized the abandonment procedures for water wells. However, there are many other types of wells in North Carolina that must be abandoned properly. For monitoring wells and other miscellaneous wells, refer to 15A NCAC 02C .0100: Criteria and Standards Applicable to Water Supply and Certain Other Wells.

Well Disinfection Tip

The following table can be used to determine how much chlorine compound is needed to dose 100 feet of a water-filled well to at least 100mg/l.

Borehole or Casing Diameter (inches)	Gallons of Water per 100 ft of Water Filled Well	Amount of Calcium Hypochlorite (65%-70% available chlorine)
2	16.3	0.5 oz.
4	65.3	2 oz.
6	146.9	4.4 oz.
8	261.1	7.8 oz.
10	408	12.2 oz.
12	587	1 lb. 2 oz.
18	1321	2 lb. 8 oz.
20	1632	3 lbs. 1 oz.
24	2350	4 lbs. 7 oz.
30	3672	6 lbs. 14 oz.
36	5287	9 lbs. 15 oz.

For more information or a copy of the 15A NCAC 02C .0100 Well Construction Standards Criteria and Standards Applicable to Water Supply and Certain Other Wells, you can visit our webpage

<http://portal.ncdenr.org/web/wq/aps/gwpro>

or contact us at:

DENR
 Aquifer Protection Section
 1636 Mail Service Center
 Raleigh, North Carolina 27699-1636
 Phone: (919) 733-3221
 Fax: (919) 715-0588

WELL ABANDONMENT RECORD

For Internal Use ONLY:

1. Well Contractor Information:

Well Contractor Name (or well owner personally abandoning well on his/her property)

NC Well Contractor Certification Number

Company Name

2. Well Construction Permit #:

List all applicable well construction permits (i.e. UIC, County, State, Variance, etc.) if known

3. Well use (check well use):

Water Supply Well:

- Agricultural Municipal/Public
- Geothermal (Heating/Cooling Supply) Residential Water Supply (single)
- Industrial/Commercial Residential Water Supply (shared)
- Irrigation

Non-Water Supply Well:

- Monitoring Recovery

Injection Well:

- Aquifer Recharge Groundwater Remediation
- Aquifer Storage and Recovery Salinity Barrier
- Aquifer Test Stormwater Drainage
- Experimental Technology Subsidence Control
- Geothermal (Closed Loop) Tracer
- Geothermal (Heating/Cooling Return) Other (explain under 7g)

4. Date well(s) abandoned: _____

5a. Well location:

Facility/Owner Name

Facility ID# (if applicable)

Physical Address, City, and Zip

County

Parcel Identification No. (PIN)

5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:

(if well field, one lat/long is sufficient)

_____ N _____ W

CONSTRUCTION DETAILS OF WELL(S) BEING ABANDONED

Attach well construction record(s) if available. For multiple injection or non-water supply wells ONLY with the same construction/abandonment, you can submit one form.

6a. Well ID#: _____

6b. Total well depth: _____ (ft.)

6c. Borehole diameter: _____ (in.)

6d. Water level below ground surface: _____ (ft.)

6e. Outer casing length (if known): _____ (ft.)

6f. Inner casing/tubing length (if known): _____ (ft.)

6g. Screen length (if known): _____ (ft.)

WELL ABANDONMENT DETAILS

7a. For Geoprobe/DPT or Closed-Loop Geothermal Wells having the same well construction/depth, only 1 GW-30 is needed. Indicate TOTAL NUMBER of wells abandoned: _____

7b. Approximate volume of water remaining in well(s): _____ (gal.)

FOR WATER SUPPLY WELLS ONLY:

7c. Type of disinfectant used: _____

7d. Amount of disinfectant used: _____

7e. Sealing materials used (check all that apply):

- Neat Cement Grout Bentonite Chips or Pellets
- Sand Cement Grout Dry Clay
- Concrete Grout Drill Cuttings
- Specialty Grout Gravel
- Bentonite Slurry Other (explain under 7g)

7f. For each material selected above, provide amount of materials used:

7g. Provide a brief description of the abandonment procedure:

8. Certification:

Signature of Certified Well Contractor or Well Owner

Date

By signing this form, I hereby certify that the well(s) was (were) abandoned in accordance with 15A NCAC 02C .0100 or 2C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

9. Site diagram or additional well details:

You may use the back of this page to provide additional well site details or well abandonment details. You may also attach additional pages if necessary.

SUBMITTAL INSTRUCTIONS

10a. For All Wells: Submit this form within 30 days of completion of well abandonment to the following:

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

10b. For Injection Wells: In addition to sending the form to the address in 10a above, also submit one copy of this form within 30 days of completion of well abandonment to the following:

Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636

10c. For Water Supply & Injection Wells: In addition to sending the form to the address(es) above, also submit one copy of this form within 30 days of completion of well abandonment to the county health department of the county where abandoned.

SUBCHAPTER 02C - WELL CONSTRUCTION STANDARDS

SECTION .0100 - CRITERIA AND STANDARDS APPLICABLE TO WATER-SUPPLY AND

15A NCAC 02C .0101 GENERAL PROVISIONS

(a) Authorization. The North Carolina Environmental Management Commission is required pursuant to G.S. 87-87 in the North Carolina Well Construction Act to adopt rules governing the location, construction, repair, and abandonment of wells, the operation of water wells or well systems with a designed capacity of 100,000 gallons per day or greater, and the installation and repair of pumps and pumping equipment.

(b) Purpose. Consistent with the duty to safeguard the public welfare, safety, health, and to protect and beneficially develop the groundwater resources of the State, it is declared to be the policy of this State to require that the location, construction, repair, and abandonment of wells, and the installation of pumps and pumping equipment conform to such reasonable standards and requirements as may be necessary to protect the public welfare, safety, health, and ground water resources.

*History Note: Authority G.S. 87-87;
Eff. February 1, 1976;
Amended Eff. December 1, 1992; July 1, 1988;
Readopted Eff. September 1, 2019.*

15A NCAC 02C .0102 DEFINITIONS

The terms used in this Subchapter shall be as defined in G.S. 87-85 and as follows:

- (1) "Abandon" means to discontinue the use of and to seal a well according to the requirements of 15A NCAC 02C .0113 of this Section.
- (2) "Access port" means an opening in a well casing or well head installed for the purpose of determining the position of the water level in the well or to facilitate disinfection.
- (3) "Agent" means any person who by agreement with a well owner has authority to act on his or her behalf in executing applications for permits. The agent may be either general agent or a limited agent authorized to do one particular act.
- (4) "Annular Space" means the space between the casing and the walls of a borehole or outer casing or the space between a liner pipe and well casing.
- (5) "Artesian flowing well" means a well in which groundwater flows above the land surface without the use of a pump and, under natural conditions, the static water level or hydraulic head elevation is greater than the land surface elevation.
- (6) "ASTM" means the American Society for Testing and Materials.
- (7) "Casing" means pipe or tubing constructed of materials and having dimensions and weights as specified in the rules of this Subchapter, that is installed in a borehole during or after completion of the borehole to support the side of the hole and thereby prevent caving, to allow completion of a well, to prevent formation material from entering the well, to prevent the loss of drilling fluids into permeable formations, and to prevent entry of contamination.
- (8) "Clay" means a substance comprised of natural, inorganic, fine-grained crystalline mineral fragments that, when mixed with water, forms a pasty, moldable mass that preserves its shape when air dried.
- (9) "Commission" means the North Carolina Environmental Management Commission.
- (10) "Consolidated rock" means rock that is firm and coherent, solidified or cemented, such as granite, gneiss, limestone, slate or sandstone, that has not been decomposed by weathering.
- (11) "Contaminate" or "Contamination" means the introduction of foreign materials of such nature, quality, and quantity into the groundwaters as to exceed the groundwater quality standards set forth in 15A NCAC 02L .0200.
- (12) "Department" is as defined in G.S. 87-85(5a).
- (13) "Designed capacity" means that capacity that is equal to the yield that is specified by the well owner or his or her agent prior to construction of the well.
- (14) "Director" means the Director of the Division of Water Resources or the Director's delegate.
- (15) "Division" means the Division of Water Resources.
- (16) "Domestic use" means water used for drinking, bathing or other household purposes, livestock, or gardens.

- (17) "Formation Material" means naturally occurring material generated during the drilling process that is composed of sands, silts, clays or fragments of rock and that is not in a dissolved state.
- (18) "GPM" and "GPD" mean gallons per minute and gallons per day, respectively.
- (19) "Grout" means a material approved in accordance with Rule .0107(e) of this Section for use in sealing the annular space of a well or liner or for sealing a well during abandonment.
- (20) "Lead Free" means materials containing not more than a weighted average of 0.25 percent lead per Section 1417 of the Safe Drinking Water Act amended January 4, 2014.
- (21) "Liner pipe" means pipe that is installed inside a completed and cased well for the purpose of preventing the entrance of contamination into the well or for repairing ruptured, corroded or punctured casing or screens.
- (22) "Monitoring well" means any well constructed for the primary purpose of obtaining information about the physical, chemical, radiological, or biological characteristics of groundwater or other liquids, or for the observation or measurement of groundwater levels. This definition excludes lysimeters, tensiometers, and other devices used to investigate the characteristics of the unsaturated zone but includes piezometers, a type of monitoring well constructed solely for the purpose of determining groundwater levels. This definition includes all monitoring well types, including temporary wells and wells using Geoprobe[®] or direct-push technology (DPT).
- (23) "Owner" means any person who holds the fee or other property rights in the well being constructed.
- (24) "Pitless adapters" or "pitless units" are devices manufactured to the standards specified under 15A NCAC 02C .0107(j)(5) for the purpose of allowing a subsurface lateral connection between a well and plumbing appurtenances.
- (25) "Public water system" means a water system as defined in 15A NCAC 18C, which is hereby incorporated by reference, including subsequent amendments.
- (26) "Recovery well" means any well constructed for the purpose of removing contaminated groundwater or other liquids from the subsurface.
- (27) "Saline" means having a chloride concentration of more than 250 milligrams per liter.
- (28) "Secretary" means the Secretary of the Department of Environmental Quality or the Secretary's delegate.
- (29) "Settleable solids" means the volume of solid particles in a well-mixed one liter sample that will settle out of suspension, in the bottom of an Imhoff Cone, after one hour.
- (30) "Sewer Lateral" means the sewer pipe connecting a structure to a wastewater treatment collection system or a municipal or commercial sewer main line.
- (31) "Site" means the land or water area where any facility, activity or situation is physically located, including adjacent or other land used in connection with the facility, activity or situation.
- (32) "Specific capacity" means the yield of the well expressed in gallons per minute per foot of draw-down of the water level (gpm/ft.-dd).
- (33) "Static water level" means the level at which the water stands in the well when the well is not being pumped and is expressed as the distance from a fixed reference point to the water level in the well.
- (34) "Suspended solids" means the weight of those solid particles in a sample that are retained by a standard glass microfiber filter, with pore openings of one and one-half microns, when dried at a temperature between 103 and 105 degrees Fahrenheit.
- (35) "Temporary well" means a well that is constructed to determine aquifer characteristics and that will be permanently abandoned or converted to a permanent well within 21 days (504 hours) of the completion of drilling of the borehole.
- (36) "Turbidity" means the cloudiness in water due to the presence of suspended particles such as clay or silt that may create laboratory analytical difficulties for determining contamination above 15A NCAC 02L.
- (37) "Vent" means a permanent opening in the well casing or well head, installed for the purpose of allowing changes in the water level in a well due to natural atmospheric changes or to pumping. A vent may also serve as an access port.
- (38) "Water-tight" means put or fit together so tightly that water cannot enter or pass through. For example, water-tight pipe may be filled with water and tested under pressure between three and five pounds per square inch (psi) for several minutes to detect leaks.
- (39) "Well" is as defined in G.S. 87-85(14).

- (40) "Well capacity" means the maximum quantity of water that a well will yield continuously as determined by methods outlined in 15A NCAC 02C .0110.
- (41) "Well head" means the upper terminal of the well including adapters, ports, valves, seals, and other attachments.
- (42) "Well system" means two or more wells connected to the same distribution or collection system or, if not connected to a distribution or collection system, two or more wells serving the same site.
- (43) "Yield" means the volume of water or other fluid per time that can be discharged from a well under a given set of circumstances.

History Note: Authority G.S. 87-85; 87-87; 143-215.3;
Eff. February 1, 1976;
Amended Eff. September 1, 2009; April 1, 2001; December 1, 1992; July 1, 1988; March 1, 1985;
September 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0103 REGISTRATION

History Note: Authority G.S. 87-87; 143-215.3(a)(1a); 143-355(e);
Eff. February 1, 1976;
Amended Eff. April 1, 2001; December 1, 1992; July 1, 1988; April 20, 1978;
Repealed Eff. September 1, 2009.

15A NCAC 02C .0104 PUMP INSTALLATION REGISTRATION

History Note: Authority G.S. 87-87;
Eff. February 1, 1976;
Repealed Eff. July 1, 1988.

15A NCAC 02C .0105 PERMITS

- (a) No person shall locate or construct any of the following wells until a permit has been issued by the Department:
 - (1) any water-well or well system with a designed capacity to pump 100,000 gallons per day (gpd) or more during one calendar year;
 - (2) any well added to an existing system if the total designed capacity of such existing well system and added well will equal or exceed 100,000 gpd;
 - (3) any temporary or permanent monitoring well or monitoring well system, including wells installed using direct-push technology (DPT) or Geoprobe® technology, designed to penetrate an aquifer to obtain groundwater data on property not owned by the well owner;
 - (4) any recovery well;
 - (5) any well with a design deviation from the standards specified under the rules of this Subchapter, including wells for which a variance is required.
- (b) The Department shall issue permits for wells used for geothermal heating and cooling, aquifer storage and recovery (ASR), or other injection purposes in accordance with 15A NCAC 02C .0200.
- (c) The Department shall issue permits for private drinking water wells in accordance with 15A NCAC 02C .0300, including private drinking water wells with a designed capacity greater than 100,000 gallons per day and private drinking water wells for which a variance is required.
- (d) An application for any well requiring a permit pursuant to Paragraph (a) of this Rule shall be submitted by the owner or his or her agent. In the event that the permit applicant is not the owner of the property where the well or well system is to be constructed, the permit application shall contain written approval from the property owner and a statement that the applicant assumes total responsibility for ensuring that the well(s) will be located, constructed, maintained and abandoned in accordance with the requirements of this Subchapter.
- (e) The application shall be submitted to the Department on forms furnished by the Department, which shall include the following:
 - (1) the owner's name;
 - (2) the owner's mailing address and proposed well site address;
 - (3) description of the well type and activity requiring a permit;
 - (4) site location (map);

- (5) a map of the site, to scale, showing the locations of:
 - (A) all property boundaries, at least one of which is referenced to a minimum of two landmarks such as identified roads, intersections, streams or lakes within 500 feet of proposed well or well system;
 - (B) all existing wells, identified by type of use, within 500 feet of proposed well or well system;
 - (C) the proposed well or well system;
 - (D) any test borings within 500 feet of proposed well or well system; and
 - (E) all sources of known or potential groundwater contamination, such as septic tank systems; pesticide, chemical or fuel storage areas; animal feedlots, as defined by G.S. 143-215.10B(5); landfills or other waste disposal areas within 500 feet of the proposed well.
 - (6) the well contractor's name and state certification number, if known; and
 - (7) a construction diagram of the proposed well(s) including specifications describing all materials to be used and methods of construction.
- (f) For water supply wells or well systems with a designed capacity of 100,000 gpd or greater, the application shall include, in addition to the information required in Paragraph (e) of this Rule:
- (1) the number, yield and location of existing wells in the system;
 - (2) the water system's name and reference number if already a public water supply system;
 - (3) the designed capacity of the proposed well(s);
 - (4) for wells to be screened in multiple zones or aquifers, representative data on the static water level and pH, specific conductance, and concentrations of sodium, potassium, calcium, magnesium, sulfate, chloride, and carbonates from each aquifer or zone from which water is proposed to be withdrawn. The data submitted shall demonstrate that construction of the proposed well will satisfy the requirements of 15A NCAC 02C .0107(h)(2);
 - (5) a copy of any water use permit required pursuant to G.S. 143-215.15; and
 - (6) any other well construction information or site specific information as requested by the Department to ensure compliance with G.S. 87-84.
- (g) For those monitoring wells with a design deviation from the specifications of 15A NCAC 02C .0108 of this Section, in addition to the information required in Paragraph (e) of this Rule, the application shall include:
- (1) a description of the subsurface conditions to evaluate the site. Data from test borings, wells, and pumping tests may be necessary;
 - (2) a description of the quantity, character and origin of the contamination;
 - (3) justification for the necessity of the design deviation; and
 - (4) any other well construction information or site specific information as requested by the Department to ensure compliance with G.S. 87-84.
- (h) For those recovery wells with a design deviation from the specifications in 15A NCAC 02C .0108 of this Section, in addition to the information required in Paragraphs (e) and (g) of this Rule, the application shall describe the disposition of any fluids recovered if the disposal of those fluids will have an impact on any existing wells other than those installed for the purpose of measuring the effectiveness of the recovery well(s).
- (i) In the event of an emergency, any well listed in Subparagraph (a)(1) through (a)(4) of this Rule may be constructed after verbal approval is provided by the Department. After-the-fact written applications shall be submitted by the person responsible for drilling or owner within 10 days after construction begins. The application shall include construction details of the well(s) and include the name of the person who gave verbal approval and the time and date that approval was given.
- (j) The well owner or his or her agent, and the North Carolina certified well contractor shall see that a permit is secured prior to the beginning of construction of any well for which a permit is required under the rules of this Subchapter.

History Note: Authority G.S. 87-87; 143-215.1; Eff. February 1, 1976; Amended Eff. September 1, 2009; April 1, 2001; December 1, 1992; March 1, 1985; September 1, 1984; April 20, 1978; Readopted Eff. September 1, 2019.

*History Note: Authority G.S. 143-215.14; 143-215.15;
 Eff. February 1, 1976;
 Repealed Eff. April 20, 1978.*

15A NCAC 02C .0107 STANDARDS OF CONSTRUCTION: WATER SUPPLY WELLS

(a) Location.

- (1) A water supply well shall not be located in any area where surface water or runoff will accumulate around the well due to depressions, drainage ways, and other landscapes that will concentrate water around the well.
- (2) The horizontal separation between a water supply well and potential sources of groundwater contamination that exist at the time the well is constructed shall be no less than as follows unless otherwise specified in Subparagraph (a)(3) of this Rule:
 - (A) Single-family dwelling with septic tank and drainfield, including the drainfield repair area 50 feet
 - (B) Single-family dwelling with septic tank and drainfield, including the drainfield repair area in saporlite system as described in 15A NCAC 18A .1956 100 feet
 - (C) All other facilities with septic tank and drainfield, including drainfield repair area 100 feet
 - (D) Other subsurface ground absorption waste disposal system 100 feet
 - (E) Industrial or municipal residuals disposal or wastewater-irrigation sites 100 feet
 - (F) Industrial or municipal sewage or liquid-waste collection or sewer main, constructed to water main standards in the American Water Works Association (AWWA) Standards C600 and/or C900, which can be obtained from AWWA at American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235, at a cost of one hundred and four dollars (\$104.00) 50 feet
 - (G) Water-tight sewer lateral line from a residence or other non-public system to a sewer main or other wastewater disposal system 25 feet
 - (H) Other sewage and liquid-waste collection or transfer facility 100 feet
 - (I) Cesspools and privies 100 feet
 - (J) Animal feedlots, as defined by G.S. 143-215.10B(5), or manure or litter piles 100 feet
 - (K) Fertilizer, pesticide, herbicide, or other chemical storage areas 100 feet
 - (L) Non-hazardous waste storage, treatment, or disposal lagoons 100 feet
 - (M) Sanitary landfills, municipal solid waste landfill facilities, incinerators, construction and demolition (C&D) landfills, and other disposal sites except Land Clearing and Inert Debris landfills 500 feet
 - (N) Land Clearing and Inert Debris (LCID) landfills 100 feet
 - (O) Animal barns 100 feet
 - (P) Building perimeters, including any attached structures that need a building permit, such as garages, patios, or decks, regardless of foundation construction type 25 feet
 - (Q) Surface water bodies that act as sources of groundwater recharge, such as ponds, lakes, and reservoirs 50 feet
 - (R) All other surface water bodies, such as brooks, creeks, streams, rivers, sounds, bays, and tidal estuaries 25 feet
 - (S) Chemical or petroleum fuel underground storage tank systems regulated under 15A NCAC 02N:
 - (i) with secondary containment 50 feet
 - (ii) without secondary containment 100 feet
 - (T) Above ground or underground storage tanks that contain petroleum fuels used for heating equipment, boilers, or furnaces, with the exception of tanks used solely for storage of propane, natural gas, or liquefied petroleum gas 50 feet
 - (U) All other petroleum or chemical storage tank systems 100 feet
 - (V) Gravesites 50 feet
 - (W) Coal ash landfills or impoundments 200 feet

- (X) All other potential sources of groundwater contamination 50 feet
 - (3) For a water supply well as defined in G.S. 87-85(13) on a lot serving a single-family dwelling and intended for domestic use, where lot size or other fixed conditions preclude the separation distances specified in Subparagraph (a)(2) of this Rule, the required horizontal separation distances shall be the maximum possible but shall in no case be less than the following:
 - (A) Industrial or municipal sewage or liquid-waste collection or sewer main, constructed to water main standards as stated in the AWWA Standards C600 and/or C900 25 feet
 - (B) Animal barns 50 feet
 - (4) In addition to the separation distances specified in Subparagraph (a)(2) of this Rule, a well or well system with a designed capacity of 100,000 gallons per day (GPD) or greater shall be located a sufficient distance from known or anticipated sources of groundwater contamination so as to prevent a violation of groundwater quality standards specified in 15A NCAC 02L .0202 resulting from the movement of contaminants in response to the operation of the well or well system at the proposed rate and schedule of pumping.
 - (5) Wells drilled for public water supply systems regulated by the Public Water Supply Section of the Division of Water Resources shall meet the requirements of 15A NCAC 18C.
- (b) Source of water.
- (1) The source of water for any water supply well shall not be from a water bearing zone or aquifer that is contaminated;
 - (2) In designated areas described in 15A NCAC 02C .0117 of this Section, the source shall be greater than 43 feet below land surface;
 - (3) In designated areas described in 15A NCAC 02C .0116 of this Section, the source may be less than 20 feet below land surface, but in no case less than 10 feet below land surface;
 - (4) For wells constructed with separation distances less than those specified in Subparagraph (a)(2) of this Rule based on lot size or other fixed conditions as specified in Subparagraph (a)(3) of this Rule, the source shall be greater than 43 feet below land surface except in areas described in Rule .0116 of this Section; and
 - (5) In all other areas the source shall be at least 20 feet below land surface.
- (c) Drilling Fluids. Drilling Fluids shall not contain organic or toxic substances or include water obtained from surface water bodies or water from a non-potable supply and shall be comprised only of:
- (1) The formational material encountered during drilling; or
 - (2) Materials manufactured specifically for the purpose of borehole conditioning or water well construction.
- (d) Casing.
- (1) If steel casing is used:
 - (A) The casing shall be new, seamless, or electric-resistance welded galvanized or black steel pipe. Galvanizing shall be done in accordance with requirements of ASTM A53/A53M-07, which is hereby incorporated by reference, including subsequent amendments and editions and can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C 700, West Conshohocken, PA, 19428-2959 at a cost of eighty dollars and forty cents (\$80.40);
 - (B) The casing, threads and couplings shall meet or exceed the specifications of ASTM A53/A53M-07 or A589/589M-06, which is hereby incorporated by reference, including subsequent amendments and editions, and can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C 700, West Conshohocken, PA, 19428-2959 at a cost of eighty dollars and forty cents (\$80.40), and fifty-two dollars (\$52.00), respectively;
 - (C) The wall thickness for a given diameter shall equal or exceed that specified in Table 1;

TABLE 1: MINIMUM WALL THICKNESS FOR STEEL CASING:

Nominal Diameter	Wall Thickness
(inches)	(inches)

For 3.5 inch or smaller pipe, Schedule 40 is required

4	0.142
5	0.156
5.5	0.164
6	0.185
8	0.250
10	0.279
12	0.330
14 and larger	0.375

- (D) Stainless steel casing, threads, and couplings shall conform in specifications to the general requirements in ASTM A530/A530M-04a, which is hereby incorporated by reference, including subsequent amendments and editions and can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C 700, West Conshohocken, PA, 19428-2959 at a cost of forty-six dollars (\$46.00), and also shall conform to the specific requirements in the ASTM standard that best describes the chemical makeup of the stainless steel casing that is intended for use in the construction of the well;
 - (E) Stainless steel casing shall have a minimum wall thickness that is equivalent to standard Schedule number 10S;
 - (F) Steel casing shall be equipped with a drive shoe if the casing is driven in a consolidated rock formation. The drive shoe shall be made of forged, high carbon, tempered seamless steel and shall have a beveled, hardened cutting edge; and
 - (G) Any materials containing lead shall meet NSF 61 standards, which can be obtained from NSF International at a cost of three hundred and twenty-five dollars (\$325.00), or NSF 372 standards, which can be obtained at a cost of fifty-five dollars (\$55.00). Both standards can be obtained from NSF International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI 48105.
- (2) If thermoplastic casing is used:
- (A) The casing shall be new and manufactured in compliance with standards of ASTM F480-14, which is hereby incorporated by reference including subsequent amendments and editions, and can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C 700, West Conshohocken, PA, 19428-2959 at a cost of sixty-seven dollars (\$67.00);
 - (B) The casing and joints shall meet or exceed all the specifications of ASTM F480-06b, except that the outside diameters shall not be restricted to those listed in ASTM F480-06b, which is hereby incorporated by reference, including subsequent amendments and editions and can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C 700, West Conshohocken, PA, 19428-2959 at a cost of eighty dollars and forty cents (\$80.40);
 - (C) The depth of installation for a given Standard Dimension Ratio (SDR) or Schedule number thickness shall not exceed that listed in Table 2 unless the Department is

provided written documentation from the manufacturer of the casing stating that the casing may safely be used at the depth at which it is to be installed is provided.

TABLE 2: Maximum allowable depths (in feet) of Installation of Thermoplastic Water Well Casing. Dimensional standards for PVC pipe are specified in ASTM F 480-14.

Nominal Diameter (inches)	Maximum Depth (in feet) for Schedule 40	Maximum Depth (in feet) for Schedule 80	Maximum Depth (in feet) for SDR 21	Maximum Depth (in feet) for SDR 17	Maximum Depth (in feet) for SDR 13.5
2	485	1460			
3	415	1170			
3.5	315	920			
4	253	755			
5	180	550			
6	130	495			
8	85	340			
10	65	290			
12	65	270			
14	50	265			
16	50	255			
All Diameters	185	355			735

- (D) Thermoplastic casing with wall thickness less than that corresponding to SDR 21 or Schedule 40 shall not be used;
 - (E) For wells in which the casing will extend into consolidated rock, thermoplastic casing shall be equipped with a coupling or other device approved by the manufacturer of the casing as sufficient to protect the physical integrity of the thermoplastic casing during the processes of seating and grouting the casing and subsequent drilling operations;
 - (F) Thermoplastic casing shall not be driven by impact, but may be pushed;
 - (G) PVC well casing joints shall meet the requirements of ASTM F 480-14; and
 - (H) Screws or similar mechanical fasteners shall not be used for joining PVC well casing.
- (3) In constructing any well, all water-bearing zones that contain contaminated, saline, or other non-potable water shall be cased and grouted so that contamination of overlying and underlying groundwater zones will not occur.
- (4) Every well shall be cased so that the bottom of the casing extends to the following depths:
- (A) Wells located within the area described in Rule .0117 of this Section shall be cased from land surface to a depth of at least 43 feet.

- (B) Wells located within the area described in Rule .0116 of this Section shall be cased from land surface to a depth of at least 10 feet.
 - (C) Wells constructed with separation distances less than those specified in Subparagraph (a)(2) of this Rule based on lot size or other fixed conditions as specified in Subparagraph (a)(3) of this Rule shall be cased from land surface to a depth of at least 43 feet except in areas described in Rule .0116 of this Section.
 - (D) Wells located in any other area shall be cased from land surface to a depth of at least 20 feet.
 - (5) The top of the casing shall be terminated at least 12 inches above land surface, regardless of the method of well construction and type of pump to be installed.
 - (6) The casing in wells constructed to obtain water from a consolidated rock formation shall meet the requirements of Subparagraphs (d)(1) through (d)(5) of this Rule and shall:
 - (A) prevent any formational material from entering the well in excess of the levels specified in Paragraph (h) of this Rule; and
 - (B) firmly be seated at least five feet into the rock.
 - (7) The casing in wells constructed to obtain water from an unconsolidated rock formation (such as gravel, sand, or shells) shall extend at least one foot into the top of the water-bearing formation.
 - (8) Upon completion of the well, the well shall be sufficiently free of obstacles including formation material as necessary to allow for the installation and proper operation of pumps and associated equipment.
 - (9) Prior to removing equipment from the site, the top of the casing shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85(16), to preclude the entrance of contaminants into the well.
- (e) Allowable Grouts.
- (1) One of the following grouts shall be used wherever grout is required by a rule of this Section. Where a particular type of grout is specified by a rule of this Section, no other type of grout shall be used.
 - (A) Neat cement grout shall consist of a mixture of not more than six gallons of clear, potable water to one 94 pound bag of Portland cement. Up to five percent, by weight, of untreated Wyoming sodium bentonite may be used to improve flow and reduce shrinkage. The Wyoming sodium bentonite shall be 200 mesh with a yield rating of 90 barrels per ton. If bentonite is used, additional water may be added at a rate not to exceed 0.6 gallons of water for each pound of untreated Wyoming sodium bentonite.
 - (B) Sand cement grout shall consist of a mixture of not more than two parts sand and one part cement and not more than six gallons of clear, potable water per 94 pound bag of Portland cement.
 - (C) Concrete grout shall consist of a mixture of not more than two parts gravel or rock cuttings to one part cement and not more than six gallons of clear, potable water per 94 pound bag of Portland cement. One hundred percent of the gravel or rock cuttings must be able to pass through a one-half inch mesh screen.
 - (D) Bentonite slurry grout shall consist of a mixture of not more than 24 gallons of clear, potable water to one 50 pound bag of commercial granular Wyoming sodium bentonite. Non-organic, non-toxic substances may be added to bentonite slurry grout mixtures to improve particle distribution and pumpability. Bentonite slurry grout may only be used in accordance with the manufacturer's written instructions.
 - (E) Bentonite chips or pellets shall consist of pre-screened Wyoming sodium bentonite chips or compressed sodium bentonite pellets with largest dimension of at least one-fourth inch but not greater than one-fifth of the width of the annular space into which they are to be placed. Bentonite chips or pellets shall be hydrated in place. Bentonite chips or pellets shall only be used in accordance with the manufacturer's written instructions.
 - (F) Specialty grout shall consist of a mixture of non-organic, non-toxic materials with characteristics of expansion, chemical-resistance, rate or heat of hydration, viscosity, density, or temperature-sensitivity applicable to specific grouting requirements. Specialty grouts shall not be used without prior approval by the Director. A request for approval of a specialty grout shall be submitted to the Director and shall include the following information:

- (i) a demonstration of non-toxicity, such as American National Standard Institute (ANSI) or National Sanitation Foundation, Inc. (NSF) Standard 60 certification, which is hereby incorporated by reference including subsequent amendments and editions, and can be obtained from NSF International, P.O. Box 130140, 789 North Dixboro Road, Ann Arbor, MI 48105 at a cost of three hundred and twenty-five dollars (\$325.00);
 - (ii) the results of an independent laboratory that demonstrate the finished product has a permeability of less than 1×10^{-6} centimeters per second and, if the product is used in areas of brackish or saline groundwater, the grout will not degrade over the lifetime of the well;
 - (iii) a general procedure for mixing and emplacing the grout;
 - (iv) the types of wells the request would apply to; and
 - (v) any other additional information the Department needs to ensure compliance with G.S. 87-84 as requested by the Department.
 - (2) With the exception of bentonite chips or pellets, the liquid and solid components of all grout mixtures shall be blended prior to emplacement below land surface.
 - (3) No fly ash, other coal combustion byproducts, or other wastes shall be used in any grout.
- (f) Grout emplacement.
- (1) Casing shall be grouted to a minimum depth of twenty feet below land surface except that in those areas designated in Rule .0116 of this Section, grout shall extend to a depth of two feet above the screen or, for open end wells, to the bottom of the casing, but in no case less than 10 feet.
 - (2) In addition to the grouting required by Subparagraph (f)(1) of this Rule, the casing shall be grouted as necessary to seal off all aquifers or zones that contain contaminated, saline, or other non-potable water so that contamination of overlying and underlying aquifers or zones shall not occur.
 - (3) Bentonite slurry grout may be used in that portion of the borehole that is at least three feet below land surface. That portion of the borehole from land surface to at least three feet below land surface shall be filled with a concrete or cement-type grout or bentonite chips or pellets that are hydrated in place.
 - (4) Grout shall be placed around the casing by one of the following methods:
 - (A) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the annular space around the casing and overflows at the surface;
 - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the annular space that can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application; or
 - (C) Other. Grout may be emplaced in the annular space by gravity flow to ensure complete filling of the space. Gravity flow shall not be used if water or any visible obstruction is present in the annular space within the applicable minimum grout depth specified in Subparagraph (f)(1) of this Rule at the time of grouting, with the exception that bentonite chips or pellets may be used if water is present and if designed for that purpose.
 - (5) If a rule of this Section requires grouting of the casing to a depth greater than 20 feet below land surface, the pumping or pressure method shall be used to grout that portion of the borehole deeper than 20 feet below land surface, with the exception of bentonite chips and pellets used in accordance with Part (f)(4)(C) of this Rule.
 - (6) If an outer casing is installed, it shall be grouted by either the pumping or pressure method.
 - (7) Bentonite chips or pellets shall be used in compliance with all manufacturer's instructions including pre-screening the material to eliminate fine-grained particles, installation rates, hydration methods, tamping, and other measures to prevent bridging.
 - (8) Bentonite grout shall not be used to seal zones of water with a chloride concentration of 1,500 milligrams per liter or greater. For wells installed on the barrier island from the Virginia state line south to Ocracoke Inlet, chloride concentrations shall be documented and reported as required by 15A NCAC 02C .0114(1)(E).
 - (9) The well shall be grouted within seven days after the casing is set. If the well penetrates any water-bearing zone that contains saline water, the well shall be grouted within one day after the casing is set.

- (10) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.
- (11) If grouting is required by the provisions of this Section, the grout shall extend outward in all directions from the casing wall to a minimum thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater.
- (12) In no case shall a well be required to have an annular grout seal thickness greater than four inches.
- (13) For wells constructed in locations where flowing artesian conditions are encountered the well shall be grouted to protect the artesian aquifer, prevent erosion of overlying material, and confine the flow within the casing.

(g) Well Screens.

- (1) The well, if constructed to obtain water from an unconsolidated rock formation, shall be equipped with a screen that will prevent the entrance of formation material into the well after the well has been developed and completed.
- (2) The well screen shall be of a design to permit the optimum development of the aquifer with minimum head loss consistent with the intended use of the well. The openings shall be designed to prevent clogging and shall be free of rough edges, irregularities, or other defects that may accelerate or contribute to corrosion or clogging.
- (3) Multi-screen wells shall not connect aquifers or zones that have differences in water quality or potentiometric surfaces that would result in contamination of any aquifer or zone.

(h) Gravel and Sand-Packed Wells.

- (1) In constructing a gravel-or sand-packed well:
 - (A) The packing material shall be composed of quartz, granite, or similar mineral or rock material and shall be of uniform size, water-washed, and free from clay, silt, and toxic materials.
 - (B) The size of the packing material shall be determined from a grain size analysis of the formation material and shall be of a size sufficient to prohibit the entrance of formation material into the well in concentrations above those permitted by Paragraph (i) of this Rule.
 - (C) The packing material shall be placed in the annular space around the screens and casing by a fluid circulation method to ensure accurate placement and avoid bridging.
 - (D) The packing material shall be disinfected.
- (2) The packing material shall not connect aquifers or zones that have differences in water quality that would result in contamination of any aquifer or zone.

(i) All water supply wells shall be developed by the well contractor. Development shall include removal of formation materials, mud, drilling fluids, and additives, such that the water contains no more than:

- (1) Five milliliters per liter of settleable solids; and
- (2) Ten NTUs of turbidity as suspended solids.

Development does not require efforts to reduce or eliminate the presence of dissolved constituents that are indigenous to the ground water quality in that area.

(j) Well Head Completion.

- (1) Access Port. Every water supply well shall be equipped with a usable access port or air line, except for the following: a multi-pipe deep well with jet pump or adapter mounted on the well casing or well head; and wells with casing two inches or less in diameter if a suction pipe is connected to a suction lift pump. The access port shall be at least one half inch inside the diameter opening so that the position of the water level can be determined. The port shall be installed and maintained in such manner as to prevent entrance of water or foreign material.
- (2) Well Contractor Identification Plate.
 - (A) An identification plate, showing the well contractor and certification number and the information specified in Part (j)(2)(E) of this Rule, shall be installed on the well within 72 hours after completion of the drilling.
 - (B) The identification plate shall be constructed of a durable weatherproof, rustproof metal or other material approved by the Department as equivalent.
 - (C) The identification plate shall be permanently attached to either the aboveground portion of the well casing, surface grout pad, or enclosure floor around the casing where it is visible and in a manner that does not obscure the information on the identification plate.
 - (D) The identification plate shall not be removed.

- (E) The identification plate shall be stamped to show the following:
 - (i) the total depth of well;
 - (ii) the casing depth (feet) and inside diameter (inches);
 - (iii) the screened intervals of screened wells;
 - (iv) the packing interval of gravel-packed or sand-packed wells;
 - (v) the yield, in gallons per minute (gpm) or specific capacity in gallons per minute per foot of drawdown (gpm/ft. of drawdown);
 - (vi) the static water level and the date it was measured;
 - (vii) the date the well was completed.
- (3) Pump Installation Information Plate.
 - (A) An information plate, showing the well contractor and certification number of the person installing the pump and the information specified in Part (j)(3)(D) of this Rule, shall be permanently attached to either the aboveground portion of the well casing, the surface grout pad, or the enclosure floor, if present, where it is visible and in a manner that does not obscure the information on the identification plate, within 72 hours after completion of the pump installation;
 - (B) The information plate shall be constructed of a durable, waterproof, rustproof metal or other material approved by the Department;
 - (C) The information plate shall not be removed; and
 - (D) The information plate shall be stamped or engraved to show the following:
 - (i) the date the pump was installed;
 - (ii) the depth of the pump intake; and
 - (iii) the horsepower rating of the pump.
- (4) Controlled flow. Every artesian flowing well shall be constructed, equipped, and operated to prevent the uncontrolled discharge of groundwater. Flow discharge control shall be provided to conserve the groundwater resource and prevent or reduce the loss of artesian hydraulic head. Flow control may consist of valved pipe connections, watertight pump connections, receiving tank, flowing well pitless adapter, packer, or other methods approved by the Department to prevent the loss of artesian hydraulic head and stop the flow of water as referenced in G.S. 87-88(d). Well owners shall be responsible for the operation and maintenance of the valve.
- (5) Pitless adapters or pitless units shall be allowed as a method of well head completion under the following conditions:
 - (A) Design, installation, and performance standards are those specified in PAS-97(04), which is hereby incorporated by reference including subsequent amendments and editions and can be obtained from the Water System Council National Programs Office, 1101 30th Street, N.W., Suite 500, Washington, DC 20007 at no cost;
 - (B) The pitless device is compatible with the well casing;
 - (C) The top of the pitless unit extends at least 12 inches above land surface;
 - (D) The excavation surrounding the casing and pitless device is filled with grout from the top of the casing grout to the land surface; and
 - (E) The pitless device has an access port.
- (6) All openings for piping, wiring, and vents shall enter into the well at least 12 inches above land surface, except where pitless adapters or pitless units are used, and shall be sealed to preclude the entrance of contaminants into the well. The final land surface grade adjacent to the well head shall be such that surface water is diverted away from the well.

History Note: Authority G.S. 87-87; 87-88; S.L. 2018-65;
 Eff. February 1, 1976;
 Amended Eff. May 14, 2001; December 1, 1992; March 1, 1985; September 1, 1984; April 20, 1978;
 Temporary Amendment Eff. August 3, 2001;
 Amended Eff. September 1, 2009; August 1, 2002;
 Readopted Eff. June 15, 2020.

- (a) No well shall be located, constructed, operated, or repaired in any manner that may adversely impact the quality of groundwater.
- (b) Injection wells shall conform to the standards set forth in Section .0200 of this Subchapter.
- (c) Monitoring wells and recovery wells shall be located, designed, constructed, operated, and abandoned with materials and by methods that are compatible with the chemical and physical properties of the contaminants involved, specific site conditions, and specific subsurface conditions.
- (d) Monitoring well and recovery well boreholes shall not penetrate to a depth greater than the depth to be monitored or the depth from which contaminants are to be recovered. Any portion of the borehole that extends to a depth greater than the depth to be monitored or the depth from which contaminants are to be recovered shall be grouted completely to prevent vertical migration of contaminants.
- (e) The well shall not hydraulically connect:
 - (1) separate aquifers; or
 - (2) those portions of a single aquifer where contamination occurs in separate and definable layers within the aquifer.
- (f) The well construction materials used shall be structurally stable, corrosion resistant, and non-reactive based upon the depth of the well and any contaminants to be monitored or recovered.
- (g) The well shall be constructed in such a manner that water or contaminants from the land surface cannot migrate along the borehole annulus into any packing material or well screen area.
- (h) In non-water supply wells, packing material placed around the screen shall extend one foot or greater above the top of the screen and a one foot or greater thick seal, comprised of chip or pellet bentonite or other material approved by the Department as equivalent, shall be emplaced directly above and in contact with the packing material. If shallow groundwater is observed within five feet or less of land surface during well construction, the packing material and seal shall comply with Paragraph (j) of this Rule.
- (i) In non-water supply wells, grout shall be placed in the annular space between the outermost casing and the borehole wall from the land surface to the top of the bentonite seal above any well screen or to the bottom of the casing for open end wells. The grout shall comply with Paragraph (e) of Rule .0107 of this Section.
- (j) For non-water supply wells in which the stabilized water table is visible within five feet of land surface during well installation or field investigation activities, well construction shall meet each of the following requirements:
 - (1) Packing material placed in the annular space around the well screen shall extend six inches or greater above the top of the screen;
 - (2) A six-inch or greater thick seal comprised of chip or pellet bentonite shall be placed in the annular space above and in direct contact with the packing material;
 - (3) A one-foot or greater seal of concrete or cement grout shall be installed in the annular space from land surface to the top of the bentonite seal (upper one foot of well horizon); and
 - (4) Shallow wells of this class shall be equipped with a two-foot or greater concrete pad around the well, flush with the land surface to prevent surface water infiltration.

If a well is installed under this Paragraph, the existence of a shallow water table shall be verified by a NC certified well contractor, licensed professional engineer, geologist, or soil scientist and noted on all documents or reporting forms submitted.

- (k) All wells shall be grouted within seven days after the casing is set. If the well penetrates any water-bearing zone that contains contaminated or saline water, the well shall be grouted within one day after the casing is set.
- (l) All non-water supply wells, including temporary wells, shall be secured with a locking well cap to ensure against unauthorized access and use.
- (m) All non-water supply wells shall be equipped with a steel outer well casing or flush-mount cover, set in concrete, and other measures to protect the well from damage by normal site activities.
- (n) Any well that would flow under natural artesian conditions shall be valved so that the flow can be regulated.
- (o) In non-water supply wells, the well casing shall be terminated no less than 12 inches above land surface unless all of the following conditions are met:
 - (1) site-specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; and
 - (2) the well head is completed in such a manner so as to preclude surficial contaminants from entering the well.
- (p) Each non-water supply well shall have permanently affixed an identification plate. The identification plate shall be constructed of a durable, waterproof, or rustproof material and shall contain the following information:
 - (1) well contractor's name and certification number;
 - (2) the date the well was completed;

- (3) the total depth of the well;
 - (4) a warning that the well is not for water supply and that the groundwater may contain hazardous materials;
 - (5) the depth to the top and bottom of each screen; and
 - (6) the well identification number or name assigned by the well owner.
- (q) Each non-water supply well shall be developed such that the level of turbidity or settleable solids does not preclude accurate chemical analyses of any fluid samples collected or adversely affect the operation of any pumps or pumping equipment.
- (r) Wells constructed for the purpose of monitoring or testing for the presence of liquids associated with tanks regulated under 15A NCAC 02N shall be constructed in accordance with 15A NCAC 02N .0504.
- (s) Wells constructed for the purpose of monitoring for the presence of vapors associated with tanks regulated under 15A NCAC 02N shall:
- (1) be constructed in such a manner as to prevent the entrance of surficial contaminants or water into or alongside the well casing; and
 - (2) be provided with a locking well cap to ensure against unauthorized access and use.
- (t) Temporary wells and all other non-water supply wells shall be constructed in such a manner as to preclude the vertical migration of contaminants within and along the borehole channel.
- (u) Geotechnical borings advanced for building activities, such as foundation testing and road bed strength evaluations shall not be considered wells as defined in G.S. 87-85(14) if they are immediately abandoned after use pursuant to Rule .0113(d)(1) of this Section. These borings shall not require submittal of a well construction or abandonment record pursuant to Rule .0114 of this Section.
- (v) Soil borings advanced for such activities as collecting soil samples for contamination assessment or characterization soil profiles shall not be considered wells as defined in G.S. 87-85(14) if they are not intended to penetrate the water table and are abandoned after samples are collected pursuant to Rule .0113(d)(1) of this Section. These borings shall not require submittal of a well construction or well abandonment records pursuant to Rule .0114 of this Section.

*History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. September 1, 2009, April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978;
 Readopted Eff. September 1, 2019.*

15A NCAC 02C .0109 PUMPS AND PUMPING EQUIPMENT

- (a) The pumping capacity of the pump shall be consistent with the intended use and yield characteristics of the well.
- (b) The pump and related equipment for the well shall be located to permit easy access and removal for repair and maintenance.
- (c) The base plate of a pump placed directly over the well shall be designed to form a watertight seal with the well casing or pump foundation.
- (d) In installations where the pump is not located directly over the well, the annular space between the casing and pump intake or discharge piping shall be closed with a watertight seal.
- (e) The well head shall be equipped with a screened vent to allow for the pressure changes within the well unless a suction lift pump or single-pipe jet pump is used or artesian flowing well conditions are encountered.
- (f) The person installing the pump in any water supply well shall install a threadless sampling tap at the wellhead for obtaining water samples except:
 - (1) In the case of suction pump or offset jet pump installations the threadless sampling tap shall be installed on the return (pressure) side of the pump piping; and
 - (2) In the case of pitless adapter installations, the threadless sampling tap shall be located upstream of the water storage tank.

The threadless sampling tap shall be turned downward, located a minimum of 12 inches above land surface, floor, or well pad, and positioned such that a water sample can be obtained without interference from any part of the wellhead. If the wellhead is also equipped with a threaded hose bibb in addition to the threadless sampling tap, the hose bibb shall be fitted with a backflow preventer or vacuum breaker.

- (g) A priming tee shall be installed at the well head in conjunction with offset jet pump installations.
- (h) Joints of any suction line installed underground between the well and pump shall be tight under system pressure.

- (i) The drop piping and electrical wiring used in connection with the pump shall meet all applicable underwriters specifications.
- (j) Only potable water shall be used for priming the pump.
- (k) Any materials containing lead shall meet NSF 61 standards.

*History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. September 1, 2009, December 1, 1992; April 20, 1978;
 Readopted Eff. September 1, 2019.*

15A NCAC 02C .0110 WELL TESTS FOR YIELD

(a) Every domestic well shall be tested for capacity by one of the following methods:

- (1) Pump Method
 - (A) select a permanent measuring point, such as the top of the casing;
 - (B) measure and record the static water level below or above the measuring point prior to starting the pump;
 - (C) measure and record the discharge rate at intervals of 10 minutes or less;
 - (D) measure and record water levels using a steel or electric tape at intervals of 10 minutes or less;
 - (E) continue the test for a period of at least one hour; and
 - (F) make measurements within an accuracy of plus or minus one inch.
- (2) Bailer Method
 - (A) select a permanent measuring point, such as the top of the casing;
 - (B) measure and record the static water level below or above the measuring point prior to starting the bailing procedure;
 - (C) bail the water out of the well for a period of one hour or longer;
 - (D) determine and record the bailing rate in gallons per minute at the end of the bailing period; and
 - (E) measure and record the water level after stopping bailing process.
- (3) Air Rotary Drill Method
 - (A) measure and record the amount of water being injected into the well during drilling operations;
 - (B) measure and record the discharge rate in gallons per minute at intervals of one hour or less during drilling operations;
 - (C) after completion of the drilling, continue to blow the water out of the well for 30 minutes or longer and measure and record the discharge rate in gallons per minute at intervals of 10 minutes or less during the period; and
 - (D) measure and record the water level after discharge ceases.
- (4) Air Lift Method. Measurements shall be made through a pipe placed in the well. The pipe shall have an inside diameter of at least five-tenths of an inch or greater and shall extend from top of the well head to a point inside the well that is below the bottom of the air line.
 - (A) Measure and record the static water level prior to starting the air compressor;
 - (B) Measure and record the discharge rate at intervals of 10 minutes or less;
 - (C) Measure and record the pumping level using a steel or electric tape at intervals of 10 minutes or less; and
 - (D) Continue the test for a period of one hour or longer.

(b) Public, Industrial, and Irrigation Wells. Every industrial or irrigation well and, if required by rule adopted by the Commission for Public Health, every well serving a public water supply system upon completion shall be tested for capacity by the following or equivalent method:

- (1) The water level in the well to be pumped and in all observation wells shall be measured and recorded prior to starting the test.
- (2) The well shall be tested by a pump of sufficient size and lift capacity to test the yield of the well, consistent with the well diameter and purpose.
- (3) The pump shall be equipped with throttling devices to reduce the discharge rate to approximately 25 percent of the maximum capacity of the pump.

- (4) The test shall be conducted for a period of 24 hours or longer without interruption and, except for wells constructed in Coastal Plain aquifers, shall be continued for a period of four hours or longer after the pumping water level stabilizes.
- (5) The pump discharge shall be set at a constant rate or rates that can be maintained throughout the testing period. If the well is tested at two or more pumping rates (a step-drawdown test), pumping at each pumping rate shall continue to the point that the pumping water level declines no more than 0.1 feet per hour for a period of four hours or more for each pumping rate, except for wells constructed to Coastal Plain aquifers. In wells constructed in Coastal Plain aquifers, pumping at each pumping rate shall continue for four hours or longer.
- (6) The pump discharge rate shall be measured by an orifice meter, flowmeter, weir, or equivalent metering device. The metering device used shall have a calibration accuracy within plus or minus five percent of a known standard.
- (7) The discharge rate of the pump and time shall be measured and recorded at intervals of 10 minutes or less during the first two hours of the pumping period for each pumping rate. If the pumping rate is constant after the first two hours of pumping, discharge measurements and recording may be made at longer time intervals not to exceed one hour.
- (8) The water level in each well and time shall be measured and recorded at intervals of five minutes or less during the first hour of pumping and at intervals of 10 minutes or less during the second hour of pumping. After the second hour of pumping, the water level in each well shall be measured at such intervals that the lowering of the pumping water level does not exceed three inches between measurements.
- (9) A reference point for water level measurements shall be selected and recorded for the pumping well and each observation well to be measured during the test. All water level measurements shall be made from the selected reference points, which shall be permanently marked.
- (10) All water level measurements shall be made with a steel or electric tape or equivalent measuring device.
- (11) All water level measurements shall be made within an accuracy of plus or minus one inch or to 0.1 foot.
- (12) After the completion of the pumping period, measurements of the water level recovery rate in the pumped well shall be made in the same manner as the drawdown for a period of two hours or greater.

*History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. September 1, 2009, April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978;
Readopted Eff. September 1, 2019.*

15A NCAC 02C .0111 DISINFECTION OF WATER SUPPLY WELLS

- (a) Any person constructing, repairing, testing, or performing maintenance or installing a pump in a water supply well shall disinfect the well upon completion of construction, repairs, testing, maintenance, or pump installation.
- (b) Any person disinfecting a well shall perform disinfection in accordance with the following procedures:
 - (1) Chlorination.
 - (A) Hypochlorite shall be placed in the well in sufficient quantities to produce a chlorine residual of at least 100 parts per million (ppm) in the well. Stabilized chlorine tablets or hypochlorite products containing fungicides, algaecides, or other disinfectants shall not be used. Chlorine test strips or other quantitative test methods shall be used to confirm the concentration of the chlorine residual.
 - (B) The hypochlorite shall be placed in the well by one of the following or equivalent methods:
 - (i) Granular hypochlorite may be dropped in the top of the well and allowed to settle to the bottom; or
 - (ii) Hypochlorite solutions shall be placed in the bottom of the well by using a bailer or by pouring the solution through the drill rod, hose, or pipe placed in the bottom of the well. The solution shall be flushed out of the drill rod, hose, or pipe by using water or air.

- (C) The water in the well shall be agitated or circulated to ensure thorough dispersion of the chlorine.
 - (D) The well casing, pump column, and any other equipment above the water level in the well shall be rinsed with the chlorine solution as a part of the disinfecting process.
 - (E) The chlorine solution shall stand in the well for a period of 24 hours or more.
 - (F) The well shall be pumped until there is no detectable total chlorine residual in water pumped from the well before the well is placed in use.
- (2) Other alternate materials and methods of disinfection, at least as effective as those set forth in Subparagraph (b)(1) of this Rule, may be used upon prior approval by the Department. A written request for approval of alternate disinfection methods or materials shall be submitted to the Director and will be approved or denied on a case-by-case basis following a review of the information submitted in this Subparagraph. The written request shall include the following information:
- (A) a demonstration that the method of disinfection will be at least as effective as chlorination as described under in Subparagraph (b)(1) of this Rule;
 - (B) a demonstration of non-toxicity, such as ANSI or NSF Standard certification or EPA studies;
 - (C) the general procedures for the disinfection and emplacement, including the amount of product to be used per unit volume of the well;
 - (D) a demonstration that, after disinfection is completed, the water within the well will meet 15A NCAC 02L groundwater standards; and
 - (E) any other information requested by the Department to ensure compliance with G.S. 87-84.

*History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. September 1, 2009; April 1, 2001; December 1, 1992; July 1, 1988; September 1, 1984;
 Readopted Eff. September 1, 2019.*

15A NCAC 02C .0112 WELL MAINTENANCE: REPAIR: GROUNDWATER RESOURCES

- (a) A well that is not maintained by the owner to conserve and protect the groundwater resources or that constitutes a source or channel of contamination to the water supply or any aquifer shall be permanently abandoned in accordance with Rule .0113(b) of this Section.
- (b) Wells that are used for dewatering shall be permanently abandoned in accordance with Rule .0113(b) of this Section within 30 days of completion of the dewatering activity.
- (c) All materials used in the maintenance, replacement, or repair of any well shall be in accordance with Rules .0107 and .0108 of this Section.
- (d) Broken, punctured, or otherwise defective or unserviceable casing, screens, fixtures, seals, or any part of the well head shall be repaired or replaced, or the well shall be permanently abandoned in accordance with Rule .0113(b) of this Section.
- (e) NSF International approved PVC pipe rated at 160 PSI may be used for liner pipe. The annular space around the liner casing shall be five-eighths inches or greater and shall be completely filled with neat-cement grout or sand cement grout. The well liner shall be completely grouted within 10 working days after collection of water samples or completion of other testing to confirm proper placement of the liner or within 10 working days after the liner has been installed if no sampling or testing is performed.
- (f) No well shall be repaired or altered such that the well head is completed less than 12 inches above land surface. Any grout excavated or removed as a result of the well repair shall be replaced in accordance with Rule .0107(f) of this Section.
- (g) Well rehabilitation by noncontinuous chemical treatment shall be conducted using methods and materials approved by the Department based on a demonstration that the materials and methods used will not create a violation of groundwater standards in 15A NCAC 02L, including rendering the groundwater unsuitable for its intended best use after completion of the rehabilitation. A written request for approval of a noncontinuous chemical treatment shall be submitted to the Director and shall include the following information:
 - (1) a demonstration of non-toxicity, such as ANSI or NSF Standard certification or EPA studies;

- (2) the general procedures for the rehabilitation, including the amount of product to be used per unit volume of the well;
- (3) a demonstration that, after rehabilitation is completed, the water within the well will meet 15A NCAC 02L groundwater standards;
- (4) a description of the dosing frequency; and
- (5) after submittal of request, any other information necessary for the Department to ensure compliance with G.S. 87-84.

*History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. September 1, 2009, August 1, 2002; April 1, 2001; December 1, 1992; September 1, 1984;
Readopted Eff. September 1, 2019.*

15A NCAC 02C .0113 ABANDONMENT OF WELLS

(a) A well that is temporarily removed from service shall be temporarily abandoned in accordance with the following procedures:

- (1) The well shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85(16), compatible with the casing and installed so that it cannot be removed without the use of hand tools or power tools.
- (2) The well shall be maintained whereby it is not a source or channel of contamination during temporary abandonment.

(b) Permanent abandonment of water supply wells other than bored or hand dug wells shall be performed in accordance with the following procedures:

- (1) All casing and screen materials may be removed prior to initiation of abandonment procedures if such removal will not cause or contribute to contamination of the groundwaters.
- (2) The entire depth of the well shall be sounded before it is sealed to ensure freedom from obstructions that may interfere with sealing operations.
- (3) Except in the case of temporary wells and monitoring wells, the well shall be disinfected in accordance with Rule .0111(b)(1)(A) through .0111(b)(1)(C) of this Section.
- (4) In the case of gravel-packed wells in which the casing and screens have not been removed, neat-cement or bentonite slurry grout shall be injected into the well, completely filling it from the bottom of the casing to the top.
- (5) Wells constructed in unconsolidated formations shall be completely filled with grout by introducing it through a pipe extending to the bottom of the well that can be raised as the well is filled.
- (6) Wells constructed in consolidated rock formations or that penetrate zones of consolidated rock may be filled with grout, sand, gravel or drill cuttings within the zones of consolidated rock. The top of any sand, gravel or cutting fill shall terminate at least 10 feet below the top of the consolidated rock or five feet below the bottom of casing. Grout shall be placed beginning 10 feet below the top of the consolidated rock or five feet below the bottom of casing in a manner to ensure complete filling of the casing, and extend up to the land surface. For any well in which the depth of casing or the depth of the bedrock is not known or cannot be confirmed, the entire length of the well shall be filled with grout up to the land surface.

(c) For bored wells or hand dug water supply wells constructed into unconsolidated material:

- (1) The well shall be disinfected in accordance with Rule .0111(b)(1)(A) through .0111(b)(1)(C) of this Section.
- (2) All plumbing or piping in the well and any other obstructions inside the well shall be removed from the well.
- (3) The uppermost three feet of well casing shall be removed from the well.
- (4) All soil or other subsurface material present down to the top of the remaining well casing shall be removed, including the material extending 12 inches or greater outside of the well casing;
- (5) The well shall be filled to the top of the remaining casing with grout, dry clay, or material excavated during construction of the well. If dry clay or material excavated during construction of the well is used, it shall be emplaced in lifts no more than five feet thick, each compacted in place prior to emplacement of the next lift.

- (6) A six-inch thick concrete grout plug shall be placed on top of the remaining casing such that it covers the entire excavated area above the top of the casing, including the area extending 12 inches or greater outside the well casing.
- (7) The remainder of the well above the concrete plug shall be filled with grout or soil.
- (d) All wells other than water supply wells, including temporary wells, monitoring wells, or test borings:
 - (1) less than 20 feet in depth that do not penetrate the water table shall be abandoned by filling the entire well up to land surface with grout, dry clay, or material excavated during drilling of the well and then compacted in place;
 - (2) greater than 20 feet in depth or that penetrate the water table shall be abandoned by completely filling with a bentonite or cement - type grout; and
 - (3) constructed in consolidated rock formations or that penetrate zones of consolidated rock may be filled with grout, sand, gravel, or drill cuttings within the zones of consolidated rock. The top of any sand, gravel or cutting fill shall terminate 10 feet or greater below the top of the consolidated rock or five feet below the bottom of the casing. Grout shall be placed beginning 10 feet below the top of the consolidated rock or five feet below the bottom of the casing in a manner to ensure complete filling of the casing and shall extend up to the land surface. For any well in which the depth of the casing or the depth of the bedrock is not known or cannot be confirmed, the entire length of the well shall be filled with grout up to the land surface.
- (e) Any well that acts as a source or channel of contamination shall be repaired or permanently abandoned within 30 days of receipt of notice from the Department.
- (f) All wells shall be permanently abandoned in which the casing has not been installed or from which the casing has been removed, prior to removing drilling equipment from the site.
- (g) The well owner is responsible for permanent abandonment of a well except that:
 - (1) the well contractor is responsible for well abandonment if abandonment is required because the well contractor improperly locates, constructs, repairs or completes the well;
 - (2) the person who installs, repairs or removes the well pump is responsible for well abandonment if that abandonment is required because of improper well pump installation, repair or removal; or
 - (3) the well contractor (or individual) who conducts a test boring is responsible for its abandonment at the time the test boring is completed.

*History Note: Authority G.S. 87-87; 87-88;
 Eff. February 1, 1976;
 Amended Eff. September 1, 2009; April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978;
 Readopted Eff. September 1, 2019.*

15A NCAC 02C .0114 DATA AND RECORDS REQUIRED

Reports.

- (1) A person completing or abandoning a well, including wells installed using direct push technology (DPT)(e.g., Geoprobe®), shall submit to the Division a record of the construction, on form GW-1, or abandonment, on form GW-30. For water supply wells, a copy of each completion or abandonment record shall also be submitted to the health department responsible for the county in which the well is located. The record shall be on forms provided by the Division and shall include:
 - (A) a certification that construction or abandonment was completed as required by this Section;
 - (B) the owner's name and address;
 - (C) the latitude and longitude of the well with a position accuracy of 100 feet or less;
 - (D) the diameter, depth, and yield of the well;
 - (E) the chloride concentration for wells installed in the area delineated in Rule .0107(f)(8) of this Section; and
 - (F) after submittal of form, any other information necessary as requested by the Department to ensure compliance with G.S. 87-84.
- (2) The certified record of completion or abandonment shall be submitted within a period of thirty days after completion or abandonment. For multiple DPT/Geoprobe® wells having the same construction, only one GW-1 or GW-30 is required to be submitted if the total number of wells is indicated on the form.

- (3) Furnishing of records to any person or agency other than the Division shall not constitute compliance with the reporting requirement and shall not relieve the well contractor of his or her reporting requirement to the Division.

History Note: Authority G.S. 87-87; 87-88;
Eff. February 1, 1976;
Amended Eff. September 1, 2009; April 1, 2001; December 1, 1992; September 1, 1984; April 20, 1978;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0115 DIAGRAMS AND FORMS

History Note: Authority G.S. 87-87;
Eff. February 1, 1976;
Amended Eff. April 20, 1978;
Repealed Eff. September 1, 1984.

15A NCAC 02C .0116 DESIGNATED AREAS: WATER SUPPLY WELLS CASED TO LESS THAN 20 FEET

(a) If the best or only source of potable water exists between 10 and 20 feet below the surface of the land, water supply wells may be cased to a depth less than 20 feet in the following areas:

- (1) in Currituck County in an area between the sound and a line beginning at the end of SR 1130 near Currituck Sound, thence north to the end of SR 1133, thence north to the end of NC 136 at the intersection with the sound;
- (2) on the barrier island from the Virginia state line, south to Ocracoke Inlet;
- (3) all areas lying between the Intracoastal Waterway and the ocean from New River Inlet south to New Topsail Inlet; and
- (4) all areas lying between the Intracoastal Waterway and the ocean from the Cape Fear River south to the South Carolina line.

(b) Pursuant to Rule .0118 of this Section, water supply wells may be cased to a depth less than 20 feet, if:

- (1) the only or best source of drinking water in the area exists between a depth of 10 and 20 feet below the surface of the land; and
- (2) using this source of water in the area is in the best interest of the public.

(c) In all other areas, the source of water shall be at least 20 feet below land surface. However, when adequate quantities of potable water cannot be obtained below a depth of 20 feet, the source of water may be obtained from unconsolidated rock formations at depths less than 20 feet provided that:

- (1) adequate quantities of water of acceptable quality for the intended use is not available to a minimum depth of 50 feet can be shown to exist;
- (2) the proposed source of water is the maximum feasible depth above 20 feet, but in no case less than 10 feet; and
- (3) the regional office of the Department is notified prior to the construction of a well obtaining water from a depth between 10 and 20 feet below land surface.

History Note: Authority G.S. 87-87;
Eff. April 20, 1978;
Amended Eff. September 1, 2009; December 1, 1992; July 1, 1988; September 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0117 DESIGNATED AREAS: WATER SUPPLY WELLS CASED TO MINIMUM DEPTH OF 43 FEET

Water supply wells constructed in the following areas or within 400 feet of the following areas shall be cased to a minimum depth of 43 feet and grouted to a depth of 20 feet:

- (1) Anson County generally west of a line beginning at the intersection of the runs of the Pee Dee River and Buffalo Creek, thence generally northeast to SR 1627, thence generally south along SR 1627 to the intersection with SR 1632, thence generally west along SR 1632 to the intersection with US 52, thence generally south along US 52 to the intersection with SR 1418, thence generally

- southwest along SR 1418 to the intersection of NC 218, thence south along NC 218 to the intersection with US 74, thence generally west along US 74 to the intersection of SR 1251, thence generally southwest along SR 1251 to the intersection with SR 1240, thence generally southeast along SR 1240 to the intersection with SR 1252, thence generally south along SR 1252 to the intersection with SR 1003, thence generally west along SR 1003 to the Union County line;
- (2) Cabarrus County generally east of a line beginning at the intersection of SR 1113 and the Union County line, thence generally northeast along SR 1113 to the intersection with SR 1114, thence generally east along SR 1114 to the Stanly County line, thence generally northeast along the county line to the intersection with SR 1100, thence generally northeast along SR 1100 to the intersection of with SR 2622, thence generally southeast along SR 2622 to the intersection with SR 2617, thence generally northeast along SR 2617 to the intersection with SR 2611, thence generally north along SR 2611 to the intersection with NC 73, thence generally east along NC 73 to the intersection with SR 2453, thence generally northeast along SR 2453 to the intersection with SR 2444, thence generally northeast along SR 2444 to the Rowan County line;
 - (3) Davidson County generally east of a line starting at the intersection of the runs of Abbotts Creek and the Yadkin River in High Rock Lake, thence generally north along Abbotts Creek to NC 8 bridge, thence generally north along NC 8 to the intersection with Interstate 85, thence generally northeast along Interstate 85 to the intersection with US 64, thence generally southeast along US 64 to the Randolph County line;
 - (4) Montgomery County generally west of a line beginning at the intersection of SR 1134 with the Randolph County line, thence generally south along SR 1134 to the intersection with SR 1303, thence generally south along SR 1303 to the intersection with NC 109, thence generally southeast along NC 109 to the intersection with SR 1150, thence generally south along SR 1150 to the intersection with NC 73, thence generally southeast along NC 73 to the intersection with SR 1227, thence generally east along SR 1227 to the intersection with SR 1130, thence generally northeast along SR 1130 to the intersection with SR 1132, thence generally southeast along SR 1132 to the intersection with SR 1174, thence generally east along SR 1174 to the intersection with NC 109, thence generally north along NC 109 to the intersection with SR 1546, generally southeast along SR 1546 to the intersection of SR 1543, thence generally south along SR 1543 to the intersection with NC 731, thence generally west along NC 731 to the intersection with SR 1118, thence generally southwest along SR 1118 to the intersection with SR 1116, thence generally west along SR 1116 to the intersection with NC 109, thence generally south along NC 109 to the intersection with the Richmond County line;
 - (5) Randolph County generally west of a line beginning at the intersection of US 64 with the Davidson County line, thence generally east along US 64 to the intersection with NC 49, thence generally southwest along NC 49 to the intersection with SR 1107, thence generally south along SR 1107 to the intersection with SR 1105, thence southeast along SR 1105 to the intersection with the Montgomery County line;
 - (6) Rowan County generally east of a line beginning at the intersection of SR 2352 with the Cabarrus County line, thence generally northeast along SR 2352 to the intersection with SR 2353, thence generally north along SR 2353 to the intersection with SR 2259, thence generally northeast along SR 2259 to the intersection with SR 2142, thence north along SR 2142 to the intersection with SR 2162, thence generally northeast along SR 2162 to the intersection with the run of the Yadkin River in High Rock Lake;
 - (7) Union County generally east of a line beginning at the intersection of SR 1117 with the South Carolina-North Carolina State line, thence generally north along SR 1117 to the intersection with SR 1111, thence generally northwest along SR 1111 to the intersection with NC 75, thence generally northwest along NC 75 to the intersection with NC 16, thence generally north along NC 16 to the intersection with SR 1008, thence generally northeast along SR 1008 to the intersection with SR 1520, thence generally northeast along SR 1520 to the intersection with NC 218, thence generally east along NC 218 to the intersection with US 601, thence generally north along US 601 to the intersection with SR 1600, thence generally northeast along SR 1600 to the intersection with the Cabarrus County line; and
 - (8) Stanly County -- all.

Eff. April 20, 1978;
Amended Eff. September 1, 2009, April 1, 2001;
Readopted Eff. June 15, 2020.

15A NCAC 02C .0118 VARIANCE

(a) The Secretary may grant a variance from any construction standard under the rules of this Section, as set forth in Rule .0119 of this Section. Any variance request shall be submitted using the official form approved the Division as set forth in Paragraph (b) of this Rule and may be granted by the Secretary to the person responsible for the construction of the well for which the variance is sought, if:

- (1) the use of the well will not endanger human health and welfare or the groundwaters; and
- (2) construction in accordance with the standards is not technically feasible in such a manner as to afford a reasonable water supply at a reasonable cost.

(b) The variance request application form shall be submitted to the Division and shall include the following:

- (1) the owner's name, mailing address, and Email address;
- (2) the owner's telephone number(s);
- (3) the physical location of the well site;
- (4) the well contractor's name and State certification number;
- (5) the well contractor's mailing address and Email address;
- (6) the well contractor's telephone number(s);
- (7) a map of the site, to scale, showing the locations of all existing and proposed well(s) in relation to:
 - (A) road names and property boundaries;
 - (B) buildings and structures;
 - (C) other wells;
 - (D) surface water bodies; and
 - (E) known sources of contamination;
- (8) the reason for the variance request;
- (9) a construction diagram of the proposed well(s) including specifications describing all atypical materials or methods to be used and means for assuring the integrity and quality of the finished well(s);
- (10) a copy of the local well application and permit, if applicable;
- (11) the signatures of the well contractor and well owner(s); and
- (12) after submittal of form, any other information necessary as requested by the Department to ensure compliance with G.S. 87-84.

(c) The Secretary may impose such conditions on a variance or the use of a well for which a variance is granted and is necessary to ensure compliance with G.S. 87-84. The facts supporting any variance under this Rule shall be in writing and made part of the variance.

(d) The Secretary shall respond in writing to a request for a variance within 30 days after the receipt of the variance request.

(e) A variance applicant who is dissatisfied with the decision of the Secretary may commence a contested case by filing a petition under G.S. 150B-23 within 60 days after receipt of the decision.

History Note: Authority G.S. 87-84; 87-87; 87-88; 143-215.3(a)(4);
Eff. April 20, 1978;
Amended Eff. September 1, 2009; April 1, 2001; December 1, 1992; September 1, 1988;
September 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0119 DELEGATION

(a) The Secretary is delegated the authority to grant permission for well construction under G.S. 87-87.

(b) The Secretary is delegated the authority to give notices and sign orders for violations under G.S. 87-91.

(c) The Secretary may grant a variance from any construction standard, or the approval of alternate construction methods or materials, specified under Rule .0118 of this Section.

History Note: Authority G.S. 143-215.3(a)(4);
Eff. March 1, 1985;
Amended Eff. October 1, 2009; December 1, 1992;
Readopted Eff. September 1, 2019.

SECTION .0200 - CRITERIA AND STANDARDS APPLICABLE TO INJECTION WELLS

15A NCAC 02C .0201 PURPOSE

The rules in this Section establish classes of injection wells and set forth requirements and procedures for permitting, constructing, operating, monitoring, reporting, and abandoning approved types of injection wells. They also establish standards for abandoning, monitoring, and reporting non-permitted wells used for the injection of wastes or any substance of a composition and concentration such that, if it were discharged to the land or waters of the State, would adversely affect human health or would otherwise render those waters unsuitable for their best intended usage. Except as provided for in G.S. 143-215.1A, the discharge of any wastes to the subsurface by means of wells is prohibited by G.S. 143-214.2(b).

History Note: Authority G.S. 87-84; 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Amended Eff. May 1, 2012; September 1, 1996; Readopted Eff. September 1, 2019.

15A NCAC 02C .0202 SCOPE

The rules in this Section apply to all construction, operation, use, modification, alteration, repair, and abandonment activities of all injection wells as defined herein. These Rules do not apply to subsurface distribution systems associated with sewage treatment and disposal permits issued in accordance with G.S. 130A.

History Note: Authority G.S. 87-86; 87-87; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Amended Eff. May 1, 2012; September 1, 1996; Readopted Eff. September 1, 2019.

15A NCAC 02C .0203 CONFLICT WITH OTHER LAWS, RULES, AND REGULATIONS

The provisions of any federal, county, or municipal laws, rules, or regulations establishing injection well standards affording greater protection to the public welfare, safety, and health and to the groundwater resources shall prevail, within the jurisdiction of such agency or municipality, over standards established by the rules in this Section.

History Note: Authority G.S. 87-87; 87-96; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Amended Eff. September 1, 1996; Readopted Eff. September 1, 2019.

15A NCAC 02C .0204 DEFINITIONS

In addition to the terms defined in Rule .0102 of this Subchapter, the following terms and phrases apply:

- (1) "Abandonment or Plugging Record" means a listing of permanent or temporary abandonment of a well and may contain a well log or description of amounts and types of abandonment material used, the method employed for abandonment, a description of formation location, formation thickness, and location of abandonment structures.
- (2) "Aquifer Storage and Recovery Well (ASR)" means a well that is used to inject potable water for the purposes of subsurface storage and for later recovery of the injected water.
- (3) "Area of Review" means the area around an injection well as specified in each applicable rule.
- (4) "Best intended usage" means best usage as used in 15A NCAC 02L .0201 for each groundwater classification.
- (5) "Catastrophic Collapse" means the collapse of overlying strata caused by removal of underlying materials.
- (6) "Closed-Loop Geothermal Well System" means a system of continuous piping, part of which is installed in the subsurface via vertical or angled borings, through which moves a fluid that does not exit the piping, but is used to transfer heat energy between the subsurface and the fluid in

association with a heating and cooling system. A variation of this type of system consists of the continuous piping emplaced into a water supply well such that the standing column of groundwater serves as the heat transfer medium.

- (7) "Closed-Loop Groundwater Remediation System" is as defined in G.S. 143-215.1A.
- (8) "Cluster" means two or more geothermal injection wells connected to the same manifold or header of a geothermal heating and cooling system.
- (9) "Confined or Enclosed Space" means any space that has a restricted means of entry and exit and is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere.
- (10) "Confining Zone" means a geological formation, group of formations, or part of a formation that is capable of limiting movement of groundwater.
- (11) "Contaminant" is as defined in 15A NCAC 02L .0102.
- (12) "Flow Rate" means the volume per unit time of a fluid moving past a fixed reference point.
- (13) "Fluid" means a material or substance which is capable of flowing whether in a semisolid, liquid, sludge, gas, or other form or state.
- (14) "Formation Fluid" means fluid present in a formation under natural conditions. This shall not include introduced fluids, such as drilling mud and grout, used to facilitate the construction or development of a well.
- (15) "Generator" means any person, identified by site location, whose act or process produces hazardous waste.
- (16) "Groundwaters" mean those waters occurring in the subsurface under saturated conditions.
- (17) "Hazardous Waste" means any solid, semisolid, liquid, or contained gaseous waste or combination thereof that, because of its quantity, concentration, or physical, chemical or infectious characteristic, may:
 - (a) cause or contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or
 - (b) pose a present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.
- (18) "Hazardous Waste Management Facility" means all contiguous land and structures and other appurtenances and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).
- (19) "Hose Bibb or Tap" means a fluid sampling port located on or appurtenant to a well.
- (20) "Hydraulic Conductivity" means the volume of water at the existing kinematic viscosity that will move in a porous medium in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.
- (21) "Hydraulic or Pneumatic Fracturing" means the intentional act of injecting potable water, ambient air, or other approved fluids, which may carry a proppant, for the purpose of forming new fractures or propagating existing fractures in a geologic formation or portion thereof with the intent of increasing the formation's permeability.
- (22) "Hydrostratigraphic Unit" means a body of rock or unconsolidated sediment distinguished and characterized by observable hydraulic properties that relate to its ability to receive, store, transmit, and yield water.
- (23) "Infiltration gallery" means a subsurface ground absorption system designed for the introduction of treated wastewater into the subsurface environment.
- (24) "Injectant" means a solid or fluid that is emplaced in the subsurface by means of an injection well.
- (25) "Injection" means emplacement or discharge into the subsurface of a solid or fluid substance or material. This definition shall exclude drilling fluids, grout used in association with well construction or abandonment, and fluids used in connection with well development, disinfection, rehabilitation, or stimulation.
- (26) "Injection Well" means any well as defined in G.S. 87-85 whose depth is greater than its largest surface dimension and that is used, or intended to be used, for the injection of fluids or solids into the subsurface or groundwaters.
- (27) "Injection Zone" means a geological formation, group of formations, or part of a formation receiving solids or fluids through an injection well.

- (28) "In-situ Thermal (IST) Well Systems" means a well or wells that are used to apply heat in a targeted subsurface zone to promote remediation, such as electrical resistance heating (ERH), thermal conductive heating (TCH), or steam enhanced extraction (SEE).
- (29) "Lithology" means the description of rocks or sediments on the basis of their physical and chemical characteristics.
- (30) "Lithostratigraphic Unit" means a body of rock or unconsolidated sediment that is distinguished and characterized by observable lithologic features or its position relative to other bodies of rock or unconsolidated sediment.
- (31) "Mechanical Integrity" means:
- (a) an absence of a leak in the casing, tubing, or packer of an injection well; and
 - (b) an absence of fluid movement through vertical channels adjacent to the injection well bore.
- (32) "Operation" means any injection well or system.
- (33) "Oversight agency" means the state or local agency with jurisdiction over a contamination incident.
- (34) "Permit" means an authorization, license, or equivalent control document issued by the Director to implement the requirements of the rules of this Section.
- (35) "Permitted by Rule" means that the injection activity is authorized by the rules of this Section and does not require the issuance of an individual permit when injection wells are constructed and operated in accordance with the rules of this Section.
- (36) "Plug" means the act or process of stopping the flow of fluids into or out of a formation through a borehole or well penetrating that formation.
- (37) "Potable Water" means those waters of the State that are suitable for drinking, culinary, or food processing purposes.
- (38) "Pressure" means the total load or force per unit area acting on a surface.
- (39) "Proppant" means a granular substance such as quartz sand or other material approved by the Department of Health and Human Services' Division of Public Health that is used to hold open cracks formed in the subsurface as a result of hydraulic or pneumatic fracturing.
- (40) "Receptor" means any human, plant, animal, or structure that is, or has the potential to be, affected by the release or migration of contaminants. Any well constructed for the purpose of monitoring groundwater and contaminant concentrations shall not be considered a receptor.
- (41) "Subsidence" means the lowering of the natural land surface in response to earth movements; reduction of formation fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (hydrocompaction); oxidation of organic matter in soils; or added load on the land surface.
- (42) "Subsurface Distribution System" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids or solids below the surface of the ground.
- (43) "Transmissivity" means the rate at which water of the prevailing kinematic viscosity is transmitted through a unit width of an aquifer under a unit hydraulic gradient. It equals the hydraulic conductivity multiplied by the aquifer thickness.
- (44) "Thermally Enhanced Grout" is a grout that is used to seal or grout water well annular spaces and geothermal ground source heat loops. It is engineered to provide efficient heat transfer and to create a low permeability seal.
- (45) "Underground Sources of Drinking Water" means all underground waters of the State classified as existing or potential water supplies in 15A NCAC 02L.
- (46) "Waste" is as defined in G.S. 143-213(18).
- (47) "Waters" or "Waters of the State" is as defined in G.S. 143-212.
- (48) "Water table" is as defined in 15A NCAC 02L .0102.

*History Note: Authority G.S. 87-85; 87-87; 143-213; 143-215.1A;
Eff. August 1, 1982;
Amended Eff. May 1, 2012; September 1, 1996; July 1, 1988; March 1, 1984;
Readopted Eff. September 1, 2019.*

History Note: Authority G.S. 87-87; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. September 1, 1996;
Repealed Eff. May 1, 2012.

15A NCAC 02C .0206 CORRECTIVE ACTION

(a) Injection wells not constructed in compliance with these Rules shall be brought into compliance with the rules in this Section or abandoned by the person responsible for the construction of the wells within 30 calendar days of becoming aware of any noncompliance.

(b) If operation of any injection facility is not in compliance with the requirements of the rules in this Section, or if continued operation of the injection facility threatens any water quality standard or classification established under the authority of G.S. 143-214.1, the owner of the injection facility shall:

- (1) stop all injection activities;
- (2) notify the Division orally by the close of the next business day and in writing within five calendar days of becoming aware of any noncompliance;
- (3) perform a site assessment and submit the site assessment to the Division within 30 calendar days of notifying the Division. The Director may approve an alternate time period greater than 30 calendar days based on the severity and extent of noncompliance. The site assessment report shall include a description of:
 - (A) the source and cause of contamination;
 - (B) any imminent hazards to public health and safety and actions taken to mitigate them;
 - (C) all receptors and exposure pathways;
 - (D) the horizontal and vertical extent of soil and groundwater contamination and all factors affecting the contaminant transport; and
 - (E) any geological and hydrogeological features influencing the movement or chemical or physical character of the contaminants; and
- (4) submit a corrective action plan and a proposed schedule for implementation of the corrective action to the Director for approval. In reviewing the proposed plan and schedule, the Director shall consider the compliance history of the well owner, the severity and extent of noncompliance, and any other criteria necessary for the protection of human health and the environment. The corrective action plan shall include:
 - (A) a description of the proposed corrective action and the reasons for its selection;
 - (B) specific plans, including engineering details where applicable, for restoring the groundwater quality and for restoring the integrity of the injection facility if the injection activity is to continue;
 - (C) a schedule for the implementation and operation of the proposed plan; and
 - (D) a monitoring plan for evaluating the effectiveness of the proposed corrective action.

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. May 1, 2012; September 1, 1996; March 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0207 MECHANICAL INTEGRITY

(a) An injection well has internal mechanical integrity, meaning there is no leak in the casing, tubing, or packer, as demonstrated by one of the following methods:

- (1) monitoring of the tubing-casing annulus pressure, following an initial pressure test, with sufficient frequency to be representative. This test shall be performed at the well head while maintaining an annulus pressure different from atmospheric pressure;
- (2) pressure testing with liquid or gas; or
- (3) any other method proposed by the permittee and approved by the Director as equally effective.

(b) An injection well has external mechanical integrity, meaning there is no fluid movement into groundwaters through vertical channels adjacent to the injection well bore, as determined by one of the following methods:

- (1) the results of a temperature or noise log;
- (2) grouting records plus predictive calculations demonstrating that the injection pressures will not exceed the strength of the grout; or

- (3) any other method proposed by the permittee and approved by the Director as equally effective.
- (c) In conducting and evaluating the tests enumerated in this Section or other tests allowed by the Director, the owner or operator shall apply methods and standards generally accepted in the industry. When the well owner or operator reports the results of mechanical integrity tests, a description of the tests and the methods used shall be included.
- (d) The Director may require additional or alternative tests if the results presented by the owner or operator under Paragraph (c) of this Rule do not demonstrate that an injection well has mechanical integrity.
- (e) If an injection well fails to demonstrate mechanical integrity, the well owner or operator shall take corrective action as specified in Rule .0206 of this Section.

History Note: Authority G.S. 87-87; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. May 1, 2012; September 1, 1996; March 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0208 FINANCIAL RESPONSIBILITY

When required by the rules of this Section, the permittee shall maintain and demonstrate financial responsibility and resources in the form of performance bonds, trust funds, surety bonds, letters of credit, financial tests, insurance or corporate guarantees, or other forms of financial assurances approved by the Director as equivalent to close, plug, and abandon the injection operation.

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c); 40 C.F.R. 144.52(a)(7); 40 C.F.R. 145.11(a)(20);
Eff. August 1, 1982;
Amended Eff. May 1, 2012; September 1, 1996;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0209 CLASSIFICATION OF INJECTION WELLS

Injection Wells are classified as follows:

- (1) Class 1. No person shall construct, use, or operate an injection well of this class. This class applies to industrial, municipal, and nuclear disposal wells that are used to inject wastes beneath the lowermost formation containing underground sources of drinking water. A description of the primary function for wells of this class is as follows:
 - (a) Hazardous Waste Disposal Well. These wells are used by generators of hazardous wastes or owners of hazardous waste management facilities to inject hazardous waste.
 - (b) Industrial Disposal Well. These wells are used to inject non-hazardous industrial waste.
 - (c) Municipal Disposal Well. These wells are used to inject non-hazardous waste.
 - (d) Nuclear Disposal Well. These wells are used to inject nuclear waste.
- (2) Class 2. No person shall construct, use, or operate an injection well of this class. This class applies to oil and gas production and storage related injection wells and includes wells that are used to inject fluids:
 - (a) that are brought to the surface in connection with natural gas storage operations or conventional oil or natural gas production;
 - (b) for enhanced recovery of oil or natural gas; and
 - (c) for storage of hydrocarbons that are liquid at standard temperature and pressure.
- (3) Class 3. No person shall construct, use, or operate an injection well of this class. This class applies to wells that are used for the purpose of extraction of minerals or energy. A description of the primary function for wells of this class is as follows:
 - (a) In Situ Production of Uranium or Other Metals. This category includes only in-situ production from ore bodies that have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class 5.
 - (b) Solution Mining Well. These wells are used in the solution mining of salts or potash.
 - (c) Sulfur Mining Well. These wells are used in the mining of sulfur by the Frasch process.
- (4) Class 4. No person shall construct, use, or operate an injection well of this class. This class applies to injection wells that are used to inject hazardous wastes into or above a formation containing an underground source of drinking water and includes wells used by:

- (a) generators of hazardous wastes or radioactive wastes; and
 - (b) owners of hazardous waste management facilities, or radioactive waste disposal sites.
- (5) Class 5. This class applies to all injection wells not included in Class 1, 2, 3, 4, or 6.
- (a) The construction, use, or operation of the following Class 5 injection well types is prohibited. A description of the primary function for these prohibited Class 5 wells is as follows:
 - (i) Agricultural Drainage Well. These wells receive irrigation tailwaters, other field drainage, animal yard, feedlot, or dairy runoff;
 - (ii) Air Scrubber Waste Disposal Well. These wells are used to inject wastes from air scrubbers;
 - (iii) Gaseous Hydrocarbon Storage Well. These wells are used for the storage of hydrocarbons that are gases at standard temperature and pressure;
 - (iv) Groundwater Aquaculture Return Flow Well. These wells inject groundwater or surface water that has been used to support aquaculture;
 - (v) In-situ Fossil Fuel Recovery Well. These wells are used for the in-situ recovery of coal, lignite, oil shale, and tar sands;
 - (vi) Mining, Sand, or Other Backfill Well. These wells are used to inject a mixture of fluid and sand, mill tailings, and other solids into mined out portions of subsurface mines, whether the injectant is a radioactive waste or not. This also includes wells used to control mine fires and acid mine drainage wells;
 - (vii) Motor Vehicle Waste Disposal Well. These wells receive wastes from motor vehicle facilities and include autobody repair shops, new and used car dealerships, specialty repair shops, such as transmission, muffler, and radiator repair shops and any facility that steam cleans or otherwise washes undercarriages or engine parts or does any vehicular repair work;
 - (viii) Sewage or Wastewater Disposal Well. These wells are used to inject sewage or wastewater from any source to the groundwaters of the State. This includes cesspools and abandoned drinking water wells;
 - (ix) Solution Mining Well. These wells are used in solution mining in conventional mines, such as stopes leaching;
 - (x) Special Drainage Well. These wells are used for disposing of water from sources other than direct precipitation. Examples of this well type include: landslide control drainage wells, water tank overflow drainage wells, swimming pool drainage wells, and lake control drainage wells; and
 - (xi) Water Softener Regeneration Brine Disposal Well. These wells are used to inject regeneration wastes from water softeners.
 - (b) The construction, use, or operation by an individual of the following Class 5 injection well types may be approved by the Director provided that the injected material does not contain any waste or any substance of a composition and concentration such that, if it were discharged to the land or waters of the State, would adversely affect human health or would otherwise render those waters unsuitable for their best intended usage:
 - (i) Aquifer Recharge Wells specified in Rule .0218 of this Section;
 - (ii) Aquifer Storage and Recovery Wells specified in Rule .0219 of this Section;
 - (iii) Aquifer Test Wells specified in Rule .0220 of this Section;
 - (iv) Experimental Technology Wells specified in Rule .0221 of this Section;
 - (v) Geothermal Aqueous Closed-Loop Wells specified in Rule .0222 of this Section;
 - (vi) Geothermal Direct Expansion Closed-Loop Wells specified in Rule .0223 of this Section;
 - (vii) Geothermal Heating/Cooling Water Return Wells specified in Rule .0224 of this Section;
 - (viii) Groundwater Remediation Wells specified in Rule .0225 of this Section;
 - (ix) Salinity Barrier Wells specified in Rule .0226 of this Section;
 - (x) Stormwater Drainage Wells specified in Rule .0227 of this Section;
 - (xi) Subsidence Control Wells specified in Rule .0228 of this Section;
 - (xii) Tracer Wells specified in Rule .0229 of this Section; and

- (xiii) Other Wells specified in Rule .0230 of this Section;
- (6) Class 6. No person shall construct, use, or operate an injection well of this class. This class applies to wells that are used for containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations.

History Note: Authority G.S. 87-87; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. August 1, 1982;
Amended Eff. May 1, 2012; September 1, 1996; March 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0210 REQUIREMENTS: WELLS USED TO INJECT WASTE OR CONTAMINANTS

The owner of any well that has been used to inject wastes or contaminants, with the exception of wells permitted in accordance with this Section, shall take corrective action as specified in Rule .0206(b) of this Section.

History Note: Authority G.S. 87-87; 87-88; 143-214.2; 143-215.1A;
Eff. August 1, 1982;
Amended Eff. September 1, 1996; March 1, 1984;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0211 GENERAL PERMITTING REQUIREMENTS APPLICABLE TO ALL INJECTION WELL TYPES

(a) A permit shall be obtained from the Director prior to constructing, operating, or using any well for injection unless the well is deemed permitted in accordance with the rules of this Section. No permit shall be granted for the injection of wastes or any substance of a composition and concentration such that, if it were discharged to the land or waters of the state, it would adversely affect human health or would otherwise render those waters unsuitable for their best intended usage unless specifically provided for by statute or by the rules in this Section.

(b) No person shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant would cause a violation of any applicable groundwater quality standard specified in Subchapter 02L or would otherwise adversely affect human health.

(c) If at any time the Director learns that any injection well may cause a violation of any applicable groundwater quality standard specified in 15A NCAC 02L that is not authorized by the rules of this Section, the Director shall do one of the following:

- (1) require an individual permit for injection wells that are otherwise permitted by rule;
- (2) require such actions as may be necessary to prevent the violation, including corrective action as required in Rule .0206 of this Section; or
- (3) take enforcement action as provided for in G.S. 87-91, G.S. 87-94, or G.S. 87-95.

(d) All permit applications shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer. For the purposes of this Section, a "responsible corporate officer" means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation;
- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
- (3) For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official; and
- (4) For all other persons: by the well owner, or his or her agent.

(e) The person signing the permit application shall certify that the data furnished on the application is accurate and that the injection well will be operated in accordance with the approved specifications and conditions of the permit.

(f) All reports shall be signed by a person described in Paragraph (d) of this Rule. All records, reports, and information required to be submitted to the Director and all public comment on these records, reports, or information shall be disclosed to the public unless the person submitting the information can show that such information, if made public, would disclose methods or processes entitled to protection as trade secrets as defined in G.S. 66-152. The Director shall determine which information is entitled to confidential treatment. If the Director determines that such information is entitled to be treated as confidential information as defined in G.S. 132-1.2, the Director shall take steps to protect such information from disclosure.

(g) The Director shall consider the cumulative effects of drilling and construction of multiple wells and operation of all proposed wells during evaluation of permit applications.

(h) All permits shall be issued for a period not to exceed five years from the date of issuance. Permits shall be deemed active until all permit requirements have been met and documentation has been received indicating that the wells meet one of the following conditions:

- (1) the wells are temporarily or permanently abandoned in accordance with Rule .0240 of this Section;
- (2) the wells have been converted to some other use; or
- (3) the wells are permitted under another permit issued by the appropriate permitting authority for that activity.

(i) All facilities shall be operated and maintained to comply with the rules of this Section.

(j) The permittee shall allow the Director or an authorized representative, upon their presentation of credentials and other documents as may be required by law, to:

- (1) enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records are required to be kept under the conditions of the permit;
- (2) have access to and copy, during normal business hours of the establishment, any records that are required to be kept under the conditions of the permit;
- (3) inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and
- (4) sample or monitor for the purposes of assuring permit compliances or as otherwise authorized, any substances or parameters.

(k) The permit may be modified, revoked and reissued, or terminated by the Director in whole or part for actions that would adversely affect human health or the environment. Such actions may include:

- (1) violation of any terms or conditions of the permit;
- (2) obtaining a permit by misrepresentation or failure to disclose fully all relevant facts; or
- (3) refusal of the permittee to allow authorized employees of the Division upon proper presentation of credentials to:
 - (A) enter upon permittee's premises on which a system is located where any records are required to be kept under terms and conditions of the permit;
 - (B) have access to and copy any records required to be kept under terms and conditions of the permit;
 - (C) inspect any monitoring equipment or method required in the permit; or
 - (D) collect any sample from the injection facility.

(l) The filing of an application by the permittee for a permit modification, revocation and reissuance, termination, or a notification of planned changes or anticipated noncompliance shall not stay any permit condition.

(m) The permittee shall furnish to the Director any information that the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. The permittee shall also furnish to the Director, upon request, copies of records required by the permit to be kept.

(n) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit for a period of at least three years from the date of the sample, measurement, report, or application. Records of monitoring information shall include the:

- (1) date, place, and time of sampling or measurements;
- (2) individuals who performed the sampling or measurements;
- (3) dates analyses were performed;
- (4) individuals who performed the analyses;
- (5) analytical techniques or methods used;
- (6) results of any such sampling, measurements, and analyses; and
- (7) description and date of any maintenance activities performed, including the name and contact information of the individuals performing such activities.

(o) The permit shall not be transferred to any person without the approval of the Director. A permit ownership or name change request shall be submitted to the Director.

(p) The permittee shall report any monitoring or other information that indicates:

- (1) noncompliance with a specific permit condition;

- (2) a contaminant may cause a violation of applicable groundwater quality standards specified in 15A NCAC 02L; and
- (3) a malfunction of the injection system may cause the injected fluids to migrate outside the approved injection zone or area.

The information shall be provided to the Director orally within 24 hours of the permittee becoming aware of the occurrence and as a written submission within five days of the occurrence. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance including dates and times, the anticipated time it is expected to continue if the noncompliance has not been corrected, and all steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); 40 CFR 144.52(a)(7); 40 CFR 145.11(a)(20); Eff. August 1, 1982; Amended Eff. May 1, 2012; February 1, 1997; October 1, 1996; March 1, 1984; Readopted Eff. September 1, 2019.

15A NCAC 02C .0212 ADDITIONAL CRITERIA AND STANDARDS: CLASS II: CLASS III

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-214.2; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Repealed Eff. March 1, 1984.

15A NCAC 02C .0213 ADDITIONAL CRITERIA AND STANDARDS APPLICABLE TO CLASS 5 WELLS

15A NCAC 02C .0214 ABANDONMENT AND CHANGE-OF-STATUS

History Note: Authority G.S. 87-87; 87-88; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. August 1, 1982; Amended Eff. February 1, 1997; October 1, 1996; March 1, 1984; Repealed Eff. May 1, 2012.

15A NCAC 02C .0215 VARIANCE

15A NCAC 02C .0216 DELEGATION

History Note: Authority G.S. 87-87(4); 87-88; 143-215.1A; 143-215.3(a)(1); 143-215.3(a)(4); 150B-23; Eff. September 1, 1996; Repealed Eff. May 1, 2012.

15A NCAC 02C .0217 PERMITTING BY RULE

(a) The following injection well systems shall be deemed to be permitted by the rules of this Section pursuant to G.S. 87-88(a) and it shall not be necessary for the Division to issue an individual permit for the construction or operation of the following injection well systems provided that the system does not result in the violation of any assigned surface water, groundwater, or air quality standard; there is no groundwater discharge of the injectant into surface waters; and all criteria for the specific systems are met:

- (1) Aquifer Test Wells specified in Rule .0220 of this Section;
- (2) Geothermal Aqueous Closed Loop Wells specified in Rule .0222 of this Section;
- (3) Geothermal Direct Expansion Closed Loop Wells specified in Rule .0223 of this Section;
- (4) Groundwater Remediation Wells specified in Rule .0225 of this Section; and
- (5) Stormwater Drainage Wells specified in Rule .0227 of this Section.

(b) Any violation of groundwater standards not authorized by the rules of this Section shall be treated in accordance with Rule .0206 of this Section.

(c) An injection well system permitted by rule under the rules of this Section shall remain permitted by rule until such time as the Director determines that it shall not be deemed to be permitted. This determination shall be made based on compliance with the provisions of the rules of this Section.

(d) If the Director determines that an injection well system shall not be permitted by rule, the Director shall require the owner of the injection well system to obtain an individual permit.

*History Note: Authority G.S. 87-87; 87-88(a);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.*

15A NCAC 02C .0218 AQUIFER RECHARGE WELLS

Aquifer Recharge Wells, which recharge depleted aquifers and inject uncontaminated water of equal or better quality than the aquifer being recharged, shall meet the requirements of Rule .0219 of this Section. However, the Director may impose additional requirements to ensure compliance with G.S. 87-84.

*History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A;
143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.*

15A NCAC 02C .0219 AQUIFER STORAGE AND RECOVERY WELLS

(a) A permit shall be obtained from the Director prior to constructing, operating, or using an Aquifer Storage and Recovery Well. "Aquifer Storage and Recovery Well" means a well that is used to inject potable water for the purposes of subsurface storage and for later recovery of the injected water.

(b) Permit Applications. In addition to the permit requirements set forth in Rule .0211 of this Section, an application shall be submitted, in duplicate, to the Director on forms furnished by the Director and shall include the following:

- (1) A site description that includes:
 - (A) the name of the well owner or person otherwise legally responsible for the injection well, his or her mailing address and telephone number, and whether the owner is a federal, state, private, public, or other entity;
 - (B) the name of the property owner, if different from the well owner, and his or her physical address, mailing address, and telephone number;
 - (C) the name, mailing address, telephone number, and geographic coordinates of the facility for which the application is submitted; and
 - (D) a list of all other injection permits associated with the subject facility.
- (2) Project Description. A description of what problem the project is intended to solve or what objective the project is intended to achieve and shall include the following:
 - (A) the history and scope of the problem or objective;
 - (B) what is currently being done to solve the problem or achieve the objective;
 - (C) why existing practices are insufficient to solve the problem or achieve the objective;
 - (D) what other alternatives were considered to solve the problem or achieve the objective; and
 - (E) how this option was determined to be the most effective or desirable to solve the problem or achieve the objective.
- (3) Demonstration of Financial Responsibility as required in Rule .0208 of this Section.
- (4) Injection Zone Determination. The applicant shall specify the horizontal and vertical portion of the injection zone within which the proposed injection activity will occur based on the hydraulic properties of that portion of the injection zone specified. No violation of groundwater quality standards specified in Subchapter 02L resulting from the injection shall occur outside the specified portion of the injection zone, as detected by a monitoring plan approved by the Director.
- (5) Hydrogeologic Evaluation. If required by G.S. 89E, G.S. 89C, or G.S. 89F, a licensed geologist, professional engineer, or licensed soil scientist shall prepare a hydrogeologic evaluation of the facility to a depth that includes the injection zone determined in accordance with Subparagraph (4) of this Paragraph. A description of the hydrogeologic evaluation shall include all of the following:
 - (A) regional and local geology and hydrogeology;
 - (B) changes in lithology underlying the facility;
 - (C) depth to the mean seasonal high water table;

- (D) hydraulic conductivity, transmissivity, and storativity of the injection zone based on tests of site-specific material, including a description of the tests used to determine these parameters;
 - (E) rate and direction of groundwater flow as determined by predictive calculations or computer modeling; and
 - (F) lithostratigraphic and hydrostratigraphic logs of test and injection wells.
- (6) Area of Review. The area of review shall be calculated using the procedure for determining the zone of endangering influence specified in 40 CFR 146.6(a), which is hereby incorporated by reference, including subsequent amendments and editions, and can be obtained electronically from the website of the Federal Register at <https://www.ecfr.gov/cgi-bin/ECFR>. The applicant shall identify all wells within the area of review that penetrate the injection or confining zone and repair or permanently abandon all wells that are improperly constructed or abandoned.
- (7) Analyses of the injection zones including:
- (A) test results of the native groundwater and the proposed recharge water for the parameters listed in Subparagraph (h)(4) of this Rule;
 - (B) geochemical analyses of representative samples of the aquifer matrix to determine the type and quantity of reactive minerals; and
 - (C) evaluation of the chemical compatibility of the native groundwater, injected water, and the aquifer matrix using site-specific geochemical data and hydraulic properties of the injection zones, and the results of any geochemical or hydrogeologic modeling. The chemical compatibility evaluation shall identify potential changes in groundwater quality resulting from the injection activities within the area of review specified in Subparagraph (6) of this Paragraph.
- (8) Injection Procedure. The applicant shall submit a description of the proposed injection procedure that includes the following:
- (A) the proposed average and maximum daily rate and quantity of injectant;
 - (B) the average maximum injection pressure expressed in units of pounds per square inch (psi);
 - (C) calculation of fracture pressures of confining units expressed in units of psi; and
 - (D) the total or estimated volume to be injected.
- (9) Injection well construction details including:
- (A) the number and depth of injection wells;
 - (B) an indication of whether the injection wells are existing or proposed;
 - (C) the depth and type of casing;
 - (D) the depth and type of screen material;
 - (E) the depth and type of grout; and
 - (F) the plans and specifications of the surface and subsurface construction of each injection well or well system.
- (10) Monitoring Wells. Monitoring wells shall be located so as to detect any movement of injection fluids, process byproducts, or formation fluids outside the injection zone as determined by the applicant in accordance with Subparagraph (4) of this Paragraph. The monitoring schedule shall be consistent with the proposed injection schedule, pace of the anticipated reactions, and rate of transport of the injected fluid. The applicant shall submit a monitoring plan that includes the following:
- (A) a list of monitoring parameters and analytical methods to be used;
 - (B) other parameters that may serve to indicate the progress of the intended reactions;
 - (C) a list of existing and proposed monitoring wells to be used; and
 - (D) a sampling schedule for monitoring the proposed injection.
- (11) Well Data Tabulation. A tabulation of data on all existing or abandoned wells within the area of review of the injection wells that penetrate the proposed injection zone, including water supply wells, monitoring wells, and wells proposed for use as injection or monitoring wells. The data shall include a description of each well's type, depth, and record of abandonment or completion.
- (12) Plan of Action. A proposed plan of action to be taken if the proposed injection operation causes fracturing of confining units, results in adverse geochemical reactions, or otherwise threatens groundwater quality.

- (13) Maps and Cross-Sections. Scaled, site-specific site plans or maps depicting the location, orientation, and relationship of facility components including the following:
 - (A) area map based on the most recent USGS 7.5' topographic map of the area, at a scale of 1:24,000, and showing the location of the proposed injection site;
 - (B) topographic contour intervals showing all facility related structures, property boundaries, streams, springs, lakes, ponds, and other surface drainage features;
 - (C) all existing or abandoned wells within the area of review of the injection wells listed in the tabulation required in Subparagraph (11) of this Paragraph that penetrate the proposed injection zone, including water supply wells, monitoring wells, and wells proposed for use as injection wells;
 - (D) potentiometric surface maps of each hydrostratigraphic unit in the injection zone(s) that show the direction of groundwater movement, and all existing and proposed wells;
 - (E) cross-sections that show the horizontal and vertical extent of the injection zones, lithostratigraphic units, hydrostratigraphic units, and all existing and proposed wells, complete with casing and screen intervals; and
 - (F) all existing sources of potential or known groundwater contamination, including waste storage, treatment, or disposal systems within the area of review of the injection well or well system.
 - (14) Any other information necessary for the Director to ensure compliance with G.S. 87-84.
- (c) Injection Volumes. The Director may establish maximum injection volumes and pressures necessary to assure that:
- (1) fractures are not initiated in the confining zones;
 - (2) injected fluids do not migrate outside the injection zone or area;
 - (3) injected fluids do not cause or contribute to the migration of contamination into uncontaminated areas; and
 - (4) there is compliance with operating requirements.
- (d) Injection.
- (1) Injection may not commence until construction is complete, the permittee has submitted notice of completion of construction to the Director, and the Director has inspected or reviewed the injection well and finds it in compliance with the permit conditions. If the permittee has not received notice from the Director of intent to inspect or otherwise review the injection well within 10 days after the Director receives the notice, the permittee may commence injection.
 - (2) Prior to granting approval for the operation, the Director shall consider the following information:
 - (A) all available logging and testing data on the well;
 - (B) a demonstration of mechanical integrity pursuant to Rule .0207 of this Section;
 - (C) the proposed operating procedures;
 - (D) the results of the formation testing program; and
 - (E) the status of corrective action on defective wells in the area of review.
- (e) Well Construction.
- (1) Wells shall not be located:
 - (A) where surface water or runoff will accumulate around the well due to depressions, drainage ways, or other landscapes that will concentrate water around the well;
 - (B) if a person would be required to enter confined spaces to perform sampling and inspection activities; or
 - (C) if injectants or formation fluids would migrate outside the approved injection zone as determined by the applicant in accordance with Subparagraph (b)(4) of this Rule.
 - (2) The methods and materials used in construction shall not threaten the physical or mechanical integrity of the well during its lifetime and shall be compatible with the proposed injection activities.
 - (3) The well shall be constructed in such a manner that surface water or contaminants from the land surface cannot migrate along the borehole annulus either during or after construction.
 - (4) The borehole shall not penetrate to a depth greater than the depth at which injection will occur unless the purpose of the borehole is the investigation of the geophysical and geochemical characteristics of an aquifer. Following completion of the investigation, the borehole beneath the zone of injection shall be completely grouted to prevent the migration of any contaminants.

- (5) Drilling fluids and additives shall contain only potable water and may be comprised of one or more of the following:
 - (A) the formation material encountered during drilling;
 - (B) materials manufactured specifically for the purpose of borehole conditioning or well construction; or
 - (C) materials approved by the Director, based on a demonstration of not adversely affecting human health or groundwater quality.
- (6) Only grouts listed under Rule .0107 of this Subchapter shall be used with the exception that bentonite grout shall not be used:
 - (A) to seal zones of water with a chloride concentration of 1,500 milligrams per liter or greater as determined by tests conducted at the time of construction; or
 - (B) in areas of the State subject to saltwater intrusion that may expose the grout to water with a chloride concentration of 1,500 milligrams per liter or greater at any time during the life of the well.
- (7) The annular space between the borehole and casing shall be grouted:
 - (A) with a grout that is non-reactive with the casing or screen materials, the formation, or the injectant;
 - (B) from land surface to the top of the gravel pack and in such a way that there is no interconnection of aquifers or zones having differences in water quality that would result in degradation of groundwater quality in any aquifer or zone; and
 - (C) so that the grout extends outward from the casing wall to a thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater; but in no case shall a well be required to have an annular grout seal thickness greater than four inches.
- (8) Grout shall be emplaced around the casing by one of the following methods:
 - (A) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the annular space around the casing and overflows at the surface;
 - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the annular space that can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application; or
 - (C) Other. Grout may be emplaced in the annular space by gravity flow to ensure complete filling of the space. Gravity flow shall not be used if water or any visible obstruction is present in the annular space at the time of grouting.
- (9) All grout mixtures shall be prepared prior to emplacement per the manufacturer's directions with the exception that bentonite chips or pellets may be emplaced by gravity flow if water is present or the chips or pellets are otherwise hydrated in place.
- (10) If an outer casing is installed, it shall be grouted by either the pumping or pressure method.
- (11) The well shall be grouted within seven days after the casing is set or before the drilling equipment leaves the site, whichever occurs first. If the well penetrates any water-bearing zone that contains saline water, the well shall be grouted within one day after the casing is set.
- (12) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.
- (13) A casing shall be installed that extends from at least 12 inches above land surface to the top of the injection zone.
- (14) Wells with casing extending less than 12 inches above land surface shall be approved by the Director only when one of the following conditions is met:
 - (A) site specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; or
 - (B) it is not operationally feasible for the well head to be completed 12 inches above land surface due to the engineering design requirements of the system.
- (15) Multi-screened wells shall not connect aquifers or zones having differences in water quality that would result in a degradation of groundwater quality in any aquifer or zone.
- (16) Prior to removing the equipment from the site, the top of the casing shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85, to preclude contaminants from entering the well.
- (17) Packing materials for gravel-and sand-packed wells shall be:
 - (A) composed of quartz, granite, or other hard, non-reactive rock material;

- (B) of uniform size, water-washed and free from clay, silt, and toxic materials;
 - (C) disinfected prior to subsurface emplacement;
 - (D) emplaced such that it will not connect aquifers or zones having differences in water quality that would result in the deterioration of groundwater quality in any aquifer or zone;
 - (E) evenly distributed around the screen and shall extend to a depth at least one foot above the top of the screen. A one-foot or greater thick seal, comprised of bentonite clay, shall be emplaced directly above and in contact with the packing material.
- (18) Each injection well shall have a well identification plate that meets the criteria specified in Rule .0107 of this Subchapter.
 - (19) A hose bibb, sampling tap, or other collection equipment shall be installed on the line entering the injection well such that a sample of the injectant can be obtained prior to its entering the injection well.
 - (20) If applicable, all piping, wiring, and vents shall enter the well through the top of the casing unless it is based on a design demonstrated to preclude surficial contaminants from entering the well.
 - (21) The well head shall be completed in such a manner as to preclude surficial contaminants from entering the well, and well head protection shall include:
 - (A) an accessible external sanitary seal installed around the casing and grouting; and
 - (B) a water-tight cap or seal compatible with the casing and installed so that it cannot be removed without the use of hand or power tools.

(f) Testing.

- (1) Well logs and other tests conducted during the drilling and construction of the wells shall be submitted to the Director after completion of well construction. A descriptive report interpreting the results of such logs and tests shall be prepared by a log analyst and submitted to the Director after completion of the tests. The accuracy and usefulness of the logs and tests shall be determined by the Director based on the intended function, depth, construction, and other characteristics of the well, and availability of similar data in the area of the drilling site. Such logs and tests shall include:
 - (A) lithostratigraphic logs of the entire borehole;
 - (B) hydrostratigraphic logs of the entire borehole; and
 - (C) deviation checks conducted on all holes where pilot holes and reaming are used at sufficiently frequent intervals to assure that vertical avenues for fluid migration through diverging holes are not created during drilling.
- (2) When the injection zone is a water-bearing formation, the following information concerning the injection zone as determined by the applicant in accordance with Subparagraph (b)(4) of this Rule shall be submitted to the Director:
 - (A) fluid pressure;
 - (B) fluid temperature;
 - (C) fracture pressure;
 - (D) other physical and chemical characteristics of the injection zone;
 - (E) physical and chemical characteristics of the formation fluids; and
 - (F) compatibility of injected fluids with formation fluids.
- (3) When the injection formation is not a water bearing formation, only the fracture pressure and other physical and chemical characteristics of the injection zone shall be determined or calculated and submitted to the Director after completion of the determinations.
- (4) Tests for mechanical integrity shall be conducted prior to operation and every 10 years thereafter in accordance with Rule .0207 of this Section. The Director may require more frequent mechanical integrity testing as set out in Rule .0207 of this Section.

(g) Operation and Maintenance.

- (1) Pressure at the well head shall be limited to a maximum that will ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.
- (2) There shall be no injection between the outermost casing and the well borehole.
- (3) Monitoring of the operating processes at the well head and protection against damage of the well head during construction and use shall be provided for by the well owner.

(h) Monitoring.

- (1) Monitoring of the groundwater quality by the permittee shall be required by the Director to demonstrate protection of the groundwaters of the State.
- (2) In determining the type, density, frequency, and scope of monitoring, the Director shall consider the following:
 - (A) physical and chemical characteristics of the injection zone;
 - (B) physical and chemical characteristics of the injected fluids;
 - (C) volume and rate of discharge of the injected fluids;
 - (D) compatibility of the injected fluids with the formation fluids;
 - (E) the number, type, and location of all wells, mines, surface bodies of water, and structures within the area of review;
 - (F) proposed injection procedures;
 - (G) expected changes in pressure, formation fluid displacement, and direction of movement of injected fluid;
 - (H) proposals of corrective action to be taken in the event of a failure in any phase of injection operations that renders the groundwaters unsuitable for their best intended usage as defined in Rule .0204 of this Section; and
 - (I) the life expectancy of the injection operations.
- (3) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- (4) The following analytical parameters shall be included:
 - (A) disinfectants and disinfection byproducts;
 - (B) radium, radionuclides, and gross alpha radiation;
 - (C) Reduction Potential (Eh), pH, Total Dissolved Solids (TDS), Biological Oxygen Demand (BOD), Total Oxygen Demand (TOD), Chemical Oxygen Demand (COD), temperature, conductivity, and dissolved oxygen;
 - (D) coliform, Escherichia coli (E. Coli), Giardia, and Cryptosporidium;
 - (E) parameters based on the source water, injection zone formation materials, native groundwater, and any other parameters necessary for the Department to ensure compliance with G.S. 87-84; and
 - (F) other parameters for which National Primary and Secondary Drinking Water Standards have been established.
- (5) Analysis of the physical, chemical, biological, or radiological characteristics of the injected fluid shall be made monthly or more frequently, as necessary in order to provide representative data for characterization of the injectant.
- (6) Continuous recording devices to monitor the injection pressure, flow, rate, and volume of injected fluid shall be installed.
- (7) Monitoring wells associated with the injection site shall be monitored quarterly or on a schedule determined by the Director to detect any migration of injected fluids from the injection zone to ensure compliance with G.S. 87-84.
- (8) Monitoring wells completed in the injection zone and adjacent to the injection zone may be affected by the injection operations. If affected, the Director may require additional monitor wells be installed outside the injection zone to detect any movement of injection fluids, process byproducts, or formation fluids outside the injection zone as determined by the applicant in accordance with Subparagraph (b)(4) of this Rule. If the operation is affected by subsidence or catastrophic collapse, additional monitoring wells shall be located so that they will not be physically affected and shall be of an adequate number to detect movement of injected fluids, process byproducts, or formation fluids outside the injection zone or area. In determining the number, location, and spacing of monitoring wells, the following criteria shall be considered by the Director:
 - (A) the population relying on the groundwater resource affected, or potentially affected, by the injection operation;
 - (B) the proximity of the injection operation to points of withdrawal of groundwater;
 - (C) the local geology and hydrology;
 - (D) the operating pressures;

- (E) the chemical characteristics and volume of the injected fluid, formation water, and process by products; and
 - (F) the number of existing injection wells.
- (i) Reporting.
- (1) A record of the construction, abandonment, or repairs of the injection well shall be submitted to the Director within 30 days of completion of the specified activities.
 - (2) All sampling results shall be reported to the Division quarterly or at another frequency determined by the Director based on the reaction rates, injection rates, likelihood of secondary impacts, and site-specific hydrogeologic information.
 - (3) The results of each test required in Paragraph (f) of this Rule shall be submitted to the Director within 30 days of the completion of the test.
- (j) Public Notice. Public notice of intent to issue permits for applications submitted pursuant to this Rule shall be given prior to permit issuance.
- (1) Such notice shall:
 - (A) be posted on the Division website and given in press releases via media outlets having coverage within the area of review;
 - (B) provide 30 days for public comments to be submitted to the Director; and
 - (C) include a description of details of the project, such as the permit applicant; the location, number, and depth of injection wells; and the injectant type, source, and volume.
 - (2) After the public comment period has ended the Director shall:
 - (A) consider the comments submitted and determine if a public hearing is warranted;
 - (B) determine if the draft permit shall be issued, modified, or denied; and
 - (C) post notice on the Division website as of the final permitting action, which shall include the issued permit or the reason for denial if the permit was denied.
 - (3) In determining if a public hearing is warranted, the Director's consideration shall include the following:
 - (A) requests by property owners within the area of review;
 - (B) potential harm to the public by not having a public hearing;
 - (C) potential harm to the applicant due to the delay in having a public hearing; and
 - (D) the likelihood of obtaining new information regarding the proposed injection.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. May 1, 2012; Readopted Eff. September 1, 2019.

15A NCAC 02C .0220 AQUIFER TEST WELLS

- (a) "Aquifer Test Wells" means wells used to inject uncontaminated fluid into an aquifer to determine the aquifer characteristics.
- (b) Injection wells of this type shall be permitted by rule when constructed and operated in accordance with this Rule.
- (c) Only potable water shall be injected through this type of injection well.
- (d) Tests for mechanical integrity shall be conducted in accordance with Rule .0207 of this Section.
- (e) Injection wells of this type shall be constructed in accordance with the well construction standards applicable to monitoring wells specified in Rule .0108 of this Subchapter;
- (f) The operation of the aquifer test well shall not cause contaminated groundwater to migrate into an area not contaminated prior to initiation of injection activities or cause a violation of applicable groundwater quality standards as specified in 15A NCAC 02L.
- (g) Within 30 days of a change of status of the well, the owner/operator shall provide the following information:
 - (1) facility name, address, and location indicated by either:
 - (A) latitude and longitude with reference datum, position accuracy, and method of collection;
 - or
 - (B) a facility site map with property boundaries;

- (2) name, telephone number, and mailing address of person responsible for installation or operation of the well;
 - (3) ownership of facility as a private individual or organization or a federal, State, county, or other public entity;
 - (4) number of injection wells and their construction details; and
 - (5) well status as proposed, active, inactive, temporarily abandoned, or permanently abandoned.
- (h) A record of the construction, abandonment, or repairs of the injection well shall be submitted to the Director within 30 days of completion of the specified activities.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0221 EXPERIMENTAL TECHNOLOGY WELLS

"Experimental Technology Wells" means wells used in experimental or unproven technologies whose operation complies with all applicable rules and statutes. Experimental Technology Wells shall comply with the rules governing the injection well types in Rule .0209(5)(b) of this Section that most closely resembles the Experimental Technology Well's hydrogeologic complexity and potential to adversely affect groundwater quality.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0222 GEOTHERMAL AQUEOUS CLOSED-LOOP WELLS

(a) "Geothermal Aqueous Closed-Loop Wells" means wells that house a subsurface system of closed-loop pipe that circulates potable water only or a mixture of potable water and performance-enhancing additives such as antifreeze, corrosion inhibitors, or scale inhibitors for heating and cooling purposes. Only additives that the Department of Health and Human Services' Division of Public Health determines not to adversely affect human health in compliance with G.S. 130A-5 shall be used.

(b) Permitted by Rule. Aqueous Closed-Loop Geothermal Wells are permitted by rule when constructed and operated in accordance with the rules of this Section.

(c) Individual Permits. If an individual permit is required pursuant to Rule .0217 of this Section, then an application for permit renewal shall be made at least 120 days prior to the expiration date of the permit.

(d) Notification. In addition to the requirements set forth in Rule .0211 of this Section, notification for systems designed to serve a single family residence shall be submitted two or more business days prior to construction and at least 30 days for all other installations. The notification shall be submitted to the Director and to the county health department. The notification shall be made using one form per facility supplied by the Director and shall include:

- (1) the well owner's name, address, telephone number, email address (if available), and whether the owner is a federal, State, private, public, or other entity. If the well operator is different from the owner then the same information shall be provided for the well operator;
- (2) the physical location of the well facility;
- (3) a description of the proposed injection activities;
- (4) a scaled, site-specific map showing the following:
 - (A) any water supply well and surface water body; septic system including drainfield, waste application area, and repair area; and any other potential sources of contamination listed in Subparagraph (e)(5) of this Rule within 250 feet of the proposed injection wells;
 - (B) property boundaries within 250 feet of the parcel where the proposed wells are located; and
 - (C) an arrow orienting the site to one of the cardinal directions;
- (5) the types and concentrations of additives, if any, to be used in the closed-loop geothermal well system. Only additives approved by the Department of Health and Human Services shall be used in any closed loop geothermal well system;

- (6) plans and specifications of the surface and subsurface construction details of the system;
- (7) the heating and cooling system installation contractor's name and certification number, address, email address (if available), and telephone number;
- (8) a description of how the items identified in Part (d)(4)(A) of this Rule will be protected during well construction; and
- (9) any other information necessary for the Department to ensure compliance with G.S. 87-84.

(e) Well Construction.

- (1) Only tubing that meets the specifications in Chapter 12 of the North Carolina Mechanical Code shall be used, which is hereby incorporated by reference, including subsequent amendments and editions, and can be accessed at no cost at <http://www.ncdoi.com/osfm/>.
- (2) Drilling fluids and water produced during well construction shall be managed to prevent direct discharges to surface waters as well as violations of groundwater and surface water quality standards. Plans for such preventive measures shall be retained onsite throughout the construction process.
- (3) The well shall be constructed in a manner that surface water or contaminants from the land surface cannot migrate along the borehole annulus at any time during or after construction.
- (4) The well shall be located such that:
 - (A) the injection well is not in an area where surface water or runoff will accumulate around the well due to depressions, drainage ways, or other landscape features that will concentrate water around the well; and
 - (B) the injection well is not in an area that requires a person to enter confined spaces to perform sampling and inspection activities.
- (5) The horizontal separation between the geothermal aqueous closed-loop well and potential sources of groundwater contamination that exist at the time the wells are constructed shall be no less than as follows:
 - (A) Building perimeters, including any attached structures for which a building permit is required, such as garages, patios, or decks, regardless of foundation construction type 15 feet
 - (B) Septic systems, including drainfield, waste application area, and repair area 50 feet
 - (C) Industrial or municipal sewage or liquid waste collection or transmission sewer mains constructed to water main standards as stated in the American Water Works Association (AWWA) Standards C600 and/or C900 15 feet
 - (D) Water-tight sewer lateral lines from a residence or other non-public system to a sewer main or other wastewater disposal system 15 feet
 - (E) Other industrial or municipal sewage or liquid waste collection or transmission sewer mains 25 feet
 - (F) Chemical or petroleum fuel underground storage tank systems regulated under 15A NCAC 02N with secondary containment 50 feet
 - (G) Chemical or petroleum fuel underground storage tank systems regulated under 15A NCAC 02N without secondary containment 100 feet
 - (H) Above ground or underground storage tanks that contain petroleum fuels used for heating equipment, boilers, or furnaces, except for tanks used solely for storage of propane, natural gas, or liquefied petroleum gas 50 feet
 - (I) Land-based or subsurface waste storage or disposal systems 50 feet
 - (J) Gravesites 50 feet
 - (K) Any other potential sources of contamination 50 feet
- (6) The methods and materials used in construction shall not threaten the physical and mechanical integrity of the well and any tubing during its lifetime and shall be compatible with the proposed injection activities.
- (7) Drilling fluids shall contain only potable water and may be comprised of one or more of the following:
 - (A) the formation material encountered during drilling; and
 - (B) materials manufactured specifically for the purpose of borehole conditioning or well construction.

- (8) Thermally enhanced bentonite slurry grout shall be used. This grout shall consist of a mixture of not more than 22 gallons of potable water, one 50-pound bag of thermally enhanced commercial Wyoming sodium bentonite, and up to 400 pounds of clean dry 50-70 mesh silica sand. The amount of silica sand may be varied to achieve the thermal conductivity desired of the grout. The thermally enhanced grout slurry shall only be used in accordance with the manufacturers written instructions and shall meet permeability standards in accordance with Rule .0107 of this Subchapter.
 - (9) Bentonite grout shall not be used:
 - (A) to seal zones of water with a chloride concentration of 1,500 milligrams per liter or greater as determined by tests conducted at the time of construction; or
 - (B) in areas of the State subject to saltwater intrusion that may expose the grout to water with a chloride concentration of 1,500 milligrams per liter or greater at any time during the life of the well.
 - (10) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.
 - (11) Grout shall be placed the entire length of the well boring from the bottom of the boring to land surface or, if completed below land surface, to the well header or manifold connection.
 - (12) The grout shall be emplaced by one of the following methods:
 - (A) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the borehole or annular space around the casing and overflows at the surface; or
 - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the borehole or annular space which can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application.
 - (13) If temporary outer casing is installed, it shall be removed during grouting of the borehole in a way that maintains the integrity of the borehole and uniform grout coverage around the geothermal tubing.
 - (14) If a permanent outer casing is installed:
 - (A) The space between the interior wall of the casing and the geothermal tubing shall be grouted the entire length of the well boring from the bottom of the boring to land surface or, if completed below land surface, to the well header or manifold connection;
 - (B) The annular space between the casing and the borehole shall be grouted with a grout that is non-reactive with the casing or the formation;
 - (C) Grout shall extend outward in all directions from the casing wall to borehole wall and have a thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater; and
 - (D) In no case shall a well be required to have an annular grout seal thickness greater than four inches.
 - (15) Grout emplacement shall not threaten the physical or mechanical integrity of the well.
 - (16) The well shall be grouted within seven days after drilling is complete or before the drilling equipment leaves the site, whichever occurs first. If the well penetrates any water-bearing zone that contains contaminated or saline water, the well shall be grouted within one day after the casing is set.
 - (17) Prior to removing the equipment from the site, the top of the casing shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85, to preclude contaminants from entering the well.
 - (18) Well head completion shall be conducted in a manner so as to preclude surficial contaminants from entering the well.
- (f) Well Location. The location of each well boring and appurtenant underground piping leading to all heat exchangers shall be identifiable such that they may be located, repaired, and abandoned as necessary after construction.
- (1) The as-built locations of each well boring, header pit, and appurtenant underground piping shall be recorded on a scaled site-specific facility map, which shall be retained onsite and distributed as specified in Subparagraph (i)(1) of this Rule.
 - (2) Each well boring and header pit shall be located by a North Carolina registered land surveyor, a GPS receiver, or by triangulation from at least two permanent features on the site, such as building foundation corners or property boundary iron pins.

- (3) Well boring and appurtenant underground piping locations shall be identifiable in the field by tracer wire and warning tape, concrete monuments, or any other method approved by the Director upon a demonstration that such a method provides a reliable and accurate method of detection.
 - (4) If tracer wire and warning tape are used, then tracer wire consisting of copper wire of at least 14 gauge shall be placed adjacent to all horizontal piping during pipe installation, and warning tape shall be installed directly above the horizontal piping approximately 12 inches below final grade.
 - (5) If concrete monuments are used, then each monument shall be located directly above each individual well, at the perimeter corners of each well field, or in the center of each well cluster. Each concrete monument shall be permanently affixed with an identification plate constructed of durable, weatherproof, rustproof metal or other material approved by the Director as equivalent, which shall be stamped with the following information:
 - (A) well contractor name and certification number;
 - (B) number and depth of the borings;
 - (C) grout depth interval;
 - (D) well construction completion date; and
 - (E) identification as a geothermal well or well field.
- (g) Testing.
- (1) Closed loop tubing shall pass a pressure test on-site prior to installation into the borehole. Any closed loop tubing that fails the pressure test shall either not be used or shall pass a subsequent pressure test prior to installation and after all leaks have been located and repaired.
 - (2) The closed loop well system shall pass a pressure test after installation and prior to operation. Any pressure fluctuation other than that due to thermal expansion and contraction of the testing medium shall be considered a failed test. Any leaks shall be located and repaired prior to operating the system.
- (h) Operation.
- (1) The well shall be protected against damage during construction and use.
 - (2) The well shall be operated and maintained in accordance with the manufacturer's specifications throughout its operating life.
- (i) Monitoring and Reporting.
- (1) The well owner shall submit the as-built well locations as documented in accordance with Paragraph (f) of this Rule to the Director and the appropriate county health department. The well owner shall also record these documents with the register of deeds of the county in which the facility is located.
 - (2) Upon sale or transfer of the property, the owner shall give a copy of these records to the new property owner or owners.
 - (3) The Director may require any monitoring necessary to ensure compliance with G.S. 87-84.
 - (4) The permittee shall report any leaks to the Division during the lifetime of the well.
 - (5) A record of the construction, abandonment, or repairs of the injection well shall be submitted to the Director within 30 days of completion of the specified activities.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. May 1, 2012; Readopted Eff. September 1, 2019.

15A NCAC 02C .0223 GEOTHERMAL DIRECT EXPANSION CLOSED-LOOP WELLS

- (a) "Geothermal Direct Expansion Closed-Loop Wells" means wells used to house a subsurface system of closed-loop pipe that circulates refrigerant gas for heating and cooling purposes. Only gasses that the Department of Health and Human Services' Division of Public Health determines not to adversely affect human health in compliance with G.S. 130A-5 shall be used.
- (b) Permitted by Rule. Direct Expansion Closed-Loop Geothermal Wells are permitted by rule when constructed and operated in accordance with the rules of this Section.
- (c) Individual Permits. If an individual permit is required pursuant to Rule .0217 of this Section, then an application for permit renewal shall be made at least 120 days prior to the expiration date of the permit.
- (d) Notification. In addition to the requirements set forth in Rule .0211 of this Section, notification for systems designed to serve a single family residence shall be submitted two or more business days prior to construction and

30 days or more for all other installations. The notification shall be submitted to the Director and to the county health department. The notification shall be made using one form per operation supplied by the Director and shall include:

- (1) the well owner's name, address, telephone number, email address (if available), and whether the owner is a federal, State, private, public, or other entity. If the well operator is different from the owner then the same information shall be provided for the well operator;
- (2) the physical location of the well;
- (3) a description of the proposed injection activities;
- (4) a scaled, site specific map showing the following:
 - (A) any water supply well and surface water body; septic system including drainfield, waste application area, and repair area; and any other potential sources of contamination listed in Subparagraph (e)(6) of this Rule within 250 feet of the proposed injection wells;
 - (B) property boundaries within 250 feet of the parcel where the proposed wells are located; and
 - (C) an arrow orienting the site to one of the cardinal directions;
- (5) the type of gas to be used in the closed-loop geothermal well system. Only approved gases shall be used in any closed loop geothermal well system;
- (6) plans and specifications of the surface and subsurface construction details of the system;
- (7) the heating and cooling system installation contractor's name and certification number, address, email address (if available), and telephone number;
- (8) a description of how the items identified in Part (d)(4)(A) of this Rule will be protected during well construction; and
- (9) any other information necessary for the Department to ensure compliance with G.S. 87-84.

(e) Well Construction.

- (1) Only tubing that meets the specifications in Chapter 12 of the North Carolina Mechanical Code shall be used.
- (2) All systems shall be constructed with cathodic protection unless testing conducted in accordance with Paragraph (g) of this Rule indicates that all pH test results are within the range of 5.5 to 11.0 standard units.
- (3) Drilling fluids and water produced during well construction shall be managed to prevent direct discharges to surface waters and violations of groundwater and surface water quality standards. Plans for such preventive measures shall be retained onsite throughout the construction process.
- (4) The well shall be constructed in a manner that surface water or contaminants from the land surface cannot migrate along the borehole annulus at any time during or after construction.
- (5) The well shall be located such that:
 - (A) the injection well is not in an area where surface water or runoff will accumulate around the well due to depressions, drainage ways, or other landscape features that will concentrate water around the well; and
 - (B) the injection well is not in an area that requires a person to enter confined spaces to perform sampling and inspection activities.
- (6) The horizontal separation between the geothermal direct expansion closed-loop well and potential sources of groundwater contamination that exist at the time the wells are constructed shall be no less than as follows:
 - (A) Building perimeters, including any attached structures for which a building permit is required, such as garages, patios, or decks, regardless of foundation construction type 15 feet
 - (B) Septic systems, including drainfield, waste application area, and repair area 50 feet
 - (C) Industrial or municipal sewage or liquid waste collection or transmission sewer mains constructed to water main standards as stated in the American Water Works Association (AWWA) Standards C600 and/or C900 15 feet
 - (D) Water-tight sewer lateral lines from a residence or other non-public system to a sewer main or other wastewater disposal system 15 feet
 - (E) Other industrial or municipal sewage or liquid waste collection or transmission sewer mains 25 feet

- (F) Chemical or petroleum fuel underground storage tank systems regulated under 15A NCAC 02N with secondary containment
50 feet
- (G) Chemical or petroleum fuel underground storage tank systems regulated under 15A NCAC 02N without secondary containment
100 feet
- (H) Above ground or underground storage tanks that contain petroleum fuels used for heating equipment, boilers, or furnaces, except for tanks used solely for storage of propane, natural gas, or liquefied petroleum gas
50 feet
- (I) Land-based or subsurface waste storage or disposal systems
50 feet
- (J) Gravesites
50 feet
- (K) Any other potential sources of contamination
50 feet
- (7) Angled boreholes shall not be drilled in the direction of underground petroleum or chemical storage tanks unless it can be demonstrated to the satisfaction of the Director that doing so will not adversely affect human health or cause a violation of a groundwater quality standard as specified in Subchapter 02L.
- (8) The methods and materials used in construction shall not threaten the physical and mechanical integrity of the well during its lifetime and shall be compatible with the proposed injection activities.
- (9) Drilling fluids shall contain only potable water and may be comprised of one or more of the following:
 - (A) the formation material encountered during drilling; and
 - (B) materials manufactured specifically for the purpose of borehole conditioning or well construction.
- (10) Thermally enhanced bentonite slurry grout shall be used. This grout shall consist of a mixture of not more than 22 gallons of potable water, one 50-pound bag of thermally enhanced commercial Wyoming sodium bentonite, and up to 400 pounds of clean dry 50-70 mesh silica sand. The amount of silica sand maybe varied to achieve the thermal conductivity desired of the grout. The thermally enhanced grout slurry shall only be used in accordance with the manufacturers written instructions.
- (11) Bentonite grout shall not be used:
 - (A) to seal zones of water with a chloride concentration of 1,500 milligrams per liter or greater as determined by tests conducted at the time of construction; or
 - (B) in areas of the State subject to saltwater intrusion that may expose the grout to water with a chloride concentration of 1,500 milligrams per liter or greater at any time during the life of the well.
- (12) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.
- (13) Grout shall be placed the entire length of the well boring from the bottom of the boring to land surface or, if completed below land surface, to the well header or manifold connection.
- (14) The grout shall be emplaced by one of the following methods:
 - (A) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the borehole or annular area space the casing and overflows at the surface; or
 - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the borehole or annular space which can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application.
- (15) If temporary outer casing is installed, it shall be removed during grouting of the borehole in a way that maintains the integrity of the borehole and uniform grout coverage around the geothermal tubing.
- (16) If a permanent outer casing is installed:
 - (A) The space between the interior wall of the casing and the geothermal tubing shall be grouted the entire length of the well boring from the bottom of the boring to land surface or, if completed below land surface, to the well header or manifold connection.
 - (B) The annular space between the casing and the borehole shall be grouted with a grout that is non-reactive with the casing or the formation.

- (C) Grout shall extend outward in all directions from the casing wall to borehole wall and have a thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater; and
 - (D) In no case shall a well be required to have an annular grout seal thickness greater than four inches.
 - (17) Grout emplacement shall not threaten the physical or mechanical integrity of the well.
 - (18) The well shall be grouted within seven days after drilling is complete or before the drilling equipment leaves the site, whichever occurs first. If the well penetrates any water-bearing zone that contains contaminated or saline water, the well shall be grouted within one day after the casing is set.
 - (19) Prior to removing the equipment from the site, the top of the casing shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85, to preclude contaminants from entering the well.
 - (20) Well head completion shall be conducted in a manner so as to preclude surficial contaminants from entering the well.
- (f) Well Location. The location of each well boring and appurtenant underground piping leading to all heat exchangers shall be identifiable such that they may be located, repaired, and abandoned as necessary after construction.
- (1) The as-built locations of each well boring, header pit, and appurtenant underground piping shall be recorded on a scaled site-specific facility map, which shall be retained onsite and distributed as specified in Subparagraph (i)(1) of this Rule.
 - (2) Each well boring and header pit shall be located by a North Carolina registered land surveyor, a GPS receiver, or by triangulation from at least two permanent features on the site, such as building foundation corners or property boundary iron pins.
 - (3) Well boring and appurtenant underground piping locations shall be identifiable in the field by tracer wire and warning tape, concrete monuments, or any other method approved by the Director upon a demonstration that such a method provides a reliable and accurate method of detection.
 - (4) If tracer wire and warning tape are used, then tracer wire consisting of copper wire of at least 14 gauge shall be placed adjacent to all horizontal piping during pipe installation, and warning tape shall be installed directly above the horizontal piping approximately 12 inches below final grade.
 - (5) If concrete monuments are used, then each monument shall be located directly above each individual well, at the perimeter corners of each well field, or in the center of each well cluster. Each concrete monument shall be permanently affixed with an identification plate constructed of durable, weatherproof, rustproof metal or other material approved by the Director as equivalent, which shall be stamped with the following information:
 - (A) well contractor name and certification number;
 - (B) number and depth of the borings;
 - (C) grout depth interval;
 - (D) well construction completion date; and
 - (E) identification as a geothermal well or well field.
- (g) Testing.
- (1) Closed loop tubing shall pass a pressure test on-site prior to installation into the borehole. Any closed loop tubing that fails the pressure test shall either not be used or shall pass a subsequent pressure test prior to installation and after all leaks have been located and repaired.
 - (2) The closed loop well system shall pass a pressure test after installation and prior to operation. Any pressure fluctuation other than that due to thermal expansion and contraction of the testing medium shall be considered a failed test. Any leaks shall be located and repaired prior to operating the system.
 - (3) When not providing cathodic protection as specified in Subparagraph (e)(2) of this Rule drilling cuttings shall be tested for pH at a frequency of at least every 10 feet of boring length using a pH meter that has been calibrated prior to use according to the manufacturer's instructions.
- (h) Operation.
- (1) The well shall be protected against damage during construction and use.
 - (2) The well shall be operated and maintained in accordance with the manufacturer's specifications throughout its operating life. Cathodic protection, if required, shall be maintained at all times in accordance with the manufacturer's specifications throughout the operating life of the wells.
- (i) Monitoring and Reporting.

- (1) The well owner shall submit the as-built well locations as documented in accordance with Paragraph (f) of this Rule to the Director and the appropriate county health department. The well owner shall also record these documents with the register of deeds of the county in which the facility is located.
- (2) Upon sale or transfer of the property, the owner shall give a copy of these records to the new property owner or owners.
- (3) The Director may require any monitoring necessary to ensure compliance with G.S. 87-84.
- (4) The permittee shall report any leaks to the Division during the lifetime of the well.
- (5) A record of the construction, abandonment, or repairs of the injection well shall be submitted to the Director within 30 days of completion of the specified activities.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
 Eff. May 1, 2012;
 Readopted Eff. September 1, 2019.

15A NCAC 02C .0224 GEOTHERMAL HEATING AND COOLING WATER RETURN WELLS

(a) "Geothermal Heating and Cooling Water Return Wells" means wells that reinject groundwater used to provide heating or cooling for structures. These wells shall not be approved by the Director unless the temperature of the injection fluid does not exceed 30 degrees Fahrenheit above or below the naturally occurring temperature of the receiving groundwater, including wells using a geothermal fluid source. No Geothermal Heating and Cooling Water Return Well shall be constructed, repaired, or operated without a permit.

(b) Permit Applications. In addition to the permit requirements set forth in Rule .0211 of this Section, an application shall be submitted, in duplicate, to the Director made using one form per operation supplied by the Director and shall include the following:

- (1) the well owner's name, address, telephone number, email address (if available), and whether the owner is a federal, State, private, public, or other entity. If the well operator is different from the owner, then the same information shall be provided for the well operator;
- (2) the physical address of the location of the well site if different than the well owner's mailing address;
- (3) a description of the injection activities proposed by the applicant;
- (4) a scaled, site-specific map showing at a minimum, the following:
 - (A) any water supply well and surface water body; septic system including drainfield, waste application area, and repair area; and any other potential sources of contamination listed under Rule .0107 of this Subchapter within 250 feet of the proposed injection wells;
 - (B) property boundaries within 250 feet of the parcel on which the proposed wells are located; and
 - (C) an arrow orienting the site to one of the cardinal directions;
- (5) the proposed average and maximum daily injection rate, volume, pressure, temperature, and quantity of fluid to be injected;
- (6) plans and specifications of the surface and subsurface construction details of the system including a schematic of the injection and source wells construction;
- (7) the heating and cooling system installation contractor's name, address, email address (if available), and telephone number; and
- (8) any other information necessary for the Department to ensure compliance with G.S. 87-84.

(c) Permit Renewals. Application for permit renewal shall be made at least 120 days prior to the expiration date of the permit.

(d) Well Construction.

- (1) A water supply well providing water for a separate geothermal heating and cooling injection well shall be constructed in accordance with the requirements of Rule .0107 of this Subchapter.
- (2) A geothermal heating and cooling water return injection well constructed with a well screen shall also be constructed in accordance with the requirements of Rule .0107 of this Subchapter except that the entire length of the casing shall be grouted from the top of the sand or gravel pack to the land surface in such a way that there is no interconnection of aquifers or zones having differences in water quality that would result in the degradation of groundwater quality of any aquifer or zone.

- (3) For open-end geothermal heating and cooling water return wells (also referred to as open-hole wells), the casing shall be grouted from the bottom of the casing to the land surface in such a way that there is no interconnection of aquifers or zones having differences in water quality that would result in degradation groundwater quality of any aquifer or zone.
 - (4) The injection well system shall be constructed such that sampling taps or other collection equipment approved by the Director provides a functional source of water when the system is operational. Such equipment shall provide the means to collect a water sample after emerging from the water supply well (influent sample), and immediately prior to injection into the return well (effluent sample).
- (e) Operation and Maintenance.
- (1) Pressure at the well head shall be limited to ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.
 - (2) Injection between the outermost casing and the well borehole shall be prohibited.
 - (3) The well owner shall monitor the operating processes and protect the well against damage during construction and use.
- (f) Monitoring and Reporting.
- (1) Monitoring of any well may be required by the Director as necessary to ensure compliance with G.S. 87-84.
 - (2) The well owner shall retain copies of records of site maps showing the location of the injection wells and any testing, calibration, or monitoring information done on-site. Upon sale or transfer of the property, the owner shall give a copy of these records to the new property owner or owners.
 - (3) The permittee shall record the number and location of the wells with the register of deeds in the county in which the facility is located.
 - (4) A record of the construction, abandonment, or repairs of the injection well shall be submitted to the Director within 30 days of completion of the specified activities.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. May 1, 2012; Readopted Eff. September 1, 2019.

15A NCAC 02C .0225 GROUNDWATER REMEDIATION WELLS AND SYSTEMS

- (a) "Groundwater Remediation Wells" means wells that are used to inject additives, treated groundwater, or ambient air for the treatment of contaminated soil or groundwater. Only additives that the Department of Health and Human Services' Division of Public Health determines not to adversely affect human health in compliance with G.S. 130A-5 shall be approved for injection.
- (b) "Groundwater Remediation Systems" include infiltration galleries and injection wells. When on-site contaminated groundwater is used, the groundwater remediation injection wells shall be permitted in accordance with G.S. 143-215.1A.
- (c) Permitted by Rule. The following are permitted by rule pursuant to Rule .0217 of this Section if constructed and operated in accordance with the rules of this Section, all criteria for the specific injection system are met, hydraulic or pneumatic fracturing are not conducted, and the injection wells or injection activities do not result in the violation of any groundwater or surface water standard outside the injection zone:
 - (1) Passive Injection Systems that use in-well delivery systems to diffuse injectants into the subsurface;
 - (2) Small-scale Injection Operations used to inject tracers or other additives to remediate contaminant plumes located within a land surface area not to exceed 10,000 square feet;
 - (3) Pilot Tests conducted to evaluate the technical feasibility of a remediation strategy in order to develop a full scale remediation plan for future implementation, if the surface area of the injection zone wells are located within an area that does not exceed five percent of the land surface above the known extent of groundwater contamination. A pilot test may involve multiple injection wells, injection events, and injectants within the specified area. An individual permit shall be required to conduct more than one pilot test on any separate groundwater contaminant plume;

- (4) Air Injection Wells used to inject ambient air to enhance in-situ treatment of groundwater and that meet the following requirements:
 - (A) The air to be injected shall not exceed the ambient air quality standards set forth in 15A NCAC 02D .0400 and shall not contain petroleum or any other constituent that would cause a violation of groundwater standards specified in Subchapter 02L; and
 - (B) Injection wells of this type shall be constructed in accordance with the well construction standards applicable to monitoring wells specified in Rule .0108 of this Subchapter.
 - (5) In-situ thermal (IST) well systems shall meet the following requirements:
 - (A) Any IST systems used shall not contain petroleum or any other constituent that would cause a violation of groundwater standards specified in Subchapter 02L; and
 - (B) Injection wells of this type shall be constructed in accordance with the well construction standards applicable to monitoring wells specified in Rule .0108 of this Subchapter.
- (d) Notification for Groundwater Remediation Wells described in Subparagraphs (c)(1) through (c)(3), and (c)(5) of this Rule shall be submitted to the Director two weeks prior to injection made using one form per facility supplied by the Director. Such notification shall include the following:
- (1) the name and contact information of the well owner;
 - (2) the name and contact information of the person who can answer technical questions about the proposed injection system, if different from the well owner;
 - (3) geographic coordinates of the injection well or well field;
 - (4) maps of the injection zone indicating the known extent of contamination such as:
 - (A) contaminant plume maps with isoconcentration lines that show the horizontal extent of the contaminant plume in soil and groundwater, existing and proposed monitoring wells, and existing and proposed injection wells; and
 - (B) cross-sections to the known or projected depth of contamination that show the horizontal and vertical extent of the contaminant plume in soil and groundwater, changes in lithology, existing and proposed monitoring wells, and existing and proposed injection wells;
 - (5) the purpose, scope, and goals of the proposed injection activity;
 - (6) the name, volume, concentration, and Material Safety Data Sheet of each injectant;
 - (7) a schedule of injection well construction and injection activities;
 - (8) the plans and specifications of each injection well or well system, which include:
 - (A) the number and depth of injection wells;
 - (B) information on whether the injection wells are existing or proposed;
 - (C) the well contractor name and certification number; and
 - (D) information on whether the injection wells are permanent wells, "direct push" temporary injection wells, or are subsurface distribution systems; and
 - (9) a description of a monitoring plan capable of determining if violations of groundwater quality standards specified in Subchapter 02L result from the injection activity.
- (e) Notification for Air Injection Wells described in Subparagraph (c)(4) of this Rule shall be submitted to the Director two weeks prior to injection on forms supplied by the Director. Such notification shall include the following:
- (1) the facility name, address, and location indicated by either:
 - (A) the latitude and longitude with reference datum, position accuracy, and method of collection; or
 - (B) a facility site map with property boundaries;
 - (2) the name, telephone number, and mailing address of the person responsible for installation or operation of the wells;
 - (3) the ownership of facility as a private individual or organization or a federal, State, county, or other public entity;
 - (4) the number of injection wells and their construction details; and
 - (5) the operating status as proposed, active, inactive, temporarily abandoned, or permanently abandoned.
- (f) Permit Applications for all Groundwater Remediation Wells not Permitted by Rule. In addition to the permit requirements set forth in Rule .0211 of this Section, an application for all groundwater remediation wells not permitted by rule shall be submitted in duplicate to the Director made using one form per facility furnished by the Director and shall include the following:

- (1) Site Description and Incident Information. The site description and incident information shall include the following:
 - (A) the name of the well owner or person otherwise responsible for the installation or operation of injection wells, mailing address, telephone number, and whether the owner is a federal, State, private, public, or other entity;
 - (B) the name of the property owner, if different from the well owner, physical address, mailing address, and telephone number;
 - (C) the name, mailing address, telephone number, geographic coordinates of the facility for which the application is submitted, a brief description of the nature of the business, and the status of the facility such as closed, still operating, or under construction;
 - (D) a description of the contamination incident including the source, type, cause, and release dates of the contamination; a list of all contaminants in the affected soil or groundwater; the presence and thickness of free product; and the maximum contaminant concentrations detected in the affected soil and groundwater;
 - (E) the State agency responsible for management of the contamination incident, including the incident tracking number, and the incident manager's name and telephone number; and
 - (F) a list of all permits issued for the facility or contamination incident, including Hazardous Waste Management program permits or approval under the Resource Conservation and Recovery Act (RCRA), waste disposal permits issued in accordance with G.S. 143-215.1, Sewage Treatment and Disposal Permits issued in accordance with G.S. 130A, and any other environmental permits required by State or federal law.
- (2) Soils Evaluation (For Systems Treating On-Site Contaminated Groundwater Only). For systems with proposed discharge within seven feet of land surface and above the seasonal high water table, a soil evaluation of the disposal site shall be provided to the Division by the applicant. If required by G.S. 89F, a soil scientist shall submit this evaluation. If this evaluation is submitted, it shall include the following information:

[Note: The North Carolina Board for Licensing of Soil Scientists has determined, via letter dated December 1, 2005, that preparation of soils reports pursuant to this Paragraph constitutes practicing soil science under G.S. 89F.]

 - (A) Field description of soil profile. Based on examinations of excavation pits or auger borings, the following parameters shall be described by individual horizons to a depth of seven feet below land surface or to bedrock: thickness of the horizon; texture; color and other diagnostic features; structure; internal drainage; depth, thickness, and type of restrictive horizons; pH; cation exchange capacity; and presence or absence of evidence of any seasonal high water table. Applicants shall dig pits when necessary for evaluation of the soils at the site.
 - (B) Recommendations concerning annual and instantaneous loading rates of liquids, solids, other wastewater constituents, and amendments. Annual hydraulic loading rates shall be based on in-situ measurement of saturated hydraulic conductivity in the most restrictive horizon.
- (3) Injection Zone Determination. The applicant shall specify the horizontal and vertical portion of the injection zone within which the proposed injection activity shall occur based on the hydraulic properties of that portion of the injection zone specified. No violation of groundwater quality standards specified in Subchapter 02L resulting from the injection shall occur outside the specified portion of the injection zone as detected by a monitoring plan approved by the Division. For systems treating on-site contaminated groundwater, computer modeling or predictive calculations based on site-specific conditions shall be provided to demonstrate that operation of the system shall not cause or contribute to the migration of contaminants into previously uncontaminated areas. This prescribed injection zone shall replace the compliance boundary as defined in 15A NCAC 2L .0107.
- (4) A hydrogeologic evaluation of the disposal site to a depth that includes the injection zone determined in accordance with Subparagraph (3) of this Paragraph. If required by G.S. 89E, G.S. 89C, or G.S. 89F, a licensed geologist, professional engineer, or licensed soil scientist shall prepare a hydrogeologic evaluation of the facility. The hydrogeologic evaluation shall include all of the following:
 - (A) the regional and local geology and hydrogeology;

- (B) the changes in lithology underlying the facility;
 - (C) the depth to bedrock;
 - (D) the depth to the mean seasonal high water table;
 - (E) the hydraulic conductivity, transmissivity, and storativity of the injection zone based on tests of site-specific material, including a description of the tests used to determine these parameters;
 - (F) the rate and direction of groundwater flow as determined by predictive calculations or computer modeling; and
 - (G) the lithostratigraphic and hydrostratigraphic logs of test and injection wells.
- (5) Area of Review. The area of review shall be calculated using the procedure for determining the zone of endangering influence specified in 40 CFR 146.6(a). The applicant shall identify all wells within the area of review that penetrate the injection or confining zone and repair or permanently abandon all wells that are improperly constructed or abandoned.
- (6) Injectant Information. The applicant shall submit the following information for each proposed injectant:
- (A) the injectant name and manufacturer, concentration at the point of injection, and percentage if present in a mixture with other injectants;
 - (B) the chemical, physical, biological, or radiological characteristics necessary to evaluate the potential to adversely affect human health or groundwater quality;
 - (C) the source of fluids used to dilute, carry, or otherwise distribute the injectant throughout the injection zone as determined in accordance with Subparagraph (f)(3) of this Rule. If any well within the area of review of the injection facility is to be used as the fluid source, then the following information shall be submitted: location or ID number, depth of source, formation, rock or sediment type, and a chemical analysis of the water from the source well, including analyses for all contaminants suspected or historically recognized in soil or groundwater on the site;
 - (D) a description of the rationale for selecting the injectants and concentrations proposed for injection, including an explanation or calculations of how the proposed injectant volumes and concentrations were determined;
 - (E) a description of the reactions between the injectants and the contaminants present, including specific breakdown products or intermediate compounds that may be formed by the injection;
 - (F) a summary of results if modeling or testing was performed to investigate the injectant's potential or susceptibility for biological, chemical, or physical change in the subsurface; and
 - (G) an evaluation concerning the development of byproducts of the injection process, including increases in the concentrations of naturally occurring substances. Such an evaluation shall include the identification of the specific byproducts of the injection process, projected concentrations of byproducts, and areas of migration as determined through modeling or other predictive calculations.
- (7) Injection Procedure. The applicant shall submit a description of the proposed injection procedure that includes the following:
- (A) the proposed average and maximum daily rate and quantity of injectant;
 - (B) the average maximum injection pressure expressed in units of pounds per square inch (psi); and
 - (C) the total or estimated total volume to be injected.
- (8) Engineering Planning Documents (For Systems Treating On-Site Contaminated Groundwater Only). If required by G.S. 89C, a professional engineer shall prepare these documents. The following documents shall be provided to the Division by the applicant:
 [Note: The North Carolina Board of Examiners for Engineers and Surveyors has determined, via letter dated December 1, 2005, that preparation of engineering design documents pursuant to this Paragraph constitutes practicing engineering under G.S. 89C.]
- (A) engineering plans for the entire system, including treatment, storage, application, and disposal facilities and equipment, except those previously permitted unless they are directly tied into the new units or are critical to the understanding of the complete process;

- (B) specifications describing materials to be used, methods of construction, and means for ensuring quality and integrity of the entire groundwater remediation system;
 - (C) plans that include construction details of recovery, injection, and monitoring wells and infiltration galleries;
 - (D) operating plans that include:
 - (i) the operating schedule including any periodic shut-down times;
 - (ii) required maintenance activities for all structural and mechanical elements;
 - (iii) a list of all consumable and waste materials with their intended source and disposal locations;
 - (iv) restrictions on access to the site and equipment; and
 - (v) provisions to ensure the quality of the treated effluent and hydraulic control of the system at all times when any portion of the system ceases to function, such as standby power capability, complete system-off status, or duplicity of system components.
- (9) Fracturing Plan. If hydraulic or pneumatic fracturing is proposed, then the applicant shall submit a detailed description of the fracturing plan that includes the following:
- (A) Material Safety Data Sheets of fracturing media including information on any proppants used;
 - (B) a map of fracturing well locations indicating the known extent of groundwater contamination and all buildings, wells, septic systems, underground storage tanks, and underground utilities located within the area of review as described in Subparagraph (5) of this Paragraph;
 - (C) a demonstration that the fracturing process shall not result in the fracturing of any confining units or otherwise cause or contribute to the migration of contamination into uncontaminated areas, or otherwise cause damage to buildings, wells, septic systems, underground storage tanks, and underground utilities;
 - (D) the injection rate and volume;
 - (E) the orientation of bedding planes, joints, and fracture sets of the fracture zone;
 - (F) a performance monitoring plan for determining the fracture well radius of influence; and
 - (G) if conducted, the results of geophysical testing or a pilot demonstration of fracture behavior conducted in an uncontaminated area of the site.
- (10) Injection well construction details including:
- (A) the number and depth of injection wells;
 - (B) the number and depth of borings if using multi-level or "nested" well systems;
 - (C) information on whether the injection wells are existing or proposed;
 - (D) the depth and type of casing;
 - (E) the depth and type of screen material;
 - (F) the depth and type of grout;
 - (G) information on whether the injection wells are permanent or temporary "direct push" points; and
 - (H) the plans and specifications of the surface and subsurface construction details of each injection well or well system.
- (11) Monitoring Wells. Monitoring wells shall be of sufficient quantity and location to detect any movement of injection fluids, injection process byproducts, or formation fluids outside the injection zone as determined by the applicant in accordance with Subparagraph (f)(3) of this Paragraph. The monitoring schedule shall be consistent with the proposed injection schedule, the pace of the anticipated reactions, and the rate of transport of the injectants and contaminants. The applicant shall submit a monitoring plan that includes the following:
- (A) the target contaminants and the secondary or intermediate contaminants that may result from the injection;
 - (B) the other parameters that may serve to indicate the progress of the intended reactions;
 - (C) a list of existing and proposed monitoring wells to be used; and
 - (D) a sampling schedule for monitoring the proposed injection.
- (12) Well Data Tabulation. A tabulation of data on all existing or abandoned wells within the area of review of the injection wells that penetrate the proposed injection zone, including monitoring wells and wells proposed for use as injection wells. Such data shall include a description of each

well's type, depth, record of abandonment or completion, and any additional information the Director may require to ensure compliance with G.S. 87-84.

- (13) Maps and Cross-Sections. Scaled, site-specific site plans or maps depicting the location, orientation, and relationship of facility components including the following:
- (A) an area map based on the most recent USGS 7.5' topographic map of the area, at a scale of 1:24,000 and showing the location of the proposed injection site;
 - (B) topographic contour intervals showing all facility related structures, property boundaries, streams, springs, lakes, ponds, and other surface drainage features;
 - (C) all existing or abandoned wells within the area of review of the injection wells listed in the tabulation required in Subparagraph (12) of this Paragraph that penetrate the proposed injection zone, including water supply wells, monitoring wells, and wells proposed for use as injection wells;
 - (D) potentiometric surface maps that show the direction of groundwater movement and existing and proposed wells;
 - (E) contaminant plume maps with isoconcentration lines that show the horizontal extent of the contaminant plume in soil and groundwater and existing and proposed wells;
 - (F) cross-sections to the known or projected depth of contamination that show the horizontal and vertical extent of the contaminant plume in soil and groundwater, major changes in lithology, and existing and proposed wells; and
 - (G) any existing sources of potential or known groundwater contamination, including waste storage, treatment, or disposal systems, within the area of review of the injection well or well system.

- (14) Any other information necessary for the Department to ensure compliance with G.S. 87-84.

(g) Injection Volumes. The Director may establish maximum injection volumes and pressures necessary to ensure compliance with G.S. 87-84 and that:

- (1) fractures are not initiated in the confining zone of the injection zone determined in accordance with Subparagraph (f)(3) of this Rule;
- (2) injected fluids do not migrate outside the injection zone or area; and
- (3) injected fluids and fractures do not cause or contribute to the migration of contamination into uncontaminated areas.

(h) Well Construction.

- (1) Wells shall not be located where:
 - (A) surface water or runoff will accumulate around the well due to depressions, drainage ways, or other landscapes that will divert water to the well;
 - (B) a person would be required to enter confined spaces to perform sampling and inspection activities; and
 - (C) injectants or formation fluids would migrate outside the approved injection zone as determined by the applicant in accordance with Subparagraph (f)(3) of this Rule.
- (2) Wells used for hydraulic or pneumatic fracturing shall be located within the boundary of known groundwater contamination but no closer than 75 feet to this boundary unless it can be demonstrated that a lesser separation distance will not adversely affect human health or cause a violation of a groundwater quality standard as specified in Subchapter 02L, such as through the use of directional fracturing.
- (3) The methods and materials used in construction shall not threaten the physical and mechanical integrity of the well during its lifetime.
- (4) The well shall be constructed in a manner that surface water or contaminants from the land surface cannot migrate along the borehole annulus either during or after construction.
- (5) The borehole shall not penetrate to a depth greater than the depth at which injection will occur unless the purpose of the borehole is the investigation, of the geophysical and geochemical characteristics of an aquifer. Following completion of the investigation the borehole beneath the zone of injection shall be grouted completely to prevent the migration of any contaminants.
- (6) For "direct-push" temporary injection wells constructed without permanent or temporary casing, injection and well abandonment activities shall be conducted within the same working day as when the borehole is constructed.
- (7) Drilling fluids shall contain only potable water and may be comprised of one or more of the following:

- (A) the formation material encountered during drilling; and
 - (B) materials manufactured specifically for the purpose of borehole conditioning or well construction.
- (8) Only allowable grout listed under Rule .0107 of this Subchapter shall be used; however, bentonite grout shall not be used:
- (A) to seal zones of water with a chloride concentration of 1,500 milligrams per liter or greater as determined by tests conducted at the time of construction; or
 - (B) in areas of the State subject to saltwater intrusion that may expose the grout to water with a chloride concentration of 1,500 milligrams per liter or greater at any time during the life of the well.
- (9) The annular space between the borehole and casing shall be grouted:
- (A) with a grout that is non-reactive with the casing or screen materials, the formation, or the injectant;
 - (B) from the top of the gravel pack to land surface and in a way that there is no interconnection of aquifers or zones having differences in water quality that would result in the degradation of the groundwater quality of any aquifer or zone; and
 - (C) so that the grout extends outward from the casing wall to a thickness equal to either one-third of the diameter of the outside dimension of the casing or two inches, whichever is greater. In no case shall a well be required to have an annular grout seal thickness greater than four inches.
- (10) Grout shall be emplaced around the casing by one of the following methods:
- (A) Pressure. Grout shall be pumped or forced under pressure through the bottom of the casing until it fills the annular space around the casing and overflows at the surface;
 - (B) Pumping. Grout shall be pumped into place through a hose or pipe extended to the bottom of the annular space that can be raised as the grout is applied. The grout hose or pipe shall remain submerged in grout during the entire application; or
 - (C) Other. Grout may be emplaced in the annular space by gravity flow in a way to ensure complete filling of the space. Gravity flow shall not be used if water or any visible obstruction is present in the annular space at the time of grouting.
- (11) All grout mixtures shall be prepared prior to emplacement per the manufacturer's directions with the exception that bentonite chips or pellets may be emplaced by gravity flow if water is present or otherwise hydrated in place.
- (12) If an outer casing is installed, it shall be grouted by either the pumping or pressure method.
- (13) The well shall be grouted within seven days after the casing is set or before the drilling equipment leaves the site, whichever occurs first. If the well penetrates any water-bearing zone that contains contaminated or saline water, the well shall be grouted within one day after the casing is set.
- (14) No additives that will accelerate the process of hydration shall be used in grout for thermoplastic well casing.
- (15) A casing shall be installed that extends from at least 12 inches above land surface to the top of the injection zone.
- (16) Wells with casing extending less than 12 inches above land surface and wells without casing shall be approved by the Director only when one of the following conditions is met:
- (A) site specific conditions directly related to business activities, such as vehicle traffic, would endanger the physical integrity of the well; or
 - (B) it is not operationally feasible for the well head to be completed 12 inches above land surface due to the engineering design requirements of the system.
- (17) Multi-screened wells shall not connect aquifers or zones having differences in water quality that would result in a degradation of the groundwater quality of any aquifer or zone.
- (18) Prior to removing the equipment from the site, the top of the casing shall be sealed with a water-tight cap or well seal, as defined in G.S. 87-85, to preclude contaminants from entering the well.
- (19) Packing materials for gravel and sand packed wells shall be:
- (A) composed of quartz, granite, or other hard, non-reactive rock material;
 - (B) of uniform size, water-washed and free from clay, silt, and toxic materials;
 - (C) disinfected prior to subsurface emplacement;

- (D) emplaced such that it will not connect aquifers or zones having differences in water quality that would result in the deterioration of the water quality in any aquifer or zone; and
- (E) evenly distributed around the screen and shall extend to a depth at least one foot above the top of the screen. A one foot thick or greater seal comprised of bentonite clay, shall be emplaced directly above and in contact with the packing material.
- (20) All permanent injection wells shall have a well identification plate that meets the criteria specified in Rule .0107 of this Subchapter.
- (21) A hose bibb, sampling tap, or other collection equipment shall be installed on the line entering the injection well such that a sample of the injectant can be obtained prior to its entering the injection well.
- (22) If applicable, all piping, wiring, and vents shall enter the well through the top of the casing unless it is based on a design demonstrated to preclude surficial contaminants from entering the well.
- (23) The well head shall be completed in a manner to preclude surficial contaminants from entering the well, and well head protection shall include:
 - (A) an accessible external sanitary seal installed around the casing and grouting; and
 - (B) a water-tight cap or well seal compatible with the casing and installed so that it cannot be removed without the use of hand or power tools.
- (i) Mechanical Integrity. All permanent injection wells shall be tested for mechanical integrity, which shall be conducted in accordance with Rule .0207 of this Section.
- (j) Operation and Maintenance.
 - (1) Unless permitted by this Rule, pressure at the well head shall be limited to a maximum that will ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.
 - (2) Injection between the outermost casing and the well borehole is prohibited.
 - (3) The well owner shall monitor the operating processes at the well head and shall protect the well head against damage during construction and use.
- (k) Monitoring.
 - (1) Monitoring of the injection well shall be required by the Director to protect groundwaters of the State.
 - (A) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
 - (B) Analysis of the physical, chemical, biological, or radiological characteristics of the injectant shall be made monthly or more frequently, as approved by the Director, in order to provide representative data for characterization of the injectant.
 - (C) Monitoring of injection pressure, flow rate, and cumulative volume shall occur according to a schedule determined necessary by the Director.
 - (D) Monitoring wells associated with the injection site shall be monitored quarterly or on a schedule determined by the Director to detect any migration of injected fluids from the injection zone.
 - (2) In determining the type, density, frequency, and scope of monitoring, the Director shall consider the following:
 - (A) physical and chemical characteristics of the injection zone;
 - (B) physical and chemical characteristics of the injected fluids;
 - (C) volume and rate of discharge of the injected fluids;
 - (D) compatibility of the injected fluids with the formation fluids;
 - (E) the number, type, and location of all wells, mines, surface bodies of water, and structures within the area of review;
 - (F) proposed injection procedures;
 - (G) expected changes in pressure, formation fluid displacement, and direction of movement of injected fluid;
 - (H) proposals of corrective action to be taken in the event that a failure in any phase of injection operations renders the groundwaters unsuitable for their best intended usage as defined 15A NCAC 02L; and
 - (I) the life expectancy of the injection operations.

- (3) Monitoring wells completed in the injection zone and any of those zones adjacent to the injection zone may be affected by the injection operations. If affected, the Director may require additional monitor wells located to detect any movement of injection fluids, injection process byproducts, or formation fluids outside the injection zone as determined by the applicant in accordance with Subparagraph (f)(3) of this Rule. If the operation is affected by subsidence or catastrophic collapse, any other required monitoring wells shall be located so that they will not be physically affected and shall be of an adequate number to detect movement of injected fluids, process byproducts, or formation fluids outside the injection zone or area. In determining the number, location and spacing of monitoring wells, the following criteria shall be considered by the Director:
- (A) the population relying on the groundwater resource affected, or potentially affected, by the injection operation;
 - (B) the proximity of the injection operation to points of withdrawal of groundwater;
 - (C) the local geology and hydrology;
 - (D) the operating pressures;
 - (E) the chemical characteristics and volume of the injected fluid, formation water, and process byproducts; and
 - (F) the number of existing injection wells.

(l) Reporting.

- (1) For all injection wells, the well owner shall be responsible for submitting to the Director on forms furnished by the Director the following:
 - (A) a record of the construction (form GW-1), abandonment (form GW-30), or repairs of the injection well within 30 days of completion of the specified activities; and
 - (B) the Injection Event Record within 30 days of completing each injection.
- (2) For injection wells requiring an individual permit, the following shall apply:
 - (A) The well owner shall be responsible for submitting to the Director hydraulic or pneumatic fracturing performance monitoring results;
 - (B) All sampling results shall be reported to the Division annually or at another frequency determined by the Director based on the reaction rates, injection rates, likelihood of secondary impacts, and site-specific hydrogeologic information;
 - (C) A final project evaluation report shall be submitted within nine months after completing all injection-related activities associated with the permit or submit a project interim evaluation before submitting a renewal application for the permit. This document shall assess the injection projects findings in a written summary. The final project evaluation shall also contain monitoring well sampling data, contaminant plume maps, and potentiometric surface maps; and
 - (D) For groundwater remediation injection permits, each monitoring report shall include a summary identifying any detectable contaminant degradation breakdown products, and a table with historical laboratory analytical results. The table shall indicate any exceedances of groundwater standards per 15A NCAC 02L .0202, and shall distinguish data collected prior to injection from data collected after injection.

(m) Application and Annual Fees (For Systems Treating On-Site Contaminated Groundwater Only)

- (1) Application Fee. For every application for a new or major modification of a permit under this Rule, a nonrefundable application processing fee in the amount provided in G.S. 143-215.3D shall be submitted to the Division by the applicant at the time of application. Modification fees shall be based on the annual fee for the facility.
- (2) Annual Fees. An annual fee for administering and compliance monitoring shall be charged in each year of the term of every renewable permit per the schedule in G.S. 143-215.3D(a). Annual fees shall be paid for any facility operating on an expired permit that has not been rescinded or revoked by the Division. Permittees shall be billed annually by the Division. A change in the facility, which changes the annual fee, shall result in the revised annual fee being billed effective with the next anniversary date.
- (3) Failure to pay an annual fee within 30 days after being billed may be cause for the Division to revoke the permit upon 60 days notice.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0226 SALINITY BARRIER WELLS

Salinity Barrier Wells, which inject uncontaminated water into an aquifer to prevent the intrusion of salt water into the fresh water, shall meet the requirements of Rule .0219 of this Section, except that the Director may impose additional requirements to ensure compliance with G.S. 87-84.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0227 STORMWATER DRAINAGE WELLS SYSTEMS

(a) Stormwater Drainage Wells Systems means well systems that receive the flow of water that occurs during rainfall or a snowmelt event.

(b) The following Stormwater Drainage Wells Systems shall be permitted by rule pursuant to Rule .0217 of this Section:

- (1) systems designed in accordance with stormwater controls required by federal laws and regulations, State statutes and rules, or local controls; and
- (2) infiltration systems, which receive stormwater from roof tops.

(c) Nothing in this Rule shall be construed as to allow untreated stormwater to be injected directly into any aquifer or to otherwise result in the violation of any groundwater quality standard as specified in 15A NCAC 02L.

(d) Reporting. Within 30 days of a change of status of the well drainage system, the owner or operator shall submit the following information to the Division:

- (1) the facility name, address, and location indicated by either:
 - (A) latitude and longitude with reference datum, position accuracy, and method of collection;
or
 - (B) a facility site map indicating property boundaries;
- (2) the name, telephone number, and mailing address of owner or operator;
- (3) the ownership of facility as a private individual or organization, or a federal, State, county, or other public entity;
- (4) the number of injection wells drainage and collection systems; and
- (5) the well injection system status as proposed, active, inactive, temporarily abandoned, or permanently abandoned.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0228 SUBSIDENCE CONTROL WELLS

Subsidence Control Wells, which are used to inject uncontaminated fluids to reduce or eliminate subsidence associated with overdraft of fresh water or other activities not related to oil or natural gas production, shall meet the requirements of Rule .0219 of this Section, except that the Director may impose additional requirements to ensure compliance with G.S. 87-84.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.

15A NCAC 02C .0229 TRACER WELLS

Tracer Wells, which are used to inject substances for determining hydrogeologic properties of aquifers, shall meet the requirements of Rule .0225 of this Section, except that the Director may impose additional requirements to ensure compliance with G.S. 87-84.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. May 1, 2012; Readopted Eff. September 1, 2019.

15A NCAC 02C .0230 OTHER WELLS

Other Wells shall meet the requirements of that injection well type described in Rule .0209(5)(b) of this Section that most closely resembles the proposed Other Well's hydrogeologic complexity and potential to adversely affect groundwater quality. The Director may impose additional requirements to ensure compliance with G.S. 87-84.

History Note: Authority G.S. 87-87; 87-88; 87-90; 87-94; 87-95; 143-211; 143-214.2(b); 143-215.1A; 143-215.3(a)(1); 143-215.3(c); Eff. May 1, 2012; Readopted Eff. September 1, 2019.

15A NCAC 02C .0240 ABANDONMENT AND CHANGE-OF-STATUS OF INJECTION WELLS AND SYSTEMS

(a) Injection wells and injection well systems shall be abandoned by the well owner in accordance with one of the following procedures or other alternatives approved by the Director that ensures compliance with G.S. 87-84:

- (1) Wells other than closed-loop geothermal wells shall be temporarily or permanently abandoned as required by Rule .0113 of this Subchapter.
- (2) Closed-loop geothermal wells that are temporarily abandoned shall be maintained so that they are not a source or channel of contamination during the period of abandonment.
- (3) Closed-loop geothermal wells shall be permanently abandoned as follows:
 - (A) all casing, tubing, or piping and associated materials shall be removed prior to abandonment if that removal will not cause or contribute to contamination of groundwater;
 - (B) the boring shall be filled from bottom to top with grout through a hose or pipe that extends to the bottom of the well and is raised as the well is filled;
 - (C) for tubing with an inner diameter of one-half inch or greater, the entire vertical length of the inner tubing shall be grouted;
 - (D) for tubing with an inner diameter less than one-half inch that cannot feasibly be grouted, the tubing shall be refilled with potable water and capped or sealed at a depth not less than two feet below land surface; and
 - (E) any protective or surface casing not grouted in accordance with the requirements set forth in this Section shall be removed and the well shall be grouted in accordance with the requirements set forth in this Section.
- (4) If a subsurface cavity has been created as a result of the injection operations, the well shall be abandoned in a manner that will prevent the movement of fluids into or between aquifers and in accordance with the terms and conditions of the permit.

(b) An injection well that acts as a source or channel of contamination shall be brought into compliance with the standards and criteria of these Rules, repaired, or permanently abandoned. Repair or permanent abandonment shall be completed within 15 days of the discovery of the noncompliance.

(c) Exploratory or test wells, constructed for the purposes of obtaining information regarding an injection well site, shall be permanently abandoned in accordance with Rule .0113 of this Subchapter within two days after drilling or two days after testing is complete, whichever is later. However, if a test well is being converted to a permanent injection well, this conversion shall be completed within 30 days after drilling.

(d) An injection well shall be permanently abandoned by the drilling contractor before removing his or her equipment from the site if the well casing has not been installed or has been removed from the well bore.

(e) The well owner shall be responsible for permanent abandonment of a well except that:

- (1) the well contractor shall be responsible for well abandonment if abandonment is required because the well contractor improperly locates, constructs, repairs or completes the well;
 - (2) the person who installs, repairs or removes the well pump shall be responsible for well abandonment if that abandonment is required because of improper well pump installation, repair or removal; or
 - (3) the well contractor (or individual) who conducts a test boring shall be responsible for its abandonment at the time the test boring is completed.
- (f) Groundwater remediation systems that include infiltration galleries shall be abandoned as follows:
- (1) 30 days prior to initiation of closure of a groundwater remediation system, the permittee shall submit the following documentation to the Division:
 - (A) the reasons for closure;
 - (B) a letter from the oversight agency authorizing closure of the system; and
 - (C) a description of the proposed closure procedure.
 - (2) The infiltration gallery shall be closed such that it:
 - (A) will be rendered permanently unusable for the disposal of fluids; and
 - (B) will not serve as a source or channel of contamination.
 - (3) Within 30 days following upon completion of the closure, the permittee shall submit the following documentation to the Division:
 - (A) a description of the completed closure procedure;
 - (B) the dates of all actions taken for the procedure; and
 - (C) a written certification a by North Carolina licensed engineer or geologist that the closure has been accomplished, and that the information submitted is complete, factual, and accurate.

History Note: Authority G.S. 87-87; 87-88; 143-211; 143-215.1A; 143-215.3(a)(1); 143-215.3(c);
 Eff. May 1, 2012;
 Readopted Eff. September 1, 2019.

15A NCAC 02C .0241 VARIANCE

- (a) The Secretary, through the Director, may grant a variance from any construction or operation standards under the rules of this Section. Any request for a variance shall be made using the form set forth in Rule .0118(b) of the Subchapter by the person responsible for construction of the well for which the variance is sought pursuant to Rule .0118(b) of this Subchapter. The Director shall grant the variance if:
- (1) the use of the well will not endanger human health and welfare or the groundwater; and
 - (2) construction or operation in accordance with the standards is not technically feasible or the proposed construction provides equal or better protection of the groundwater.
- (b) The Secretary, through the Director, may require the variance applicant to submit such information necessary to make a decision to grant or deny the variance. The Director may impose such conditions on a variance or the use of a well for which a variance is granted and is necessary to ensure compliance with G.S. 87-84. The facts supporting any variance under this Rule shall be in writing and made part of the variance.
- (c) The Secretary, through the Director, shall respond in writing to a request for a variance within 30 days after receipt of the variance request.
- (d) For variances requested as a part of a permit application, the Director may include approval as a permit condition.
- (e) A variance applicant who is dissatisfied with the decision of the Director may commence a contested case by filing a petition under G.S. 150B-23 within 60 days after receipt of the decision.

History Note: Authority G.S. 87-87(4); 87-88; 143-215.1A; 143-215.3(a)(4);
 Eff. May 1, 2012;
 Readopted Eff. September 1, 2019.

15A NCAC 02C .0242 DELEGATION

- (a) The Secretary is delegated the authority to grant permission for well construction under G.S. 87-87.
- (b) The Secretary is delegated the authority to give notices and sign orders for violations under G.S. 87-91.
- (c) The Secretary may grant a variance from any construction standard, or the approval of alternate construction methods or materials, as specified under the rules of this Section.

*History Note: Authority G.S. 87-87(4); 143-215.1A; 143-215.3(a)(1); 143-215.3(a)(4);
Eff. May 1, 2012;
Readopted Eff. September 1, 2019.*

SECTION .0300 - PERMITTING AND INSPECTION OF PRIVATE DRINKING WATER WELLS

15A NCAC 02C .0301 SCOPE AND PURPOSE

- (a) The purpose of the rules of this Section is to set out standards for permitting and inspection of private drinking water wells as defined in G.S. 87-85 by local health departments pursuant to G.S. 87-97.
- (b) The rules of 15A NCAC 02C .0100 apply to private drinking water wells, as well as the following:
- (1) Potential sources of groundwater contamination shall not be located closer to the well than the separation distances specified in 15A NCAC 02C .0107(a)(2) or .0107(a)(3), as applicable;
 - (2) In addition to the provisions in 15A NCAC 02C .0109, the builder, well contractor, pump installer, or homeowner, as applicable, shall provide assistance when necessary to gain access for inspection of the well, pumps, and pumping equipment; and
 - (3) In addition to the requirements of 15A NCAC 02C .0113, any well that acts as a source or channel of contamination shall be repaired or permanently abandoned within 30 days of receipt of notice from the local health department.

*History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.*

15A NCAC 02C .0302 DEFINITIONS

The definitions in G.S. 87-85 and 15A NCAC 02C .0102 apply throughout this Section. In addition, the following definitions apply throughout this Section:

- (1) "Abandonment Permit" means a well abandonment permit issued by the local health department authorizing or allowing the permanent abandonment of any private drinking water well as defined in the rules of this Section.
- (2) "Certificate of Completion" means a certification by the local health department that a private drinking water well has been constructed or repaired in compliance with the construction permit or repair permit.
- (3) "Construction of wells" means the term as defined in G.S. 87-85.
- (4) "Construction permit" means a well construction permit issued by the local health department authorizing or allowing the construction of any private drinking water well as defined in the rules of this Section.
- (5) "Known source of release of contamination" means a location where any of the following activities, facilities, or conditions have been documented by the Department of Environmental Quality or a local health department:
 - (a) Groundwater contamination incidents arising from agricultural operations, including application of agricultural chemicals pursuant to 15A NCAC 02L;
 - (b) Groundwater contamination associated with the construction or operation of injection, monitoring, and other wells subject to permitting under the Well Construction Act and this Subchapter;
 - (c) Groundwater contamination associated with the operation of non- discharge, discharge (NPDES) facilities, land application of animal waste, and other activities subject to permitting under G.S. 143-215.1;
 - (d) Releases of hazardous waste or constituents that currently exceed the Groundwater Quality Standards listed in 15A NCAC 02L at facilities governed under G.S. 130A-294;
 - (e) Dry-Cleaning Solvent Cleanup sites regulated under G.S. 143-215.104(A);
 - (f) Pre-regulatory landfills and Inactive hazardous substance or waste disposal sites governed under the Inactive Hazardous Sites Act of 1987, G.S. 130A-310;
 - (g) Solid waste facilities subject to 15A NCAC 13B that have monitoring wells with exceedances of the Groundwater Protection Standards as defined in 15A NCAC 13B .1634(g) and (h);

- (h) Releases of petroleum and hazardous substances subject to G.S. 143-215.75 through 215.98;
 - (i) Sites that fall within the authority of the Brownfields Property Reuse Act as defined by G.S. 130A, Article 9 Part 5;
 - (j) Contamination associated with pollution sources in soils or other sites known or suspected to have exceeded the Groundwater Quality Standards listed in 15A NCAC 02L; or
 - (k) Contamination known to the local health department through experience with the property, surrounding properties, or information provided by the applicant.
- (7) "Local Health Department" means the authorized agent of the county or district health department or its successor.
 - (8) "Person" means the term as defined in G.S. 87-85.
 - (9) "Plat" means a property survey prepared by a registered land surveyor, drawn to a scale of one inch equals no more than 60 feet, that includes: the specific location of all structures and proposed structures and appurtenances, including decks, porches, pools, driveways, out buildings, existing and proposed wastewater systems, existing and proposed wells, springs, water lines, surface waters or designated wetlands, easements, including utility easements, and existing or proposed chemical or petroleum storage tanks above or below ground. "Plat" also means, for subdivision lots approved by the local planning authority and recorded with the county register of deeds, a copy of the recorded subdivisions plat that is accompanied by a site plan that is drawn to scale.
 - (10) "Pumps" and "pumping equipment" means the terms as defined in G.S. 87-85.
 - (11) "Repair" means the term as defined in G.S. 87-85.
 - (12) "Repair permit" means a well repair permit issued by the local health department authorizing or allowing the repair of any private drinking water well as defined in the rules of this Section.
 - (13) "Site plan" means a drawing not necessarily drawn to scale that shows the existing and proposed property lines with dimensions, and the specific location of all structures and proposed structures and appurtenances, including decks, porches, pools, driveways, out buildings, existing and proposed wastewater systems, existing and proposed wells, springs, water lines, surface waters or designated wetlands, easements, including utility easements, and existing or proposed chemical or petroleum storage tanks above or below ground.
 - (14) "Water supply system" means pump and pipe used in connection with or pertaining to the operation of a private drinking water well including pumps, distribution service piping, pressure tanks, and fittings.
 - (15) "Well contractor activity" has the same meaning as in G.S. 87-98.2(6).
 - (16) "Well seal" means the term as defined in G.S. 87-85.

History Note: Authority G.S. 87-87; 87-97;
 Eff. July 1, 2008;
 Readopted Eff. July 1, 2019.

15A NCAC 02C .0303 APPLICATION FOR PERMIT

A property owner or the property owner's agent shall submit an application for a permit to construct, repair, or abandon a private drinking water well to the local health department for the county where the well is located or will be located. The application shall include:

- (1) The name, the address, and the phone number of the proposed well property owner or agent;
- (2) The signature of owner or agent;
- (3) The address and the parcel identification number of the property where the proposed well is to be located;
- (4) A plat or site plan;
- (5) The intended use(s) of the property;
- (6) Other information deemed necessary by the local health department to determine the location of the property and any site characteristics, such as existing or permitted sewage disposal systems, easements or rights of way, existing wells or springs, surface water or designated wetlands, chemical or petroleum storage tanks, landfills, waste storage, known source of release of contamination, and any other characteristics or activities on the property or adjacent properties that could impact groundwater quality or suitability of the site for well construction;

- (7) Any current or pending restrictions regarding groundwater use as specified in G.S. 87-88(a); and
- (8) Any variances regarding well construction or location issued under 15A NCAC 02C .0118.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.

15A NCAC 02C .0304 PERMITTING

(a) No person shall construct a private drinking water well without first obtaining a well construction permit from the local health department. No person shall repair a private drinking water well without first obtaining a well repair permit, except a well repair permit is not required for maintenance or pump repair or replacement. Disinfection in accordance with 15A NCAC 02C .0111 is a maintenance activity that does not require a repair permit. No person shall permanently abandon a private drinking water well without first obtaining a well abandonment permit from the local health department.

(b) Before issuing a well construction permit, the local health department shall conduct a field investigation to evaluate the topography, landscape position, available space, and potential sources of groundwater contamination on or around the site where a private drinking water well is to be located. Furthermore, the Department shall conduct a search of DEQ's published inventories to determine whether the proposed well site is located within 1,000 feet of a known source of release of contamination. The local health department shall issue a private water well construction permit after determining the site can be permitted for a well meeting the rules of this Section. The local health department shall not issue a construction permit for a well in violation of restrictions regarding groundwater use established pursuant to G.S. 87-88(a). The construction permit shall include a site plan showing the location of potential sources of contamination and area(s) suitable for well construction. The construction permit shall reference documentation from DEQ's published inventories of known releases of contamination within 1,000 feet of the proposed well site, and any known risk of constructing the well related to those findings. The local health department shall issue a written notice of denial of a construction permit if it determines a private drinking water well cannot be constructed in compliance with the rules of this Section. The notice of denial shall include reference to specific laws or rules that cannot be met and shall be provided to the applicant.

(c) Any well permit shall be valid for a period of five years; however, the local health department may revoke a permit at any time if it determines that there has been a material change in any fact or circumstance upon which the permit shall not be issued. The validity of a well construction permit or a well repair permit is not affected by a change in ownership of the site where a private drinking water well is proposed to be located if the proposed well can still be constructed or repaired in the permitted area and in accordance with this Section and 15A NCAC 02C .0100. The local health department may suspend or revoke any permits issued upon a determination that the rules of this Section have been violated.

(d) If there is an improperly abandoned well(s) on the site, the construction permit shall be conditioned upon repair or abandonment of those improperly abandoned well(s) in accordance with the rules of 15A NCAC 02C .0100.

History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.

15A NCAC 02C .0305 GROUT INSPECTION AND CERTIFICATION

(a) The well contractor shall contact the local health department to schedule a grout inspection before grouting a private drinking water well and include the location, permit number, and anticipated time for grouting each private drinking water well. The local health department shall schedule the appointment by the end of the business day before the grouting is to occur except where the local health department has made provisions for scheduling inspections at night or on the same day of the inspection.

(b) Upon completion of a grout inspection, the local health department shall provide a written certification on the well permit that a grout inspection was completed and that the grouting is in compliance with the rules of 15A NCAC 02C .0100. When a local health department is unable to conduct a grout inspection within one hour of the scheduled time, the well contractor may grout a well without a grout inspection by the local health department. The well contractor shall provide a written certification to the local health department that the well has been grouted in compliance with the rules of 15A NCAC 02C .0100. A completed Well Construction Record form GW-1 stating the well was grouted in compliance with the rules of this Section shall serve as the well contractor's grout certification.

For purposes of issuing a Certificate of Completion, the well contractor's grout certification shall be accepted by the local health department as evidence the grout complies with the rules of this Section if the local health department:

- (1) was contacted by the well contractor to schedule a grout inspection;
- (2) was unable to inspect the grouting of the well within one hour following the scheduled time; and
- (3) upon final inspection, finds no evidence to indicate the well grout does not comply with the rules of this Section.

*History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.*

15A NCAC 02C .0306 WELL COMPLETION AND CERTIFICATION

(a) After receiving a permit to construct a private drinking water well, the property owner or agent shall notify the health department prior to well construction if any of the following occur:

- (1) The separation criteria specified in 15A NCAC 02C .0107 cannot be met;
- (2) The residence or other structure is located other than indicated on the permit;
- (3) The use of the structure is changed from the use specified on the permit;
- (4) The septic system needs to be changed from the location indicated on the permit;
- (5) Landscaping changes have been made that may affect the integrity of the well;
- (6) There are current or pending restrictions regarding groundwater use as specified in G.S. 87-88(a);
- (7) The water source for any well intended for domestic use is adjacent to any water-bearing zone suspected or known to be contaminated; or
- (8) Any other changes occur in the information provided in the application for the well permit.

(b) The well contractor shall maintain a copy of the well construction permit, repair permit, or abandonment permit on the job site at all times during the construction, repair, or abandonment of the well. The well contractor shall meet all the conditions of the permit.

(c) The well contractor shall submit a copy of Well Construction Record (GW-1) to the local health department. Upon completion of construction or repair of a private drinking water well for which a permit is required, the local health department shall inspect the well and issue a Certificate of Completion that includes an "as built" drawing. Prior to the issuance of a Certificate of Completion, the local health department shall verify that the well was constructed in the designated area and according to the well construction permit and the rules of this Subchapter. The local health department shall inspect the grout around the casing for any settling, inspect the well head after the well seal is in place, and verify that a Well Construction Record has been received from the certified well contractor. No person shall place a private drinking water well into service without first having obtained a Certificate of Completion.

*History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.*

15A NCAC 02C .0307 WELL DATA AND RECORDS

(a) Any person completing, abandoning, or repairing any well shall submit a record of the construction, abandonment, or repair to the local health department and the Division of Water Resources within 30 days of completion of construction, abandonment, or repair. The record shall be on a form provided by the Department of Environmental Quality.

(b) The local health department shall maintain a registry of all permitted private drinking water wells, specifying the well location and the water quality test results until the well is permanently abandoned in accordance with this Subchapter.

*History Note: Authority G.S. 87-87; 87-97;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.*

15A NCAC 02C .0308 APPEAL PROCEDURE

Appeals concerning permit decisions or actions by the local health department to enforce the rules of this Section shall be conducted according to the procedures established in G.S. 150B, the Administrative Procedure Act.

History Note: Authority G.S. 87-87;
Eff. July 1, 2008;
Readopted Eff. July 1, 2019.

15A NCAC 02C .0309 WELL ABANDONMENT AND CERTIFICATION

- (a) The applicant or well contractor shall contact the local health department to provide notification of intent to permanently abandon a private drinking water well, and include the location, permit number, and anticipated time for abandonment of each private drinking water well. If it is conducting an inspection, the local health department shall schedule the appointment by the end of the business day before the abandonment is to occur except where the local health department has made provisions for scheduling inspections at night or on the same day as the inspection.
- (b) Upon notification from the well contractor, the local health department may opt to inspect the well abandonment process. The local health department shall inform the well contractor of its availability and intention to inspect the well abandonment after notification pursuant to Paragraph (a) of this Rule. When a local health department is unable to conduct the abandonment inspection within one hour of the scheduled time, the well contractor may abandon the well without an inspection by the local health department.
- (c) Upon completion of a permanent well abandonment, the local health department shall provide a written certification on the well abandonment permit, or other local health department form, that a well abandonment inspection was completed and that the abandonment is in compliance with the rules of 15A NCAC 02C .0100. When the local health department opts to not inspect the permanent abandonment process, the well contractor shall provide written certification to the local health department that the well has been abandoned in compliance with the rules of 15A NCAC 02C .0100. A completed Well Abandonment Record form GW-30 stating the well was abandoned in compliance with the rules of this Section shall serve as the well contractor's abandonment certification.

History Note: Authority G.S. 87-87;
Eff. July 1, 2019.

ATTACHMENT 8

Big Rockfish Creek Sanitary Sewer Outfall Contract II
SRF#CS370434-15/16
Pre-Bid Conference
October 11, 2022, 10:00 AM
Virtual, PWC Operations Center

Minutes:

1. Welcome and Introductions
 - a. AJ Riddle introduced himself and reminded the attendees that this was a mandatory pre-bid meeting for BRCO Contract II. He asked participants to sign in on the chat screen with name, company, email, and phone number. He also asked them to include their designation: primary, subcontractor, or supplier.
 - b. Attendees are included on the final sheet of these minutes.

2. Project Overview
 - a. Sewer Installation
 - i. 11,180 LF of 24-inch Gravity Sanitary Sewer Main
 - ii. 3,595 LF of 18-inch of Gravity Sanitary Sewer Main
 - iii. 630 LF of **Guaranteed** Trenchless Installation on Part A of the Contract
 1. Alternate Base Bid for Part A includes two additional trenchless crossings within Mariners Landing
 - iv. 60 EA Sanitary Sewer Manholes
 - v. 850 LF of 8-inch Gravity Sanitary Sewer Main
 - vi. 410 LF of **Guaranteed** Trenchless Installation under I-295 on Part B of the Contract
 - vii. 1 EA Lift Station Abandonments
 - b. Part A Base Bid entails open cutting the deepest portions of sewer within Mariners Landing while meeting NCDOT's traffic control requirements, which permits a daily "rolling" road closure and requires the road to be fully re-opened to traffic at end of each working day
 - c. Part A Alternate Bid entails performing trenchless crossing of the deepest sections of sewer within Mariners Landing under a temporary road closure plan. All other sections within Mariners Landing shall be installed utilizing a daily "rolling" road closure and fully re-opening the road to traffic at end of each working day.
 - d. Part B is the same for either Part A Base or Part A Alternate.

3. Bid Items
 - a. Questions due by 5:00 p.m., Tuesday, October 18, 2022
 - i. Submit in writing to Tanya Hazlett, Procurement Advisor (tanya.hazlett@faypwc.com)
 - b. Addendum #1 expected to be issued by Monday, October 17, 2022 and is expected to include:
 - i. Answers to initial questions received
 - ii. Pre-bid Minutes
 - iii. Updated SDBE requirements and forms

- iv. Revised bid form to include Part A base bid (inadvertently omitted with initial publication of Project Manual) and Part C (Well Abandonment/ Relocation Work)
 - v. Inclusion of Well Abandonment/ Relocation work adjacent to Lakeview Drive
 - 1. Approximately 13 well abandonments and relocations of these wells to conform to minimum spacing requirements (100 foot from manholes) or variant spacing requirements, as approved by DEQ and Cumberland County Health Department (50 foot from manholes).
 - vi. Easement Special Conditions associated with Well Abandonment/ Relocation work
 - c. Addendum #2 expected to be issued by Friday, October 21, 2022 to provide responses to any additional bidder questions.
 - d. All Bids are due at 2:00 p.m., Thursday, October 27, 2022.
 - e. Bid acceptance period of one hundred twenty (120) calendar days unless otherwise noted.
 - f. Given continued concerns over material pricing volatility, bids are subject to material escalation and de-escalation clause per Instructions to Bidders, Item O.3. The material price form per Section 0300 must be submitted for a responsive bid.
 - g. Notice to Proceed expected in June 2023 so material orders and deliveries can be secured.
 - i. Due to continued long lead times, PWC expects the 670-day contract duration to be delayed until June 2023, or at an established date when sufficient material has been secured and delivered and when delivery schedule of remaining material has been confirmed to begin project without multiple starts and stops.
 - h. 670-day contract duration
 - i. Calculation for Sewer Installation from Station 116+89.41 to Station 264+63.60 plus Part B: Approximately 40 LF for sewer installation per day, approximately 100 days for mobilization, approximately 100 days for well abandonments/relocations, approximately 100 days for punch-list and clean-up, testing and restoration.
 - ii. No weather days are included in Contract Time Calculation
 - i. \$1,500 per day liquidated damages all portions
 - j. A Bid Bond is required for this project and must be submitted with all bids.
 - k. All prospective bidders should thoroughly review the Bid Evaluation information listed in the Bid Proposal Section of the Contract Documents. If any information is omitted, the submitted bid may be considered incomplete. Incomplete bid packages may be rejected as non-responsive. A Bid Evaluation Checklist has been provided but may not be all inclusive.
- 4. Division of Water Infrastructure Special Conditions, DBE and Local Participation Requirements (Procurement)
 - a. Since this project is funded through a State Revolving Fund Loan, the SRF program includes provisions which establish goals and other requirements to participation by certified Minority Business Enterprises (MBE)/ Women Business Enterprises (WBE), wage rates set forth under the Davis Bacon Act and requirements of the American Steel Act.
 - b. The Bidder to whom the contract is awarded shall comply with the statutory requirements of these provisions.
 - c. EPA MBE/ WBE participation goals: MBE 10.9%/ WBE 10.4%
 - d. State of NC MBE/ WBE participation goals: 10% (combined)
 - e. Contractors are required to give DBE Contractors the opportunity to quote the work.
 - f. There have been revisions to the PWC/City of Fayetteville's SDBE packet, the revised packet will be included in Addendum No. 1. Only the SDBE packet has been revised, all other DWI requirements and packets in the original contract documents remain unchanged.

All DBE documents shall be submitted with the bid are marked as such. All DBE documents required to be submitted with the bid are marked as such. Good faith opportunity efforts shall be documented. If the goal is not met, Contractor will be required to show that good faith efforts were made.

- g. If a subcontractor is selected or changed after execution of the contract, DWI will require MBE/ WBE documentation.
 - h. PWC promotes utilizing local businesses for services and supplies.
 - i. By submitting a bid, the Bidder agrees to comply with the E-Verify and Iran Divestment Acts.
 - j. Bidder must submit the executed American Iron and Steel (AIS) Certification with submittals for approval of the materials and any waiver requests with their bid.
 - k. If bidders have questions or concerns and need assistance in locating local and DBE-certified firms, bidders are encouraged to contact Nikole Bohannon at 910-223-4016 or via email at Nikole.bohannon@faypwc.com and include Tanya Hazlett (tanya.hazlett@faypwc.com).
5. Contract Items
- a. Section A-Project Specifics
 - i. General
 - ii. Bid Submittal Documents
 - 1. Bid form to be revised (to be issued by addendum)
 - iii. DWI Requirements
 - b. Section B-Contract Execution Documents
 - i. Contract Forms and Supplemental Forms
 - c. Section C-Administrative Requirements
 - i. General Requirements including General Conditions, Special Conditions and Measurement and Payment
 - d. Section D-Technical Specifications
 - e. Section E-Well Abandonment/Relocations Requirements and Technical Specifications (to be issued by addendum)
 - i. Requirements include Special Conditions and Measure and Payment
 - ii. Technical Specifications include well, electrical, plumbing, and other material requirements for this work
 - f. Appendices-Geotechnical Investigation, Permits/Encroachments, Easement Control Worksheet, etc.
 - g. Appendix E-Well Abandonment/Relocations Approvals (to be issued by addendum)
6. Construction Issues
- a. Encroachments- PWC will obtain Hold Harmless Agreement from NCDOT. The Hold Harmless Agreement will transfer to the Contractor.
 - i. NCDOT U2519BA/BB Design Build Encroachment (E062-026-22-00123)– transfer hold harmless agreement to Contractor and no access within right of way regardless of whether road construction is completed or not completed.
 - ii. NCDOT E062-026-20-00167/E062-026-22-00468 (Lake View Road) – Bonding Requirements include Performance and Indemnity Bonds in the amount of \$2,421,835.00.
 - iii. NCDOT E062-026-20-00168/E062-026-22-00469 (Lake Farm Road) Bonding Requirements include Performance and Indemnity Bonds in the amount of \$543,075.00
 - iv. NCDOT E062-026-20-00169/E062-026-2200470 (Mariners Landing Drive) Bonding Requirements include Performance and Indemnity Bonds in the amount of \$2,436,395.00.
 - v. NCDOT E062-026-20-00170/E062-026-22-00471 (Camden Road).

- vi. LREMC (See Sheet C-15) – The Contractor is responsible for coordination with LREMC and PWC Project Coordinator to relocate the pole and guy wire a minimum of three calendar days from the Notice to Proceed. The Contractor and PWC Project Coordinator are responsible for coordinating a location outside the work area that will present no conflicts during construction and maintenance of sewer easement. PWC will pay for relocation charges by LREMC for pole and guy wire relocation, if LREMC charges for said work.
- b. Easements (no additional comments from PWC Right-of Way Department)
 - i. Easement acquisition is complete at this time. It is anticipated that all easements will be acquired prior to the NTP.
 - ii. The Contractor is expected to adhere to the easement special conditions listed in Section 01000 of the Contract Documents. The easement special conditions are also noted on the plans.
 - iii. Any additional special conditions will be provided by addendum
 - iv. Easement map status and locations of potential condemnations are disclosed on the map which will be made available by the Pre-Bid Meeting Minutes and via addendum.
- c. Customer Service-It is expected that the Contractor recognize they are working in public right of ways, on private property and adjacent to and within subdivisions. All personnel are to be respectful and courteous. The Contractor shall follow the Contract requirements for dealing with complaints that may arise during construction. Special attention is called to the working hours provided within the Contract Documents. The working hours will be enforced. There will be no work on weekends and PWC recognized holidays.
- d. Testing and Acceptance
 - i. Compaction testing will be conducted in accordance with the Contract Documents.
 - 1. Compaction testing will be coordinated by the PWC Project Coordinator.
 - 2. PWC will contract directly with the materials testing firm and pay for all initial compaction testing. However, the Contractor will be charged for all retests and bracket testing for failed compaction testing.
 - ii. Testing of the sewer mains and manholes shall be conducted in accordance with the Contract Documents.
 - 1. Reference Special Condition 01000 (Item # 46) for hydrostatic testing of all sewer mains where sewer is less than 100 feet from a private well, for all stream and wetland crossings and where sewer is less than 50 feet from a wetland.
 - 2. Contractor shall coordinate with the PWC Project Coordinator two (2) business days prior to schedule testing.
 - iii. Specialty Testing – Where vibration monitoring is needed or specified, it will be performed through an allowance established in the bid form. Contractor shall employ a testing firm based on PWC’s approval and use allowance to pay for these expenses.
- e. Traffic Control-Traffic Control shall be in accordance with the most recent edition of the MUTCD, NCDOT Standards, and the Approved Traffic Control Plan. The Contractor is required to submit traffic control plans for approval to the Project Engineer for work in NCDOT, the Town of Hope Mills, and City of Fayetteville roadways. These plans shall be approved prior to work beginning in any roadway. In accordance with the Contract Documents, the Contractor shall notify the entity responsible for operation and maintenance of the roadway (the Town of Hope Mills, NCDOT, or City of Fayetteville) and PWC by close of business the Wednesday of the previous business week indicating which roadways will be affected by the work for the upcoming week. This notification shall include a brief sketch. The Contractor shall abide by all NCDOT, Town of Hope Mills, and City of Fayetteville requirements when working within their respective rights of way.

- f. Erosion Control-The Contractor will be required to abide by the approved erosion control plan and permit daily. The Contractor is also required to submit a supplemental erosion plan for their staging areas to NCDEQ for approval. Upon completion of the project, the staging areas shall be seeded and ground cover established, in accordance with the requirements of the erosion control permit.
- g. Water Services-The majority of this project is outside of any congested utility corridors. Any incidental damage to existing water services shall be repaired to utility owner's requirements. If an AQUA water service is damaged during construction, the Contractor is expected to replace the water service from main to meter with poly pipe. If any damage to facilities occurs, the PWC Project Coordinator and the AQUA representative shall be notified.
- h. Restoration shall be in accordance with the Contract Documents.
 - i. Areas outside the project limits that are damaged shall be considered collateral damage areas and shall be restored with sod at no cost to PWC.
 - ii. NCDOT roadways (Lakeview, Lake Farm, and Mariners Landing)- Contractor will perform full street-width street replacement conforming to street restoration detail. The Contractor will mill and overlay to tie back into the existing roads.
 - iii. Hope Mills Roadways-PWC's standard pavement repair detail along with mill and overlay to the designated limits on the drawings
- i. Staging Area requirements can be found in Section 01000 (Item #26) of the Contract Documents. The Contractor is required to submit a plan to PWC, as indicated in the Contract Documents. Any Temporary Use and Truck Route Permit fees shall be the Contractor's responsibility. An approved supplemental erosion control plan is also the Contractor's responsibility.
- j. Temporary Driveway Permits with NCDOT will be submitted for the proposed temporary construction entrances (TCE) on Waldos Beach Road, Lakeview Drive, Lake Farm Road, and Camden Road. Each access will require the installation of driveway culverts. When work is completed, the access and driveway culvert is to be removed and the area restored in accordance with the plan and permit requirements. Bond amounts are set at \$10,000 per location per driveway. Driveway permits must be renewed every 90 days. PWC shall be responsible for obtaining the initial driveway permits and application fees. The Contractor shall be responsible for obtaining and renewing temporary driveway permits and application fees (\$50 per driveway) thereafter.
- k. The Contractor is required to post a Performance and Indemnity Bond with the Town of Hope Mills in the amount of \$579,000, based on the opinion of probable construction cost (OPCC) that was developed by the engineer for the cost of replacing Hope Mills roadway infrastructure related to the designated haul route to access the Peartree Estates Lift Station elimination outfall (See Sheet A-8 detailing the streets of Pine Cone Lane, Redspire Lane, and Ritson Lane). Proof of payment of the required Performance and Indemnity Bond is to be submitted to PWC with the initial payment request.
- l. Construction access is restricted to certain areas, as detailed on the plans, at the following locations:
 - i. Contractor must use specified construction access points, as described herein, or as negotiated by the Contractor. **The Contractor may not cross the NCDOT I-295 corridor for construction access at any time.** The Contractor shall be prepared to utilize an in and out approach to access corridor on each side of this controlled access right-of-way.
 - ii. Contractor shall utilize an in and out approach to access the corridor between SSMH 45 and Lakeview Drive.
 - iii. Contractor shall utilize the easternmost connector for Lakeview Drive to Waldo's Beach Road as the dedicated haul route as designated on Sheet A-8 to access sewer

installation between MH 50 and Lakeview Drive, and along Lakeview Drive to MH 58.

- iv. Contractor shall utilize the easternmost connector for Lakeview Drive to Waldo's Beach Road or Waldo's Beach to the sewer easement to access the sewer installation MH 58 and MH 61.
 - v. Contractor shall utilize Waldo's Beach Road to access the sewer installation between MH 61 and MH 65. A combination of Waldo's Beach Road and the designated haul route from Camden Road to Mill Creek Road to Lake Farm Road to access the sewer installation between MH 65 and MH 73.
 - vi. No construction traffic is permitted access across the permanent sewer easement on Parcel #33 on Sheet C-18. Access to the receiving pit shall be through the dedicated haul route on Mill Creek Road to Lake Farm Road. Access to the jacking/launching pit shall be through Mariners Landing Drive as designated on Sheet A-8.
 - vii. Contractor shall utilize designated access/haul route on Northbank Street from Camden Road to Mariners Landing Drive to access sewer installation from SSMH 75 to SSMH 91. Mariners Landing Drive is a looped residential street. Contractor is not permitted to utilize the eastern portion of this looped street for any construction access. This portion of the street shall only be utilized to redirect local traffic as designated on traffic control Sheet TC-2.
 - viii. No construction traffic is permitted across the permanent sewer easement on Parcel #33 and Parcel #34 on Sheet C-18. Access to the receiving pit shall be through the dedicated haul route on Mill Creek Road to Lake Farm Road. Access to the jacking/launching pit shall be through Mariners Landing Drive as designated on Sheet A-7.
 - ix. No construction traffic is permitted across the permanent sewer easement on Parcel #35 and #36 on Sheet C-20. Access to the receiving pit shall be through the dedicated haul on Northbank Street to Mariners Landing Drive. Access to the jacking/launching pit shall through the Camden Road construction access as designated in Sheet A-2 and as shown on Sheet C-20. Foot traffic to permit hand clearing as defined in Paragraph 21 on Parcel #35 using an in and out approach from Mariners Landing Drive herein is permitted.
 - x. Contractor shall access launching pit for the trenchless installation between SSMH 91 and SSMH 92, launching pit for the trenchless installation between SSMH 107 and SSMH 163 (Peartree Estates/ Camden Glenn Lift Station elimination outfall) and sewer installation from SSMH 92 to SSMH 107 using an in and out approach via the Camden Road construction access. No construction access is permitted to this corridor using any portions of I-295. No disturbance is permitted within any portions of the I-295 right of way.
 - xi. Contractor shall utilize the designated haul/access route as shown on Sheet A-8 entailing Pine Cone Lane, Redspire Lane, and Ritson Lane to the Camden Glen Road construction access to access the receiving pit for the trenchless installation between SSMH 107 and SSMH 163 and the sewer installation from SSMH 163 to SSMH 165. This designated haul/access route shall be bonded as identified in Paragraph 22 herein.
7. Special Property Owner Considerations for sewer main (outfall) installation (per Section 1000 and indicated on Drawings)

- a. ***Parcel 23, 6748 Waldos Beach Road:*** The Contractor shall provide a ninety-day (90) notification to PWC regarding work on this parcel.

The Contractor shall erect safety fencing along the limits of the construction corridor through this property and provide signage and temporary detour routes to redirect tenants and patrons of the RV park safely around the work area.

The Contractor shall maintain access to Waldo's Beach Campground and Swim Park during normal business hours, which are considered to be 10:00 am to 5:30 pm Sunday through Saturday. The Contractor shall maintain no less than two (2) points of access to the existing pool house at all times during construction.

The Contractor shall coordinate with PWC Project Coordinator a minimum of 14 calendar days so property owner can temporarily relocate parking disturbed by construction. The Contractor shall coordinate with PWC Project Coordinator and property owner a minimum of 14 calendar days to initiate the location of the private water main from the existing well that serves the RV park. The Contractor shall be responsible for locating the water main prior to initiating the sewer construction in accordance with Paragraph 32 herein and protect the existing utility in accordance with Paragraph 31.

The Contractor shall coordinate with PWC Project Coordinator and property owner a minimum of 14 calendar days to initiate the location of the private water, sewer, telephone, cable, internet, and electrical services in the vicinity of the sewer main alignment from approximate Station 176+50 to Station 179+75 that serve the RV bays. The Contractor shall be responsible for locating these services prior to initiating the sewer construction in accordance with Paragraph 32 herein and protect the existing utility in accordance with Paragraph 31.

The Contractor shall also be responsible for providing temporary services to maintain drainage, water, sewer, telephone, cable, internet, and electrical hookups and permanently replacing all drainage, water, sewer, telephone, cable, internet, and electrical services, risers, equipment racks, etc. that conflict with the sewer installation. All temporary and permanent utility facilities shall be in accordance with all local and state building and inspection codes and requirements.

- b. ***Parcel 28, 7075 Lamplighter Drive:*** If damage to the septic system and drain field occurs as a result of the project construction, Contractor shall repair the system as necessary to original condition or better. If damage cannot be repaired, then Contractor shall be responsible for the property's septic pump and haul operations until the Contractor can connect the property to the outfall.
- c. ***Parcel 33, 7341 Mariners Landing Drive:*** This property shall not be utilized for construction access between Lake Farm Road and Mariners Landing Drive. Ingress and egress is only permitted for installation of the boring/launching pit as shown on Sheet C-18. No equipment or any kind shall be permitted elsewhere on this property, and no material of any kind shall be permitted elsewhere on this property. The driveway shall not be disturbed during construction.
- d. ***Parcel 34, 7345 Mariners Landing Drive:*** This property shall not be utilized for ingress and egress. No equipment or any kind shall be permitted on this property, and no material of any kind shall be permitted on this property. The driveway shall not be disturbed during construction.

If damage to the existing septic system components occur as a result of project construction, the Contractor shall repair the system as necessary to original condition or better. If damage cannot be repaired, then Contractor shall be responsible for the property's septic pump and haul operations until the Contractor can connect the property to the outfall.

If any damage to the existing irrigation system components occurs as a result of project construction, the Contractor shall repair the system as necessary to original condition or better.

- e. ***Parcel 35, 7105 Mariners Landing Drive:*** The existing fence on this property shall not be disturbed or damaged as a result of project construction. No access will be permitted through the fenced portion of this property. No access shall be permitted in the back yard.

Removal of the existing River Birch tree and Bradford Pear tree (See Tree Schedule, Item 6 and 9 on Sheet C-20) located within the permanent easement area, shall be done by hand, and the stumps ground utilizing equipment that will not damage existing septic system components. If damage to septic system and drain field occurs as a result of the project construction, Contractor shall repair the system as necessary to original condition or better. If damage cannot be repaired, then Contractor shall be responsible for the property's septic pump and haul operations until the Contractor can connect the property to the outfall.

There shall be no ingress or egress across this parcel except as may be necessary for the removal of the trees and any landscaping items designated as needing to be removed by PWC.

No material storage on this property will be allowed.

If damage to the irrigation system or landscape lighting on this property occurs as a result of project construction, the Contractor shall repair the component(s) or system(s) as necessary to original condition or better.

- f. ***Parcel 36, 7115 Mariners Landing Drive:*** Contractor shall erect a temporary, six (6) foot high chain link fence adjacent to the temporary construction easement on the eastern side of the permanent utility easement to keep pets and small children out of the work area. Temporary gate shall be provided to permit construction entrance and alleviate any unauthorized use of temporary construction entrance.

Access to the rear yard for tree removal shall be made from the Camden Road side of the project easement area. The gazebo located on this property shall not be disturbed. The neighbor's fence, located on the common property line, with arched top panels, shall not be disturbed.

If damage to septic system and drain field occurs as a result of the construction, Contractor shall repair the system as necessary to original condition or better. If damage cannot be repaired, then Contractor shall be responsible for the property's septic pump and haul operations until the Contractor can connect the property to the outfall.

There will be no material storage on this property.

- a. Monroe Huckabee pointed out that on 2507 Lakeview Dr there is an electric gate that will have to be disconnected from the well power supply and re-connected to the new electrical. A temporary fence will also be required to keep the breed dog protected.
 - b. For all thirteen well properties, the permit requirements will be part of the addendum. Well permits will need to be pulled to abandon the wells according to State and Local requirements.
9. Project Specifics:
 - a. HDPE Encasement- Pipe shall be butt-fused and interior electrofuse weld bead shall be removed prior to installation of sewer carrier pipe.
 - b. Downstream or receiving sewer for Camden Woods Lift Station shall be operational and accepted prior to diverting flow and abandoning lift station. Contractor shall sequence work so that minimal disruption of flow and minimal duration of bypass pumping occurs. Bidders are also reminded of construction sequence for the initial sections of Peartree Estates elimination outfall main that crosses the cul-de-sac as noted on Sheet C-36A. Critical elements to address before constructing this portion of the sewer include:
 - a. New sewer operational downstream of lift station
 - b. Implementing bypass plan upstream of lift station
 - c. Constructing temporary sanitary sewer for 3257 Hunting Lodge Road
 - d. De-energizing circuit that powers lift station
 - e. Cutting in isolation valve on 2-inch water main to allow existing services to remain unimpeded and to provide the ability to shut off end of the main blow-off assembly and the existing service that supplies water to lift station
 - c. Contractor is responsible for developing work plan of diverting flows of perennial and/or intermittent streams during crossings. Work within streams must be in a dry condition and comply with 401/404 Water Quality Certifications. It shall include the engineering of an acceptable diversion dam and stream flow bypass system.
10. Design Engineer Comments
 - a. Mark Fisher asked for clarification on the contract duration. 660 or 570 days? PWC did not address this comment in the pre-bid. The project duration is 670 calendar days as defined in Bid Items H.
11. Town of Hope Mills Comments
 - a. Not present.
12. Division of Water Infrastructure Comments
 - a. Not present. AJ Riddle reiterated DWI requirements state that if the Contractor changes subcontractors, the appropriate paperwork needs to be filled out. American Iron Steel Certification forms are required and a certification should accompany any submittal and also if unable to obtain the form, then a waiver request should accompany the submittal.
13. PWC Comments
 - a. AJ Riddle explained the bid submittal process: The bid package will be opened at the PWC Operations complex outside, near the visitor's entrance. Bid packages should be submitted to the Procurement Services Department or brought to PWC on the day of the

bid opening. If mailing, it is suggested that the bidder obtain a tracking number and notify PWC by email of its expected arrival. If bidders drop off their package it is recommended that they tell the security guard that they are turning in a bid package to the Procurement Department and should not leave it with the guard. Bid proposals shall be in a sealed envelope and if mailed, should be addressed as follows: Sealed Bid, Big Rockfish Creek Sanitary Outfall II, Public Works Commission, Attention Tanya Hazlett, Procurement Advisor, 955 Old Wilmington Rd. Fayetteville, NC 28301. In the lower left-hand corner of the envelope shall include the project title, hour and due date of the bid and the bidders, North Carolina contractor registration number.

14. Questions

- a. William Bryant with TMB Lawn Care: Did you say we can pick up the bid packages at PWC building? Mark Fisher: So PWC has them available for digital download at no cost to any bidder, suppliers or subcontractors by visiting the PWC portal, that's pretty easy to navigate on PWC's website. If any bidder, suppliers or subcontractors need actual hard copies printed and delivered to their location, they can be purchased through McKim and Creed.
- b. William Bryant with TMB Lawn Care: And my next question is, I know this is quite an area to cover with all the construction that will be going on. Is there a square footage that would be on there for pay items like sod? Mark Fisher: Yes, the restoration is based upon the measurement payment. I mean that question can probably be answered by reviewing the documents. But there will be a basis of measurement for sod and seed
- c. Janie Rodriguez with Oscar Renda Contracting, Inc: Will there be an Engineer's Estimate for this project? AJ Riddle: We typically share our Engineer's Estimates after the bid is awarded and we have opened the bids.

15. Adjourn

Big Rockfish Creek Outfall Contract II
 Pre-Bid Conference
 October 11, 2022 10am via Microsoft Teams

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Valerie Morrison	Crowder Trucking	Not provided	Not provided
Jim Lehmann	Xylem Dewatering	Jim.lehmann@xylem.com	910-409-7975
Nick Lyons	Mechanical Jobbers	nicklyons@mechanicaljobbers.com	770-482-5220