IREDELL COUNTY HEALTH DEPARTMENT - ENVIRONMENTAL HEALTH ☐ STATESVILLE OFFICE 704-878-5305 ☐ MOORESVILLE OFFICE 704-664-5281

IMPROVEMENT PERMIT / AUTHORIZATION TO CONSTRUCT / OPERATION PERMIT / EXISTING SYSTEM INSPECTION

PERMIT # EXPANSION PIN # 4629-61-2919 DATE JUNE 15, 2011

OWNER WILLIAM S. McBANE APPLICANT: PAULA & DAVID STEELE PHONE: Home/Cell # 704-437-6203 Business # 704-872-3681

SITE ADDRESS 150 KEVEN DRIVE, TROUTMAN, NC OWNER / APPLICANT ADDRESS 150 KEVEN DRIVE, TROUTMAN, NC 28166

SITE DIRECTIONS STATE PARK RD, TL MORRISON FARM RD, TR PENICILLIN PT, TR KEVEN DR, LOT AT END OF CUL-DE-SAC

SUBDIVISION C L & T BLOCK / SECTION 17 LOT # 85 LOT AREA 0.61 ACRES DESIGN FLOW 480 L.T.A.R.

REC'D

Septic Tank 1000 Gallons: STB 2054 Date

Pump Tank 1250 Gallons: PT 2062 Date

Pump Make Model Serial #

No. Nitrification Fields: 1 No. Lines 2 Linear Feet 67

Trench Width 24" Max. Trench Bottom Depth 36" Gravel Depth 24"

☑ New System ☐ Repair ☐ Expansion System Type I II III IV (V)

System Description: PRETREATMENT, PPBPS, PRESS, MAN

Repair System Description: PRETREATMENT, PPBPS, LOW-PRESS

Maintenance Agreement Required ☑ YES ☐ NO

☐ GRAVITY ☑ PRESSURE

☐ Residence ☐ Business ☐ Other ☐ Slab ☐ Crawl Space ☑ Basement w/plumbing ☐ Basement w/o plumbing

No. Bedrooms 4 No. Persons No. Employees

Water Supply: ☑ Private ☐ Public ☐ Community

Comments / Conditions A CONTRACT SHALL BE EXECUTED BETWEEN SYSTEM OWNER & A MANAGEMENT ENTITY PRIOR TO ISSUANCE OF OPERATION PERMIT.

INITIAL SITE SKETCH

SEE ATTACHED WASTEWATER SYSTEM IMPROVEMENTS DESIGN INFORMATION PREPARED BY HUGH CREED ASSOC, INC, P.A. AND CERTIFICATION FROM AQUA, INC.

AS BUILT SKETCH

Installed as shown on approved plans.

Maintenance Agreement attached.

Permit can be suspended or revoked if any false information is supplied toward securing the permit / any unauthorized changes are made to the site / any unauthorized changes are made in the installation of the system.

☐ *IMPROVEMENT PERMIT with plat valid without expiration.* ☑ *IMPROVEMENT PERMIT with plat valid ~~without expiration~~ site plan valid 60 mo.* ☑ *AUTHORIZATION TO CONSTRUCT* valid for period equal to IMPROVEMENT PERMIT--not to exceed 60 mo.

Owner / Applicant Signature: Date

IMPROVEMENT PERMIT by: STEVE HEDRICK REHS Date 6-15-2011

AUTHORIZATION TO CONSTRUCT by: REHS Date 9-19-2011

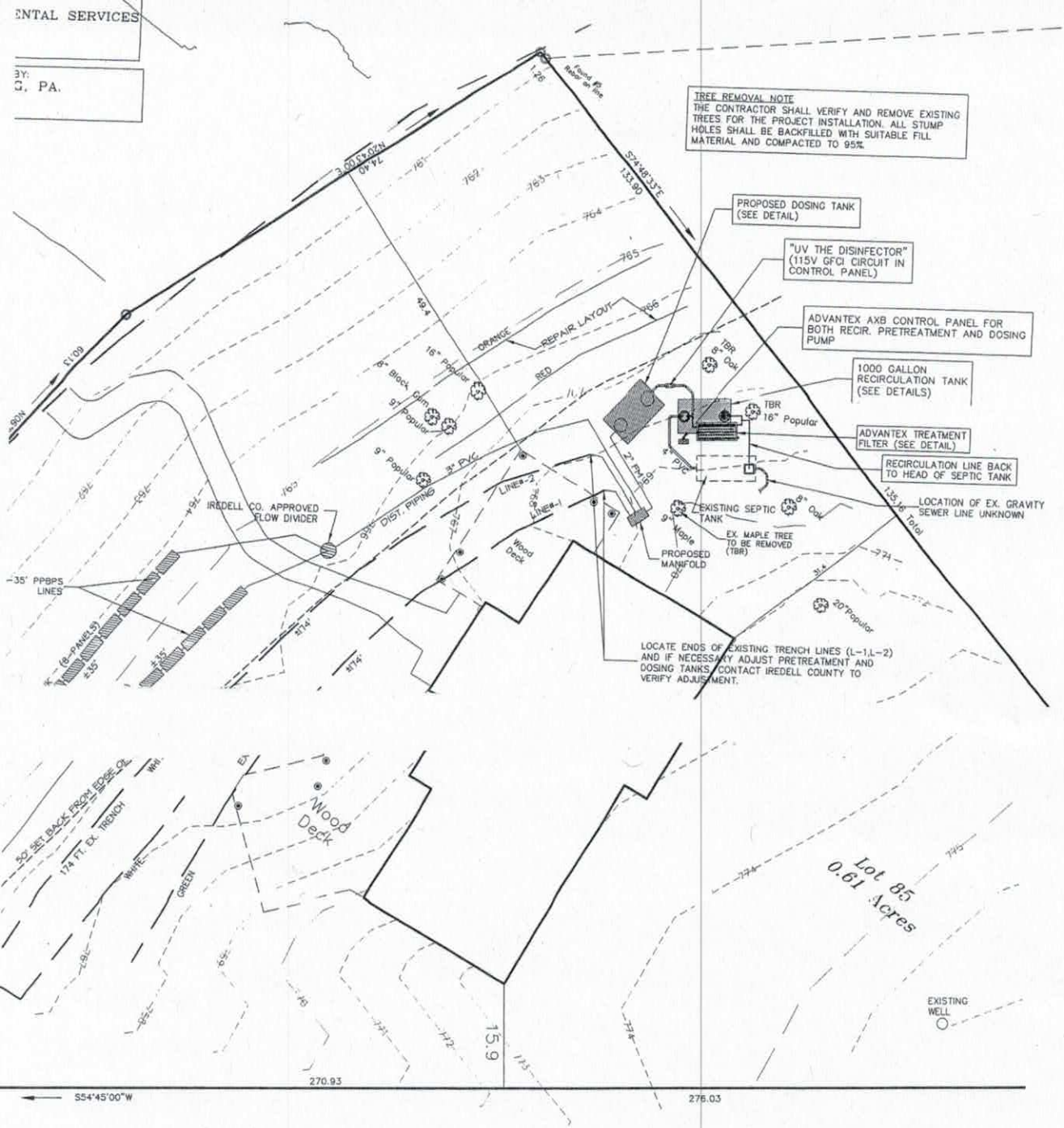
YOU SHOULD CONTACT A LOCATOR SERVICE PRIOR TO ANY EXCAVATION

Installed by: Sid Gaskins

OPERATION PERMIT by: REHS Date 23 JAN. 12

Existing System Inspected by: REHS Date

White Copy - Environmental Health Yellow Copy - Owner Pink Copy - Applicant



NORTH CAROLINA PROFESSIONAL SEAL 10727 ENGINEER NORRIS Z. CLAYTON

5-3-11

Land Surveying by:
PATTERSON LAND SURVEYING, PA
C-3390
P.O. Box 5010, Mooresville, NC 28117
704/361-0415 * Fax 704/799-8565

JOB NAME: *SEPTIC FIELD SURVEY OF 150 KEVEN DRIVE*

LOCATION: DAVIDSON TWSP., IREDELL CO., NC
TAX PARCEL ID: 4629612919

OWNER:

DRAWN BY: JHP
SCALE: 1" = 30'
DATE OF FIELD SURVE
DATE OF MAP: MARC
JOB NUMBER: 11019/LOT85

Steve Hedrick

From: Ken Brendle <kbrendle@i-america.net>
Sent: Thursday, June 09, 2011 9:29 AM
To: Steve Hedrick
Cc: 'Paula Steele'; rollans@windstream.net
Subject: 150 Keven Dr Troutman

Mr. Steve Hedrick

P. S. West Construction Co. Inc. agrees to modify the doorway opening as discussed at 150 Keven Dr.Troutman, by removing the door, jamb, and hardware and trimming out with a cased opening jamb, making this a no privacy opening. We understand that this modification will need to be completed and inspected prior to the septic system work start-up.

Please contact us as to the amount owed for the permit and when it may be issued.

If you have any questions please call.

Ken Brendle

P.S. West Construction Company Inc.
430 S Center St / Box 751
Statesville, NC
28687

704-873-4325 Office
704-902-2497 Cell

kbrendle@i-america.net

WASTEWATER SYSTEM IMPROVEMENTS
DESIGN INFORMATION

FOR

150 KEVEN DRIVE

DAVIDSON TOWNSHIP, IREDELL COUNTY

PREPARED BY:

HUGH CREED ASSOCIATES, INC., P.A.

CONSULTING ENGINEERS AND LAND SURVEYORS

1306 WEST WENDOVER AVE.
GREENSBORO, N.C. 27408

TELE: (336) 275-9826
FAX: (336) 275-3379
E-MAIL: hca@triadbiz.rr.com



5-3-11

AQWA™
The clear leader.

05/03/2011

Hugh Creed Associates, Inc.,P.A.
1306 W. Wendover Ave.
Greensboro, NC 27408
Attention: Darian Creed

Subject: 150 Keven Property Davidson Township, Iredell County NC

AQWA Inc. has reviewed your plans for the AdvanTex wastewater treatment system at the above referenced address. We certify that the AdvanTex equipment as designed will perform within the performance parameters detailed below when installed in accordance with the approved plans and operated and maintained according the manufacturer's guidelines.

Flow Characteristics (4-Bedroom, Domestic Waste)

Design Flow	– 480 GPD – Per Table I
Peak Flow	– 528 GPD (+10%)
Average Flow	– 384 GPD (-20%)

Influent (not to exceed)		Effluent TS-II(per design)	
BOD5	= 350 mg/l	CBOD5	= ≤ 10 mg/l
TSS	= 200 mg/l	TSS	= ≤ 10 mg/l
TKN	= 100 mg/l	TN	= ≥ 60% Reduction
		Fecal Coliform	= ≤ 1,000 cfu

This certification reflects the design parameters as indicated above and assumes no other environmental factors that will adversely affect treatment. Excessive floor strippers, cleaners, grease, chemotherapy agents, antibiotics, or other non-biodegradable substances may adversely affect system performance.

Sincerely,

Steve Barry

AQWA, Inc

252 | 243 | 7693 PHONE 252 | 243 | 7694 FAX
2604 | Willis Court | Wilson, NC 27896 ADDRESS
www.aqwa.net WEB

WASTEWATER DISPOSAL SYSTEM CALCULATIONS

FOR

150 KEVEN DRIVE

IREDELL COUNTY, NORTH CAROLINA

DESIGN NOTE

THE EXISTING DWELLING LOCATED AT 150 KEVEN DRIVE IN IREDELL CO. WAS ORIGINAL CONSTRUCTED AND PERMITED WITH THREE BEDROOMS. THE SEPTIC SYSTEM IS CURRENTLY BEING UP GRADED TO SUPPORT A TOTAL OF FOUR (4) BEDROOMS. THE EXISTING SEPTIC SYSTEM INCLUDES A ±1,000 GALLON SEPTIC TANK AND ±281 FT. (PER LOCATION PROVIDED, LINE#1–107 fT, LINE#2–174 FT.) OF CONVENTIONAL GRAVEL TRENCH. THE PROPOSED SEPTIC SYSTEM IMPROVEMENTS TO SUPPORT FOUR (4) BEDROOMS WILL INCLUDE PRETREATMENT TO TS–II STANDARDS UTILIZING AN AX20 ADVANTEX TREATMENT SYSTEM, PUMP DOSING TANK, PRESSURE MANIFOLD, AND THE ADDITION OF 70 FT. PPBPS. THE FOLLOWING CALCULATIONS SUPPORT THE PROPOSED SEPTIC SYSTEM IMPROVEMENTS.

TRENCH LINE ADDITION REQUIREMENTS FOR ONE (1) BEDROOM

DAILY FLOW REQ. – 120 GPD

LTAR – 0.3 GPD/SF.

REQ. LENGTH OF CONV. TRENCH = 120 GPD / 0.3 GPD/SF / 3 FT (TRENCH WIDTH) = 133.3 FT.

EQUIVILENT PPBPS = 133.3 FT. / 2 = 66.7 FT.

REQ. NUMBER OF PANELS = (66.7 FT. X 12") ÷ 52" = 15.4

**USE TWO (2) 35 FT. PPBPS LINES WITH FLOW DIVIDER (SEE SITE CONSTRUCTION PLANS)

MANIFOLD DESIGN

MANIFOLD TAP LAYOUT (HEAD –2 FT.)				APPROX. DOSE VOLUME – 188 GAL.		
LINE #	LENGTH (FT)	TAP SIZE/TYPE	TAP FLOW (GAL/MIN.)	PUMP TIME	LINE DOSE (GAL.)	MAX. LINE DOSE (GAL.)
1	107	1/2" SCH. 80 PVC	5.48	8.3	45.5	52.3
2	174	3/4" SCH. 80 PVC	10.1	8.3	83.8	84.8
**3	133'	1/2" SCH. 40 PVC	7.11	8.3	59.0	64.8
	414 FT.		22.7 GPM		188.3 GAL	

PUMP RUN TIME = $\frac{188.3 \text{ GAL}}{22.7 \text{ GPM}}$ = 8.3 MIN.

MIN. DOSING VOL. = 414 FT. X 0.65 GAL/FT. X 0.66 = 177.6 GAL.

MAX. DOSING VOL. = 414 FT. X 0.65 GAL/FT. X 0.75 = 201.8 GAL.

**EQUIVILANT LENGTH OF TWO (2) 35 FT PPBPS LINES

DOSING TANK DESIGN

ASSUME PUMP HEIGHT OF 20" AND TANK WITH 21.8 GAL/IN.
(SHOAF PRECAST 1250 GALLON)
PT-42

PUMP SUBMERGENCE VOLUME = 436 GALLONS (20")

DOSING VOLUME – 188 GALLONS (±8.5")

EMERGENCY VOLUME – 480 GALLONS (22")

6" BUFFER TO EMERGENCY FLOAT – 130.8 GALLONS (6")

1,234 GALLONS

USE 1,250 GAL. SHOAF PRECAST PUMP TANK (MODEL# PT-42)

(SEE PUMP TANK FLOAT DIAGRAM)

PUMP CALCULATIONS

SUPPLY LINE LENGTH: ±20 FT.
PUMPING FLOW RATE – ±23 GPM

FRICTION LOSS:

2" SCH 40 PVC FRICTION LOSS PER 100 FT – 1.28 FT./100
FLUID VELOCITY = 2.25 FT./SEC. (MIN. SCOUR VELOCITY > 2.0 FT./SEC)

FRICTION LOSS = 20 FT. X 1.28 FT/100 = 0.26 FT.

ADD 25% SYSTEM VALVES AND FITTING LOSSES

TOTAL FRICTION LOSS = 0.3 FT.

STATIC HEAD = 768-761.0 = 7.0 FT.

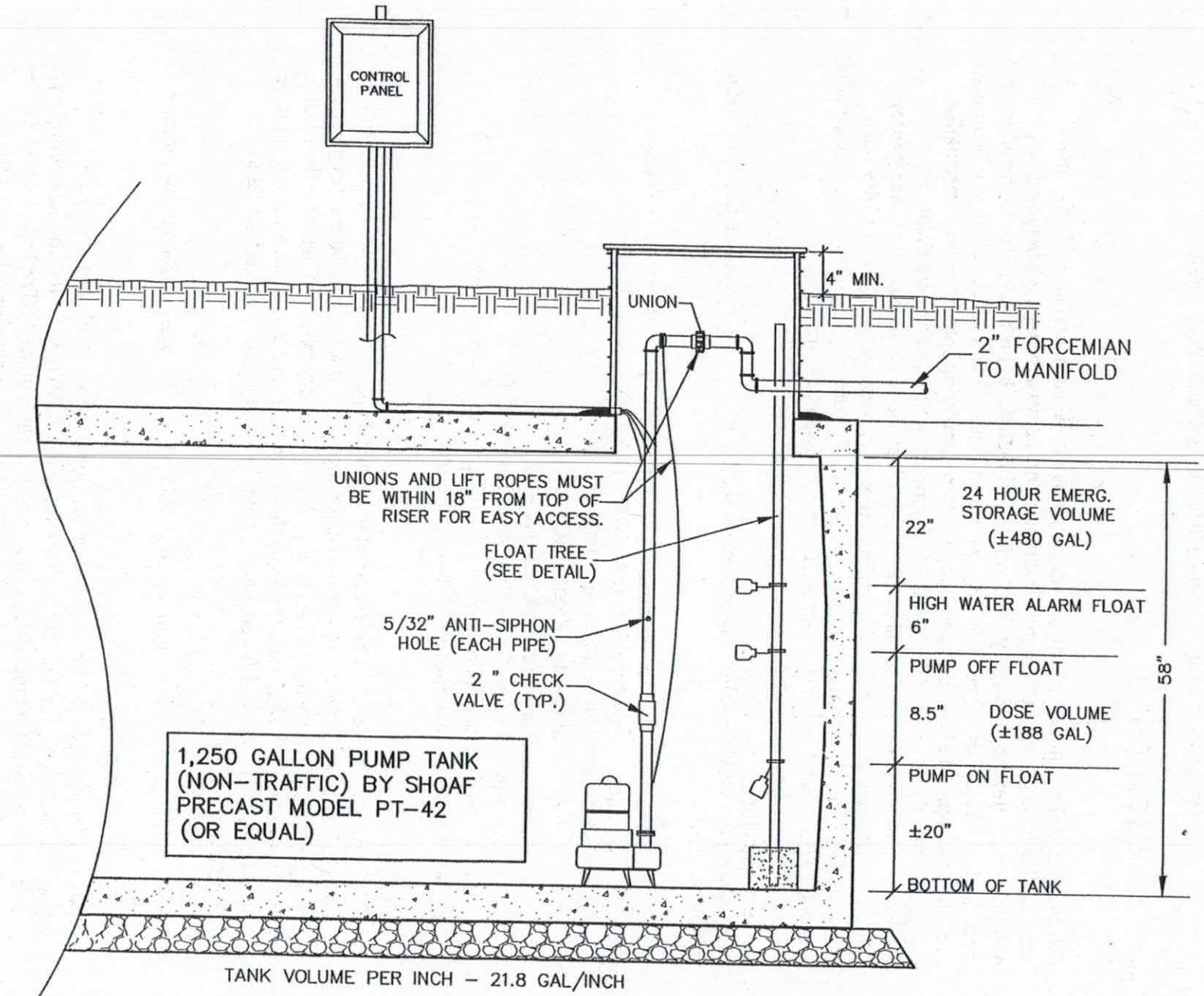
MANIFOLD HEAD = 2.0 FT.

TOTAL DYNAMIC HEAD

MANIFOLD HEAD:	±2.0 FT.
FRICTION HEAD:	±0.3 FT.
STATIC HEAD:	±7.0 FT.
TOTAL DYNAMIC HEAD	±9.3 FT.

USE ZOELLOR PUMP CO.
151 SERIES PUMP, 1PH,
115 VOLTS, FOR PUMPING
±23 GPM @ ±9.3 FT. TDH.
(OR APPROVED EQUAL)

PUMP RUN TIME = 8.3 MINUTES



DOSING TANK FLOAT DIAGRAM

Project Specifications
150 Keven Drive
Wastewater Treatment and Disposal System Improvements

Scope and General Specifications

A. Scope

The contractor shall furnish all equipment, supervision, labor, materials, and any other incidentals necessary for the complete installation of the wastewater treatment and disposal system for the referenced property. This work shall include, but is not limited to, installing a septic tank, recirculation pump tank, disposal pump tank, effluent filter, AdvanTex Treatment Unit and any appurtenances, Bidtube pump vault, recirculating splitter valve, recirculation pump, UV disinfection unit, dosing tank, dosing pump, control panel and floats for recirculation treatment and disposal systems, electrical service hook-up for all wastewater treatment and disposal components, distribution piping, pressure manifold, PPBPS lines, landscaping, seeding and mulching, system start-up, all inspections, and any other incidentals necessary to complete the wastewater treatment and disposal system.

B. Standard Specifications

The current edition of the following references shall apply to all work and materials included in this project.

- NCDENR, On-Site Wastewater Section, The Laws And Rules For Sewage Treatment And Disposal, 15A NCAC 18A.1900.
- NCAC 02B.0100, .0200 and .0300
- International Building Code (IBC)
- North Carolina Building Code (NCBC)
- American Society for Testing Materials (ASTM)
- Rules and Regulations of the NC Department of Agriculture
- North Carolina Erosion Control Standards

C. Materials

1. PVC pipe and fittings shall be manufactured from Type 1, Grade 1 PVC in conformance with ASTM D 1785. Compound from which pipe is produced shall have a design stress rating of 2,000 pounds per square inch at 73 degrees Fahrenheit, as listed by the Plastics Pipe Institute (PPI). Materials from which pipe and fittings are manufactured shall have been tested and approved for conveying potable water by the National Sanitation Foundation (NSF).

2. Pipe shall conform to the requirements of ASTM D 1785, sizes as shown on Contract Drawings.

3. Fittings for pressure service and/or chemical applications shall conform to the requirements of ASTM D 2466 for Schedule 40 and ASTM D 2467 for Schedule 80. For drainage and waste piping, fittings shall be drainage pattern ASTM D 2165. Socket diameter shall be such that they are compatible with the pipe for solvent welding.

D. Examination Of Site

The contractor shall visit the site of the work and fully inform himself as to all existing conditions, proposed improvements, and limitations. The contractor shall have included in his proposal a lump sum fee to cover all items necessary to complete the project.

E. Preconstruction Meeting

Prior to beginning work, the contractor is required to schedule a pre-construction meeting to review the scope and schedule of the project. The meeting shall be attended by the owner, Iredell County Health Department, designer, soil scientist, and AQWA representative.

F. Ensuring Normal Operations

All work and schedules for performing work shall be coordinated and approved by the Owner to ensure that interruption of the normal operation will be minimal.

G. Weather Limitations

No work shall be done when the weather is unsuitable. The contractor shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment for damage of deterioration due to floods, driving rain, or wind and snowstorms. The owner reserves the right, through the opinion of the designer, to order that additional protection measures over and beyond those proposed by the contractor, be taken to safeguard all components or the project. The contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the owner for damage to the work from weather elements.

The bidder shall prepare his bid with the understanding that unsuitable weather may cause all work to be stopped; yet an extension of the contract period will not be permitted due to unsuitable weather.

H. Protection of Property

Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or injury as a result of his operations under this contract. Any damage or injury occurring on account of any act, omission or neglect on the part of the contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the contractor to an equal or superior condition the previously existed.

In the event of any claims of alleged damage to the property as a result of work under this contract, the contactor shall be responsible for all costs in connection with the settlement of or defense against such claims. Prior to commencement of work in the vicinity of property adjacent to the work site, the contractor at his own expense shall take such surveys as may be necessary to establish the existing condition of the property. Before final payment can be made, the contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

I. Permits, Codes, Regulations and Inspections

The contractor shall obtain and keep current any necessary construction permits from those authorities or agencies having jurisdiction over the work. The contractor shall give all notices, and pay all required fees for permits, licenses, inspections, testing, etc. After completion of the work, the contractor shall furnish a certificate of final inspection and approval from the necessary local, state, and federal agencies.

J. Barricades, Danger, Warning and Detour Signs

The contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals and signs, and take all necessary precautions for the protection of the work and safety of the public.

K. Existing Utilities

The term existing utilities shall be deemed to refer to both publicly owned and privately owned utilities such as electric power and lighting, telephone, water, gas, storm drains, and sanitary sewers, and all appurtenant structures.

Where existing utilities and structures are indicated on the drawings, it shall be understood that all of the existing utilities and structures affecting the work may not be shown and that the locations of those shown are approximate only. It shall be the responsibility of the contractor to ascertain the actual extent and exact location of existing utilities and structures. In every instance, the contractor shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any work in the vicinity of existing utilities.

The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to ensure no interruption of existing services. Any damage resulting from the work of this contract shall be promptly repaired by the contractor at his own expense in a manner approved by the designer and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that they perform their own repairs or have them done by others, the contractor shall be responsible for all costs thereof.

Where excavations by the contractor require any utility lines or appurtenant structures to be temporarily supported and otherwise protected during the construction work, such support and protection shall be provided by the contractor. All such work shall be performed in a manner satisfactory to the engineer and the respective authority having jurisdiction over such work. In the event the contractor fails to provide proper support or protection to any existing utility, the engineer may, at his discretion, have the respective authority provide such support or protection as may be necessary to insure the safety of such utility; and the costs of such measures shall be paid by the contractor.

L. Safety

Each contractor alone shall be solely and completely responsible for conditions of the job site in connection with his work, including safety of all persons and property, preparatory to and

during performance of the work. This requirement shall apply continuously and not be limited to normal working hours.

The construction documents and the construction hereby contemplated are to be governed, at all times, by applicable provisions of local and state laws and regulations and federal laws, including, but not limited to the latest amendments of the following:

Department of Labor, Bureau of Labor Standards, Safety and Health Regulations for Construction, and Williams and Steiger Occupational Safety and Health Act of 1970, including rules and regulations issued pursuant thereto, applicable to the work and performance of the contract (OSHA).

All trench excavation must comply with all applicable OSHA regulations, and it is the sole responsibility of the contractor to be sure this compliance occurs. If any part of the plans or specifications direct or might be interpreted to direct the contractor to perform any act, procedure, or method that might be construed to cause an OSHA violation, the contractor must notify the engineer in writing before any such act, procedure or method is undertaken by the contractor and the contractor must outline why this act, procedure or method might be construed to be an OSHA violation and the contractor must recommend a method to accomplish the same task that will not result in an OSHA violation, with all such work to be performed at no additional cost to the owner. The contractor is fully responsible for all OSHA compliance on this project.

The duty of the engineer to conduct periodic construction review of the contractors performance is not intended to include review of the adequacy of the contractors' safety measures in, on, or near the construction site.

M. Record Drawings

The contractor shall keep a complete and up to date record in red pencil of any and all changes made during construction on one set of plans and specifications.

At the completion of the work, the contractor shall furnish Record Drawings indicating the final location of all structures, piping, property lines, etc. The Record Drawings shall also show the size and elevation of all piping, finish grades, and elevation of all structures.

N. Temporary Toilets

The general contractor shall provide temporary toilet facilities for use by all workmen. Temporary toilet facilities shall comply with local and state sanitation laws and regulations. Owner's facilities shall not be used by any contractors' personnel.

O. Inspection and Tests

The contractor shall allow the engineer ample time and opportunity for testing materials and equipment to be used in the work. He shall advise the engineer promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The contractor shall at all times furnish the engineer and his representatives, facilities including labor, and allow proper time for

inspecting and testing materials, equipment and workmanship. The contractor must anticipate possible delays in the execution of his work due to the necessity of materials and equipment being inspected and accepted for use. The contractor shall furnish at his own expense, a sample of materials required by the engineer for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various inspections and test of structures and equipment.

Where other tests or analyses are specifically required in other sections of these specifications, the cost thereof shall be borne by the party (owner or contractor) so designated in such sections. The owner will bear the cost of all tests, inspections, or investigations undertaken by the order of the engineer for the purpose of determining conformance with the Contract Documents of such tests, inspections, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the engineer as a result of such test, inspections, or investigations, the contractor shall bear the full cost thereof or shall reimburse the Owner for said costs. In this connection, the cost of any additional tests and investigations, which are ordered by the engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the contractor.

P. Erosion

The general contractor should be familiar with the applicable provisions of the Sedimentation Pollution Control Act of 1973, General Statutes, Chapter 113A, Article 4. The general contractor shall be responsible for incorporating conservational procedures necessary to comply with the Act in minimizing erosion and sediment pollution associated with the construction of the project as directed by the engineer.

Q. Contractors Qualifications

The wastewater system installer shall have been in business for not less than ten (10) years, and shall upon request provide documentation of installing previous system of this size and complexity. The installer shall also hold a current and up to date certification with the North Carolina On-Site Wastewater Contractors Certification Board (NCOWCICB) at the required grade level as outlined by NCOWCICB for this size project. The installer shall be a certified Advanetex Treatment and Geoflow Drip System installer.

R. Final Clean-Up

Before finally leaving the site, the general contractor shall wash and clean all exposed surfaces that have become soiled or marked. Each contractor shall remove from the site of the work all accumulated debris and surplus materials of any kind which result from his operation, including construction equipment, tools, sheds, sanitary enclosures, etc. Each contractor shall leave all equipment, fixtures, and work, which he has installed, in a clean condition. The completed project shall be turned over to the owner in a neat and orderly condition.

The site of the work shall be rehabilitated or developed in accordance with other sections of the specifications and the drawings. In the absence of any portion of these requirements, the

general contractor shall completely rehabilitate the site to a condition and appearance equal or superior to that which exist just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the owner.

S. Final Inspections

Upon completion of all work, the contractor shall contact the project engineer, property owner and NCDENR DWQ Representative and schedule a final inspection. The final inspection will verify that all work has been installed per the Plans and Specifications and is completely operational and ready for start-up.

T. Shop Drawings

Shop drawings include but are not limited to, layout drawings in plan and elevation, installation drawings, construction drawings, certified wiring diagrams, interconnecting wiring diagrams, manufacturer's data, etc. Contractor shall be responsible for securing all of the information, details, dimensions, drawings, etc. necessary to prepare the shop drawings required under the contract and to fulfill all other requirements of this contract. Shop drawings shall at minimum, accurately and clearly present the following information:

1. All working and installation dimensions.

2. Arrangement and sectional views.

3. Units of equipment in the proposed positions for installation, details of required attachments and connections and dimensioned locations between units and in relation to the structures.

4. Necessary details and information for making connections between the various trades including, but not limited to, power supplies and interconnection wiring between unit, accessories, appurtenance, etc.

Contractor shall submit for review by the engineer shop drawings for all fabricated work and for all manufactured items required to be furnished by the Contract Documents.

Structural and all other layout drawings prepared specifically for the project shall have a plan scale of not less than 1/4" = 1'.

Where manufacturers' publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink, and submissions showing only general information are not acceptable.

All submissions from subcontractors, manufacturers, or suppliers shall be sent direct to the contractor for checking. Contractor shall thoroughly check all drawings for accuracy and conformance to the intent of the Contract Documents. Drawings found to be inaccurate or

otherwise in error shall be returned to the subcontractors, manufactures, or suppliers by the contractor for correction before submitting them to the engineer.

All submissions shall be bound, dated, properly labeled and consecutively numbered. Information on the label shall indicate specification section, contract drawing number, subcontractors, manufacturers, or suppliers name and the name or type of item the submission covers. Each part of a submission shall be marked and tabulated.

Shop drawings shall be submitted as a single complete package for any operating system and shall include all items of equipment and any mechanical units involved or necessary for the functioning of such system. Where applicable, the submission shall include elementary wiring diagrams showing circuit functioning and necessary interconnection wiring diagrams for construction.

All submissions shall bear the contractor's stamp of approval certifying that they have been checked for conformance and accuracy. Submissions without the contractors stamp of approval will not be reviewed by the engineer and will be returned to the contractor.

If the submissions contain any departures from the Contract Drawings, specific mention thereof shall be made in the contractor's letter of transmittal. Otherwise, the review of such submittals shall not constitute approval of the departure. Where errors, deviation, and/or omissions are discovered at a later date in any of the submissions, the engineer's prior review of the submissions does not relieve the contractor of the responsibility for correcting all errors, deviations, and/or omissions. Submissions shall be transmitted in sufficient time to allow the engineer a reasonable time period for review and processing.

Contractor shall transmit six copies of each submission to the engineer for review. Submission shall be accompanied by a letter of transmittal containing date, project title, title of submission, notification of deviation, and any other pertinent data. Submission will be marked by the engineer in one of the following ways:

"Approved as Noted" - no exceptions are taken, or minor corrections have been noted and shall be made to final drawings.

"Revise and Resubmit" - major corrections have been noted and a resubmittal is required.

"Rejected" - submittal generally does not comply with specification, and a resubmittal is required.

The engineer will retain four submission copies and return two to the contractor. The contractor shall revise and resubmit submissions as required by the engineer until submissions are acceptable to the engineer. Engineer's review of the contractor's submissions shall in no way relieve the contractor of any of his responsibilities under the contract. An acceptance of a submission shall be interpreted to mean that the engineer has no specific objections to the submitted material, subject to conformance with the contract drawings and specifications.

Engineer's review will be confined to general arrangement and compliance with the contract drawings and specifications only and will not be for the purpose of checking dimensions, weights, clearances, fittings, tolerances, interferences, coordination of trades, etc.

U. Warranty

The contractor warrants to the owner that the projects constructed under this contract will be of good material and workmanship, and agrees to replace promptly any part or parts which by any reason of defective material or workmanship shall fail under normal use, free of negligence or accident, for a minimum of 12 months from the date of acceptance. Such replacement shall be free of any charge to the owner or his representative.

V. Excavation and Backfilling

1. Excavated materials acceptable as backfill shall be stockpiled in a location approved by the Owner. The materials shall be located away from the edge of any excavations. Excavated materials shall not be stored within the drip lines of existing trees.

2. All open excavations shall be barricaded when construction in the area has stopped. Night barricading should include posted warning lights.

3. Protect existing structures, utilities, sidewalks, pavement, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations. Protect roots from damage or dry-out to the greatest extent possible.

4. Soil materials shall be free of boulders, roots, sod, organic matter, and frozen material.

5. Bedding materials for pre-cast concrete structure installation shall be #57 washed stone to the dimensions and depth shown on the construction drawings.

6. All excavation is unclassified and includes excavation to sub-grade elevations indicated on the construction drawings regardless of character of materials and obstruction encountered. In the event that rock is encountered, the Contractor shall remove it at no additional cost to the owner.

7. Stability of excavations shall be maintained by sloping of the sides and shall comply with local codes, ordinances, and requirements of agencies having jurisdiction. Where space restrictions prevent sloping of the sides, shoring and bracing of the walls shall be employed in full compliance with OSHA requirements. In the case of pipe installations, sheeting shall remain in place until backfilling progress to a stage where no damage to the pipe will result from removal.

8. The Contractor shall attempt to prevent surface and subsurface water from flowing into excavations. The Contractor shall provide equipment, materials, and work necessary to dewater any accumulation of water in the excavation to prevent softening of the soils, undercutting of footings, and changes to the soils detrimental to the stability of the

improvements.

9. Excavations for structures shall conform to dimensions and elevations shown on the construction drawings within a tolerance of plus or minus 0.10 feet and to the standards of ASTM C891-90.

10. Backfill shall be installed to excavated spaces in 8-inch lifts and tamped by hand or pneumatically around pipe or structures. Tamping shall be performed evenly on both sides of pipe and around sides of structures to a depth such that damage to the pipe or structures is avoided as a result of subsequent methods of compaction. Extreme care shall be exercised in backfilling operations to avoid displacement of pipe and structures either horizontally or vertically. Backfill consolidation by ponding water is not permitted. Compaction of each layer of backfill and the top 6 inches of subgrade shall achieve a 90 percent maximum dry density as measured by AASHTO method T-99.

11. Remove all waste materials including unacceptable excavated material, trash and debris and legally dispose of it off Owner's property. Where settling is measurable or observable at excavated areas during project warranty period, the Contractor shall remove surface finish, add backfill material, compact, and replace surface treatment to a quality and appearance matching adjacent areas of previous work.

W. AdvanTex® Recirculation Tank

1) The recirculation tank shall be provided by Shoaf Precast. The tank will be a 1,000-gallon capacity tank approved by the state. Access shall be provided for entry into the tank directly over the effluent pump location and over the splitter valve, and extend the access openings to 6 inches above final grade. Both chambers of the tank shall be properly sealed using 1-inch diameter butyl rubber pliable sealant as approved by the tank manufacturer. After joining the tank sections together, plaster along the joint with hydraulic cement, cement mortar, or other approved waterproofing sealant. Installer should contact AQWA or other approved Orenco distributor before purchasing recirculation tank.

2) Before backfilling around all tanks, and after all piping has been connected with and sealed against the tanks, all tanks shall be filled to the outlet level with water, and shall be observed for 24 hours for leakage. If the water level within the tanks has dropped more than 1/2 inch during the 24-hour inspection period, the tank leakage tests are considered to have failed, and the tank must not be used until the sources of the leaks have been found, the leaks properly sealed, and the tanks retested and the leakage tests are passed. The designer or his representative shall be allowed to observe the installed tank/system configuration, prior to backfilling around the tanks. Approved vacuum testing of the tank may be used in lieu of leakage testing.

X. AdvanTex® Recirculation Pump and Control Panel

1) The recirculation tank will contain the recirculating splitter valve and the Biotube® pump vault (PVU 5724-19L). The force main shall have a drainback configuration without a pump check valve. The pump vault consists of a P series high-head effluent pump (P3005-1-1), float switch assembly, and Biotube® filter cartridge and shall be provided by AQWA or other approved Orenco distributor.

2) The control panel shall be a VeriComm® AXB1 Control Panel and shall be provided by AQWA or other approved Orenco distributor. The panel shall have remote telemetry capabilities and UV disinfection compatibility.

Y. AdvanTex AX20 Unit and Recirculation Tank

1) The AdvanTex® AX20 unit shall be equipped with a set of vertical geotextile sheets with low pressure pipe distribution above the sheets. The low pressure pipe distribution shall operate at 3-5 feet of pressure head. The unit shall be placed above the tank, but will not obstruct tank accesses. The unit provided by AQWA or other approved Orenco distributor.

2) Two air vents shall be installed for the pod. One air vent shall be located on the pod, and the other shall be located on the discharge cleanout.

3) The recirculating tank shall dose every 15 minutes for 30 seconds at 15 gallons per dose. Under peak water usage the re-circulating tank will dose the filter 4 times for every 1 dose to the disposal site.

4) The drip field dosing pump shall be controlled by a Nema4x control panel with a two (2) stage timer, elapsed time meter, event counter, alarm (both audible and visual), remote telemetry capabilities, and UV disinfection compatibility.

5) The control panel shall require a non-dedicated telephone line for telemetry operation. The telephone line shall be installed in conduit.

Z. UV Disinfection

1.) The UV disinfection system shall be UV "The Disinfector", or an AQWA approved equal.

2.) The contractor shall provide and construct all housing required for installation of the UV light as per the approved plans and AQWA. Call AQWA for questions (888-552-AQWA)

3.) The UV shall be a single bulb unit.

4.) All electrical wiring requirements shall be provided by the system installer. Electrical power shall be fed directly from the AdvanTex panel as required by AQWA.

AA. Distribution Pump Tanks and Equipment

1. The distribution pump tank shall be provided by Shoaf Precast and shall be State approved. The tank will be sized as indicated on the approved plans with access directly over the effluent pump and tank inlet. The access risers shall be 4 inches above finished grade. Both chambers of the tank shall be properly sealed using 1-inch diameter butyl rubber pliable sealant as approved by the tank manufacturer. After joining the tank sections together, plaster along the joint with hydraulic cement, cement mortar, or other approved waterproofing sealant.

2. Inlet – Discharge effluent from the septic tank into pump tank. Use straight pipe for pipe inlet and seal joints watertight.

3. Access Openings – The septic tanks shall be provided with access openings, (inlet and outlet) centered in tank and extend 6" above ground level with precast concrete risers as indicated on the approved drawings.

4. Identifying Markings – Provide with a suitable legend, identifying the manufacturer and indicating the liquid capacity of the tank in gallons. Cast or stamp legend into the wall inlet end within six inches from wall top. Tanks must be approved by NCDENR.

5. Installation – Install pump tank level on a gravel bedding that will prevent settling. Backfill in six-inch tamped layers to form a stable fill and prevent undue strain on the tank. Test tank for leakage prior to backfilling. Leakage from water filled tank or into an empty tank cannot exceed ½ inch in 24 hours. After backfilling, grade the ground surface around the tank to divert surface water.

6.

BB. Provide pumps, piping and controls as indicated on the approved drawings. The pumps, piping, and controls shall be installed as required by NCDENR, On-site Wastewater Section, Iredell County Health Department, and any other applicable local and state codes.

1. Pumps shall be submersible effluent pumps by Zoeller Pump Co or approved equal and installed per the approved plans.

2. The pump discharge piping in the pump tank shall be 2" schedule 40 PVC. All fittings used must be pressure type fittings and solvent welded.

3 All pump discharge piping shall include a union and check valve. Both shall be schedule 40 PVC pressure type and solvent weld. Discharge piping at union shall be located within 18" of top of risers for easy access on all pump tanks.

4. The septic field dosing pump shall be controlled by a Nema4x control panel with demand dosing capabilities. The controller shall be able to perform the following functions: Receive input from floats, provide pump operations, event counter, alarm (both audible and visual), remote telemetry capabilities, and UV disinfection capabilities.

5. The level controls (float switches) shall be installed as indicated on the approved plans. Level controls shall be by SJE Rhombus Controls (or approved equal), mercury activated, narrow-angle float switch designed to activate pump controls and alarms.

6. All electric power cables and level controls shall be installed in waterproof conduits. Provide moisture seals around wires in each conduit, including walls, floors, roofs, and all cut or patched areas which are subject to moisture penetration.

CC. Forcemains

1. Forcemains shall be installed with the size and materials as indicated on the approved plans. All forcemains shall be laid to the line and grade as indicated on the approved plans. If grades are not provided, then the minimum depth shall be 30 inches. Forcemains shall include cleanouts at the end of each line and at least every 300 feet. Air release valves must be provided at any high spots along the forcemain. A coated locating wire, #12THHH or larger, shall be installed along the entire length of all forcemains. The wire shall begin at the pump and terminate at the end of the forcemain.

2. Forcemains shall be tested in the manner set forth in Section 13 of AWWA Standards C-600. The Contractor will furnish his own gauges and perform the test at no cost to the Owner. Before final acceptance, the forcemain shall be filled with water, care being taken to expel all air. A pressure test of 150 psi shall be applied to the line at the test pump and shall be maintained at that pressure for a minimum period of two consecutive hours. All defective material found will be replaced by the Contractor. All leaking joints shall be made tight. The pipe installation will not be accepted unless and until leakage, evaluated on the pressure test of 150 psi for two hours does not exceed 10.0 gallons per day per mile of pipe per inch of nominal diameter.

3. The installer shall locate all underground utilities and is responsible for repairing all damages his organization causes during the performance of the installation.

DD. Water and Sewer Line Separation

1. Whenever possible, sewer should be laid at least 10 feet horizontally from any existing or proposed water main.

2 Whenever it is necessary for a water main to cross above the sewer line and a vertical separation of 18 inches cannot be maintained, then the sewer line shall be ductile iron pipe extending 10 feet beyond each side of the water line. Whenever a sewer line crosses above a water main, the sewer must be ductile iron pipe extending 10 feet beyond each side of the water line.

3. When sanitary sewer crosses storm sewer, allow one foot of vertical separation between pipes. If this cannot be met, ductile iron sanitary sewer, extending 10 feet beyond each side of storm sewer will be required. For storm sewers 24 inches and larger, where clearance above sanitary sewer is less then one foot, concrete piers on each side of sanitary sewer to support storm sewer will be required, in addition to ductile iron pipe.

4. Valves shall be cast iron as per AWWA C500 for a working pressure of 150 psi, or equal.

EE. Manifolds

Manifold Vault - Use NCDENR On-Site Water Protection Section and Iredell County Health Department approved manifold vault. Prior to installation, cut sheet of the proposed manifold vault shall be submitted and approved by the Iredell County Health Department.

FF. Ground Absorption Field (Drainfield)

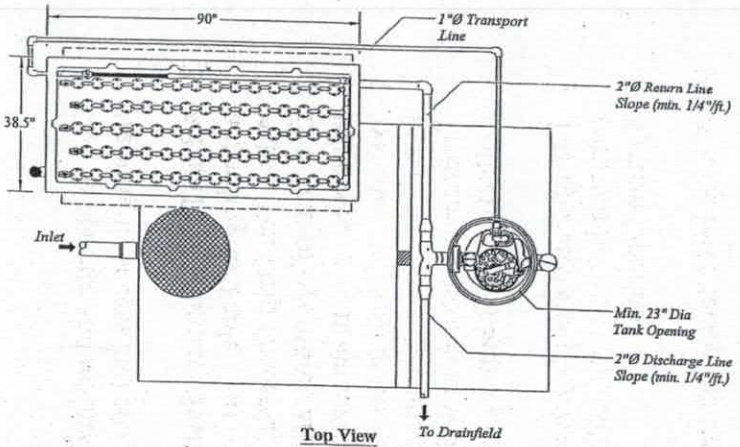
The ground absorption field installation shall comply with 15A NCAC 18a.1990, "The Laws and Rules for Sewage Treatment and Disposal Systems".

GG. Seeding and Mulching

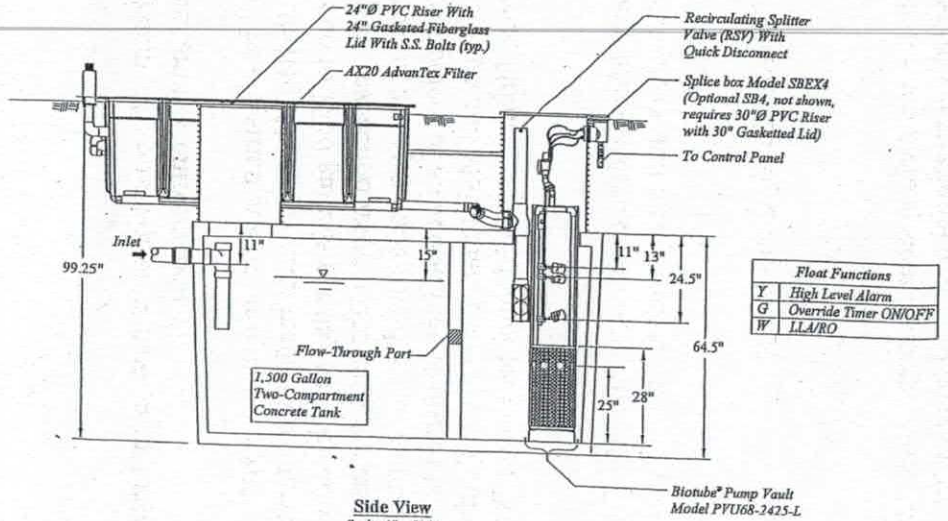
General

The work of seeding and mulching shall be performed immediately upon completion of all land disturbing activities. The Contractor shall adapt his operations to variations in weather and soil conditions as necessary for the establishment of growth of the grasses or legumes. During the seeding and mulching operation, care shall be taken to preserve the required line, grade, and cross section of the area.

AdvanTex® AX20 Mode 1A w/Concrete Tank

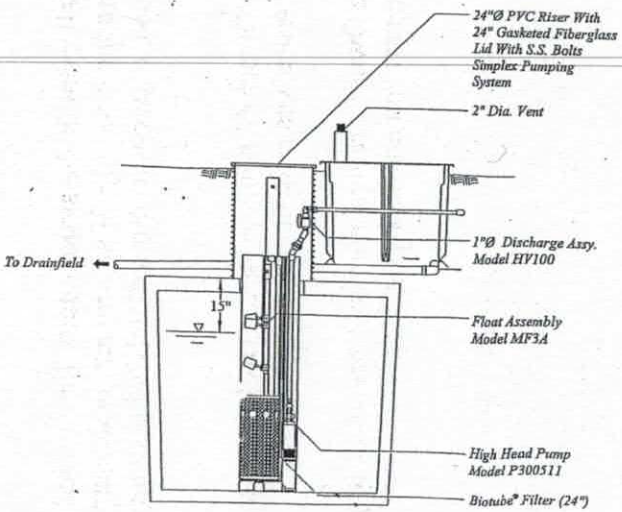


Top View
Scale: 1" = 3'-0"



Float Functions	
Y	High Level Alarm
G	Override Timer ON/OFF
W	LLA/RO

Side View
Scale: 1" = 3'-0"



End View
Scale: 1" = 3'-0"

Design Notes

Expected Flows
- Q_{Peak} = 500 gpd
  Up To 4 Bedrooms

Expected Influent Quality
Grease & Oil: 20 mg/L
BOD: 150 mg/L
TSS: 40 mg/L
TKN: 65 mg/L

Typical Effluent Quality
BOD: < 10 mg/L
TSS: < 10 mg/L
TN: < 25 mg/L

Orenco Systems® Incorporated

Title: AdvanTex® - AX20 Mode 1A
Drawing No. NDW-ATX-STD-I
Scale: 1" = 3'-0"
Date: 02/14/2006
Drawn By: CHRIS JORDAN
Drawing: 1 OF 1
Revision: 2.0
Designed By: ENGINEERING
Approved By: TERRY BOUNDS PE
Date Approved: 02/14/2006

U.S. Patents-4,439,323
5,492,635-5,372,137-5,360,556
5,980,748-5,531,894- 5,480,561
Other Patents Pending
© 2005 Orenco Systems ®, Inc

Inc. to operate and maintain the system. The operator must have proper equipment and training to access and program VeriComm Control panels on site.

2) AdvanTex Treatment Systems shall be classified at a minimum as a Type Va system according to Table V(a) of Rule. 1961(b). The maximum inspection interval for AdvanTex Drip Dispersal systems up to 1500 gallons per day shall be quareterly for the first year of operation, after which the inspection interval for such systems may be increased to semi-annually. In the event any system is found out to compliance, Orenco systems, Inc. will assist in the development of an action plan to bring the system back into compliance. See attached Operation and Maintenance Manual for AdvanTex Treatment Systems as well as Orenco Homeowner's Manual for Onsite Wastewater Collection & Treatment systems.

1) The operator shall be present during initial system commissioning. The ORC shall be certified both as a NC Subsurface Operator and an authorized AdvanTex Treatment System Operator.

2) A hose bib attached to the facility is required for maintenance.

II. Start- Up

1. The Contractor shall be responsible for complete system start-up. After start-up is complete, the system shall be fully operational and need no additional work.

2. After start-up, the Contractor shall monitor the system daily for a period of 5 days to ensure the system is operating correctly. If any repairs or adjustments are necessary the Contractor will make corrections immediately without any cost to the Owner.

3. The Contractor shall contact the Owner 48 hours prior to start-up, so the Owner can have necessary representatives present.

4. The Contractor shall provide the Owner's representative instructions in proper operation and maintenance of the system and its equipment.

IREDELL COUNTY HEALTH DEPARTMENT

Environmental Health Division

Application For Improvement Permit and/or Authorization To Construct, Existing System Inspection

(THE ABOVE PERMIT DOCUMENTS WILL BECOME INVALID IF INFORMATION PROVIDED ON THIS APPLICATION IS FALSIFIED OR CHANGED, OR IF THE SITE IS ALTERED. THE IMPROVEMENT PERMIT IS VALID FOR EITHER 60 MONTHS OR WITHOUT EXPIRATION DEPENDING UPON DOCUMENTATION SUBMITTED - APPLICATION WITH SITE PLAN 60 MONTHS, APPLICATION WITH COMPLETE, SCALED PLAT WITHOUT EXPIRATION. SEE 15A NCAC 18A .1937(f) FOR DETAILS)

1. **APPLICATION FOR:** ___ Improvement Permit ___ Authorization To Construct ___ BOTH ✓ Existing System Inspection

2. **Page 2: *Site Plan Worksheet* Form MUST Accompany This Application**
   The following optional attachments may also be submitted: ___ Survey Plat, Scaled no more than 1 Inch = 60 Feet
   Place check ( ) beside whichever is submitted if applicable ✓ Custom Site Plan, Scaled no more than 1 Inch = 60 Feet

3. **Applicant Information:**

Applicant Name	Mailing Address	Home Phone #	Alternate Phone #
Paula/David Steele	449 W. Gleneagles Statesville, NC 28625	(704) 873-2754	437-6203 (704)
Owner Name	Mailing Address	Home Phone #	Alternate Phone #
same	"	"	872-3681 (704) David office

4. **Property Information:**

Street Address	Subdivision Name	Section/Phase and Lot Number
150 Keven Dr	Troutman, NC	85

Driving Directions: End of Morrison Farm take a right on Penicillin Point - right on Keven. House in center of cul-de-sac - grey

****

5. **RESIDENTIAL Site Development Information:** *(Check or Complete ALL that apply)*

( ) New, Single Family Residence
( ) New, Multi-Family Residence
(✓) Expansion of Existing Septic System
( ) Repair To Failing Septic System
( ) Other ___

Maximum Number of Bedrooms 3 4
Maximum Number of Occupants 4
If Expansion, Current Number of Bedrooms ___

( ) Crawl Space Foundation?
( ) Concrete Slab Foundation?
( ) Basement w/Plumbing?
( ) Basement w/out Plumbing?

IF Non- Residential Site Development:
Type of Business ___
Square Footage of Building ___
Maximum Number of Employees ___
Maximum Number of Seats ___

****

6. **Proposed Water Supply:**

( ) New Well (✓) Existing Well ( ) Community Well ( ) City Water ( ) Other Public Water

****

7. **Desired Septic System Type:** *(You may rank in order of preference, if any)* Existing

( ) Alternative ( ) Conventional ( ) Innovative ( ) Modified Conventional ( ) Other___ ( ) No Preference

****

8. **Please Answer The Following To The Best of Your Ability:**

( ) Yes ( ) No Does the site contain any jurisdictional wetlands?
( ) Yes ( ) No Is any non-domestic sewage (i.e. industry) to be generated?
( ) Yes ( ) No Is the site subject to approval by any other public agency?

****

I have read this application and certify that the information provided herein is true, complete, and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed.

9. **Signature:** Paula M Steele 2/9/11
Property owner or owner's legal representative signature (SIGNATURE REQUIRED) DATE

$725.00 PAID JUN 16 2011

PAID FEB 9 2011 $485.00 ck # 1240

IREDELL COUNTY HEATLH DEPARTMENT

PAGE 2: *SITE PLAN WORKSHEET*

SEE THE SAMPLE SITE PLAN BELOW. INCOMPLETE SITE PLANS WILL BE RETURNED TO YOU FOR COMPLETION AND MAY RESULT IN A DELAY IN THE ISSUANCE OF YOUR SEPTIC SYSTEM PERMIT!!!

Place an (X) beside each item as you complete the site plan:

- ____ **Property Line measurements are clearly identified…**
- ____ **All proposed structures are indicated…**
  SHOW: proposed house or business footprint, wells, water lines, patios, pools and decks, and any other item that will occupy space on the site
- ____ **Front and side setbacks from property line…**
- ____ **Preferred driveway location and configuration, preferred well location…**
- ____ **Area you prefer your septic system to be placed…**
- ____ **North arrow, or other sufficient indicator of direction…**

Circle N/A on the following if appropriate:

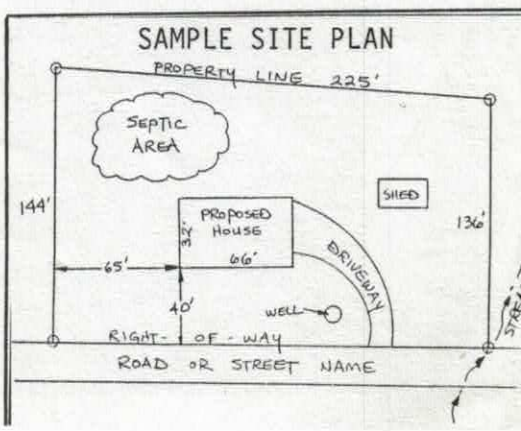
- ____ **Location of septic systems and wells within 100' of your property… N/A**
- ____ **Location of easements and rights of ways on your property… N/A**
- ____ **Location of any designated wetlands on the property… N/A**

Signature: Paula M Steele
Property owner or owner's legal representative signature (SIGNATURE REQUIRED)

2/9/11
DATE

USE THIS SPACE TO DRAW YOUR SITE PLAN

See attached



09504

IREDELL COUNTY HEALTH DEPARTMENT

(SEPTIC TANK) IMPROVEMENTS PERMIT AND CERTIFICATE OF COMPLETION
(Ground Absorption Sewage Disposal System -- G. S. Chapter 130-Article 13C)

OWNER OR CONTRACTOR THORNTON BROOKS DATE 3-13-89 PERMIT NO. 17D.

PHONE: Business _____ Home _____

LOCATION Morrison Farm Rd. off State Park Rd. - T.R. on Bairella Dairy Rd. - 1st R. on 1st dirt drive go to the end. S. R. No. _____

SUBDIVISION NAME SECTION 17 LOT NO. 85 SECTION OR BLOCK NO. _____

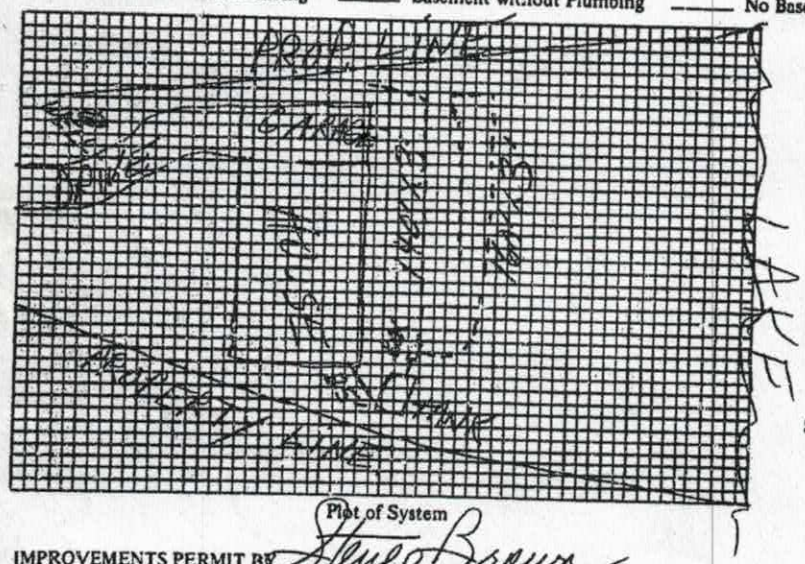
KEVEN DRIVE.

House (✓) Mobile Home ( ) Business ( ) Other _____

No. Bedrooms 3 No. Bathrooms 2

Garbage Disposal Unit	Yes ( )	No (✓)	Character & Porosity of Soil Prev. Suitable.
Auto. Dishwasher	Yes (✓)	No ( )	Percolation Rate 40 / Sq. Ft.
Auto. Wash. Machine	Yes (✓)	No ( )	Topography 2-6%
Site Suitable	Yes (✓)	No ( )	Depth to Water Table 104
Lot Area Ample.			Rock or other impervious formations none observed.

✓ Basement with Plumbing ____ Basement without Plumbing ____ No Basement



Plot of System

Size of Tank 1000 Gals.
Nitrification Field:
No. of Lines 2
Sq. Ft. 900 Linear Ft. 300
Depth of Stone in Lines 12"
Water Supply: Individual (✓)
Public ( )

Installed by James Hudler

I understand and agree to install septic tank system as specified on this Improvements Permit.

Signed: _____

IMPROVEMENTS PERMIT BY Steve Brown

COMMENTS: _____

CERTIFICATE OF COMPLETION BY Steve Brown DATE 3-13-89

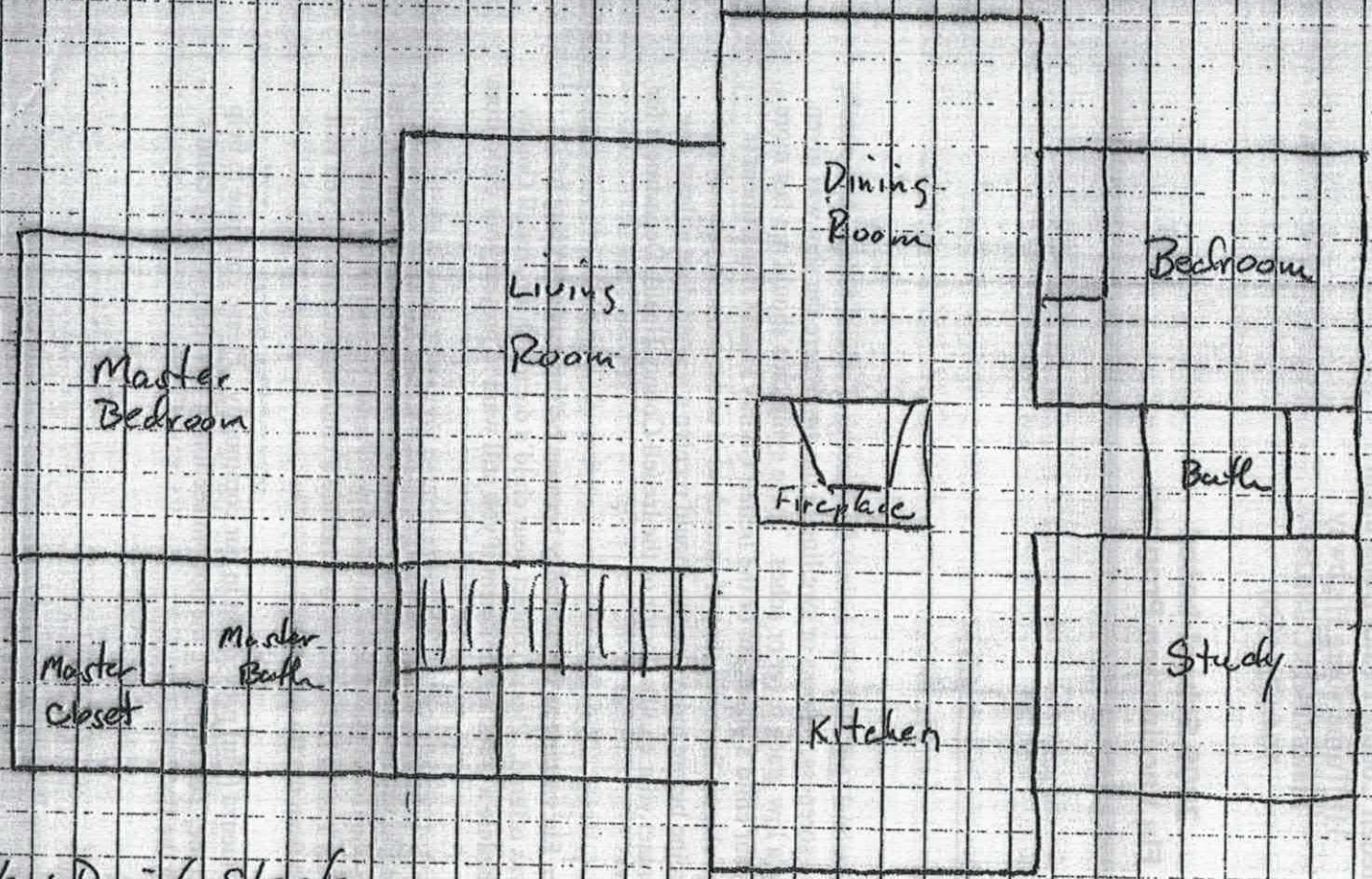
EXISTING SYSTEM CHECKED BY: _____ DATE _____

CONSTRUCTION MUST COMPLY WITH ALL OTHER APPLICABLE STATE AND LOCAL REGULATIONS.

Permit is VOID if any unauthorized changes are made in installation of system and/or if any false information is supplied in making Improvements Permit.

Health Dept. Copy: White Inspection Dept. Copy: Yellow Sanitarian's Copy: Pink Owner's Copy: Gold

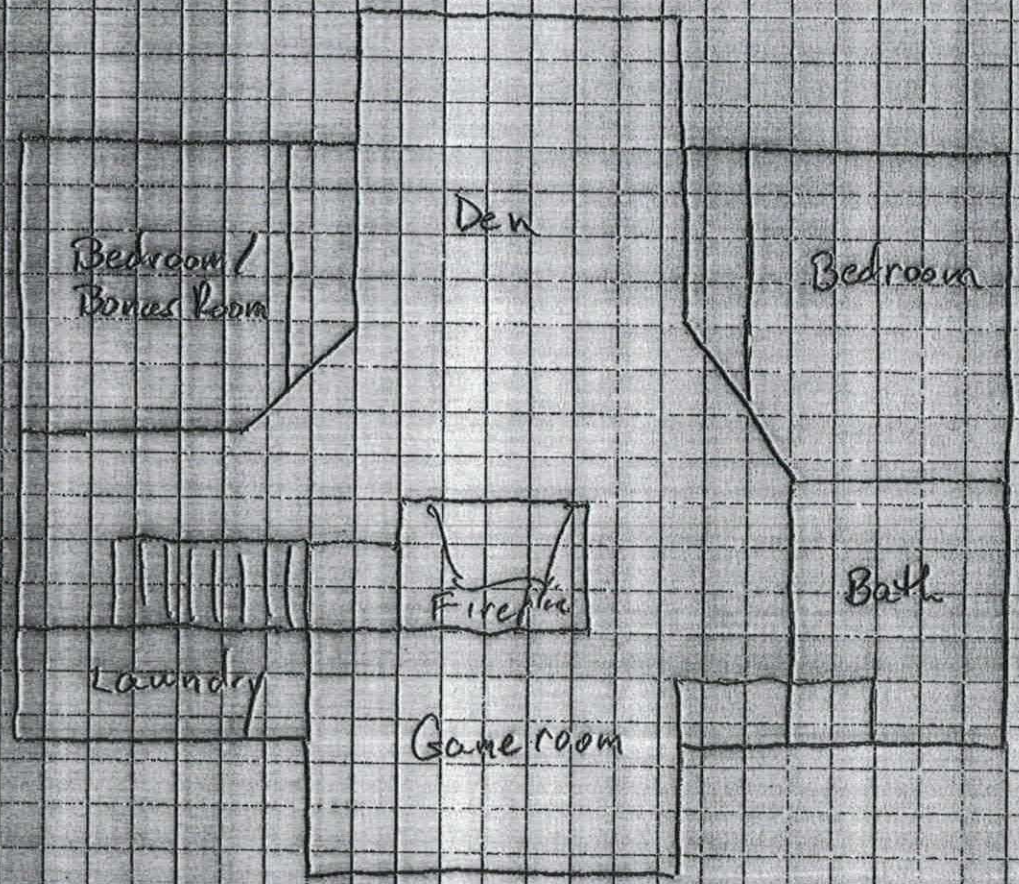
02/21/2011 10:40 #025 P.002/003
From:



Paula + David Steele
150 KEVEN DRIVE, TROUTMAN
MAIN FLOOR

1/4" = 2'

02/21/2011 10:41 #025 P.003/008



1/4" = 2'

Paula & David Steele
150 KEVEN DRIVE
BASEMENT

From: