RECOMMENDED INDIVIDUAL RESIDENCE

T & J PANEL

GROUND ABSORPTION, WASTEWATER

DISPOSAL SYSTEM

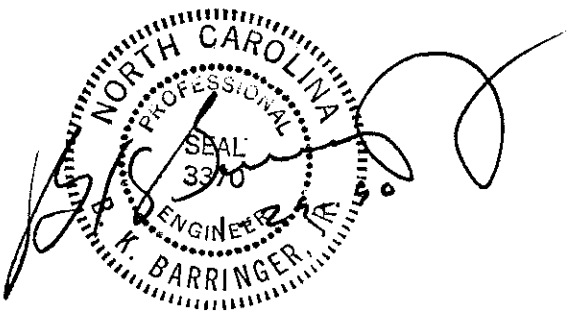
for

DR. FRANK JEFFERSON POORE, JR.
RAINBOW LANE
CATALINA COVE - LAKE NORMAN
IREDELL COUNTY, N.C.

JANUARY 29, 1990

Owner:
Dr. & Mrs. F. J. Poore, Jr.
Rt. 2, Rainbow Lane
Mooresville, N.C. 28115

Prepared By:
B. K. Barringer, Jr., P.E.
N. C. Registration No. 3370
104 Westfield Center
Mooresville, N. C. 28115
Phone (704)664-7888
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T & J PANEL SYSTEM

DESIGN CONSIDERATIONS:

The owner intends to expand his existing home to three bedrooms. The expansion is to take place where the existing septic system and tank are located. This system is to be abandoned. Also the existing water well is to be abandoned and a new well drilled.

LOCATION: The property is located on Rainbow Lane, Catalina Cove, Lake Norman, in Iredell County. The proposed field is located to the north of the house location.

TERRAIN The property, where the field is to be located, slopes north to south at approximately 3-1/2%. The new field shall be located a minimum of 10' from the abandoned, existing nitrification field.

REFERENCE MATERIAL:

(1) DESIGN AND INSTALLATION (Manual)
OF LOW PRESSURE PIPE WASTE WATER TREATMENT SYSTEMS
By: Craig Cogger; Bobby L. Carlisle; Dennis Osborne; Ed Holland
Published by: UNC Sea Grant College Pub. UNC-SC-82-03
May, 1982.

(2) LAWS AND RULES FOR GROUND ABSORPTION SEWAGE DISPOSAL SYSTEMS.
SECTION .1956 OF THE N.C. Administrative Code: Title 10 Health Services; Environmental Health; Subchapter 10a; Sanitation.
Published by: N.C. Dept. of Human Resources; July 1, 1982.
Paragraph .1956 (a)(ii)(B).

(3) EPA 625/1-80-012 Design Manual
Onsite Wastewater Treatment and Disposal System Oct.,1980;
Chapter 7.

RECOMMENDATIONS: ~~Due to shallow soil depth, sloping lot~~, and limited area, a precast porous block panel system (PPBPS) - T & J - is ~~recommended~~ for the location.

AVAILABLE SPACE: This property qualifies under Rule 10NCAC 10A.1945. Available space is not required.

OWNERSHIP RESPONSIBILITY:

It must be kept in mind that this system is designed to accept a moderate amount of waste water (which is called the EFFLUENT), in a minimal water absorbing soil.

Conservation measures must be undertaken by all members of the house hold to minimize the volume of waste water entering the disposal system, including, but not limited to, the following precautions:

(a) Provide water conserving plumbing fixtures within the facility; toilets shall be equal to **Eljer "Ultra-One/G" or Sloan's "Flushmate".**

(b) Develop conservative water use habits;

(c) Monitor and maintain the system as necessary for proper operation according to .1961 of T10:10A.1900 of the North Carolina Administrative Code.

(d) Check and pump the septic tank sludge on a regular basis of approximately every year if garbage disposal is included in the residence, or approximately every three years otherwise.

(e) Make rapid repairs to leaking plumbing fixtures and faucets.

(f) Avoid excessive watering of the lawn in the vicinity of the disposal field.

CONSTRUCTION SEQUENCE AND COMPONENTS OF THE SYSTEM

Refer to T & J Panel System's manufacturing and installment manual. Furnish and install all items required for a complete system in accordance with plans and specifications; for requirements of the County Dept. of Environmental Health (CDEH); the N. C. Dept. of Environmental Health (NCDEH); the N. C. Building Code, Plumbing Code and Electrical Code; and the National Electric Code. System must be properly installed by a qualified, competent contractor.

COMPONENTS OF SYSTEM

1. Two compartment septic tank
2. Pumping chamber
3. Submersible effluent pump and level controls
4. High water alarm signals (audible and visible)
5. Supply pipe
6. Ball valves
7. T & J 16" high panels & distribution laterals
8. Check valve

* Chlorination prior to filling w/ concrete

CONSTRUCTION SEQUENCE:

(1) The existing septic system shall be abandoned. The tank shall be pumped empty and the sludge disposed of legally. The top of the tank shall be removed and the tank filled with clean, well compacted earth or shall be removed. The existing distribution box shall be removed.

(2) The existing 2" water well shall be abandoned as follows: Remove existing piping. The well shall be filled with a 2000 psi mixture of sand and cement slurry. Additionally the earth around the well casing shall be excavated down to 4' below soil surface and grouted with 2000 psi concrete up to a level 6" below surface grade. The well casing shall be cut off and capped 6" below grade.

(3) Lay out T & J, 16" high, Panel System network area and repair area with stakes and flagging to ten feet (minimum) beyond the limits of the network. As soon as the absorption area is designated, it should be flagged, roped off and isolated from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area. The Engineer has previously flagged the general limits of the nitrification field. See site plans for flag locations.

(4) Prior to actually beginning construction of the system, carefully locate, lay out and identify disposal site, manifolds and the lateral panel piping networks, using a tripod mounted engineer's leveling instrument to accurately establish each lateral along a level contour. Note: Lateral panel runs which conflict with cut-off-in-place stumps or trees shall "snake" by with a 12" minimum trench clearance and then continue along its projection run. (The 6' minimum trench separation must be maintained.)

(5) Excavate for and construct curtain drain (if shown on the plan.)

(6) Excavate lateral network trenches 24" wide by 28" deep (see detail). Remove loose soil from bottom of trench.

(7) Install sand in bottom of the lateral trench to the proper depth of approximately 22" below finish ground level.

(8) Follow the manufacturer's guidelines for installing the T & J Panel System.

(9) All joints in lateral and the manifold piping shall be water tight connections to insure that the only source of the water seepage from the system is through the orifices as designed. See layout and details. Carefully install manifold and lateral network according to the attached designed layout. A larger diameter protective sleeve with cap or approved box with lid shall be placed over the turned up lateral and positioned level with the ground surface (so as not to be damaged by mowing machine.)

(10) Carefully backfill manifold trenches to finish grade with clean (debris free earth (no stone).

(11) Leave absorption area with a raked surface, ready for grassing.

(12) The installation contractor shall stabilize the area of construction by planting and seeding with Kentucky 31 tall fescue and shall keep the planted area watered and mulched until such time that a hardy stand of grass is established. (See Seeding Specification.)

(13) The septic tank shall consist of a 1,500 gallon capacity, reinforced, precast concrete tank with full baffle and shall have easy access to each chamber from ground level for checking and pumping. The first chamber of the septic tank shall consist 2/3 to 3/4 of the volume of the total tank and the baffle shall contain a horizontal opening across the tank at about midway its height. Locate the septic tank at such height as to provide approximately 8" of cover soil over top of the tank.

1250 min.

(14) The dosing tank shall consist of a 1,000 gallon capacity, reinforced, precast concrete tank without baffle and shall have a concrete mounting pad (concrete blocks) for accommodating the pump. Provide access for entry into the tank directly over the pump location, and extending 6" above final grade. Use a 30" diameter concrete well casing and concrete well cap.

1250 min.

(15) All piping and fittings shall be PR160 PVC. Glue for all PVC pipe joints shall be as recommended by the pipe manufacturer.

Sch 40 preferred

1/4" laterals w/ one 5/32" hole per panel (46 panels total)

(16) PUMP: The submerged pump shall be Model SSM4M manufactured by ~~F.E.Meyers Co., Ashland, OH, or equal,~~ 4/10hp, 115v/1ph; capable of pumping 23.0 gallons per minute at an 13.5' head.

19 gal/min At Approx. 17' TDH

(17) PUMP ON-OFF water level control switch shall by Myers, Model MLC-20, mercury switch, with three prong, piggy back plug.

(18) HIGH WATER ALARM SWITCH shall be equal to Myers, model FLCA-30, mercury switch, red colored ball with support bracket.

(19) HIGH WATER ALARM CONTROL BOX shall be equal to Myers, model FLCA CA-SS4 with connection box having buzzer alarm, on, off, test switch with terminal block for all connections. Control box shall be supplied by two separate 115 volt circuits, one plug circuit, and one alarm circuit.

(20) A "HOME OWNER'S WARNING SIGN" shall be located within the house to inform the owner of what action to take in case the "High Water Alarm" is activated. This sign shall contain the name, address, telephone number, and emergency telephone number of the person to contract immediately upon malfunction of the system.

(21) PUMP AND CONTROLS: Details of pump installation are shown on the plan. The pump must be placed on two concrete blocks next to each other on the bottom of the tank. This prevents the pumping of any solid particles which can clog the LPP system. A piece of nylon rope or other non corrodible material should be attached to the pump and to the outlet pipe for lifting the pump in and out of the chamber. (The PVC outlet pipe is too fragile to support the pump.)

Controls are fastened to the outlet pipe with clamps or brackets supplied by the manufacturer. The lower level control or "pump-off" must be positioned above the pump, so that the pump remains submerged at all times. The upper level control "pump-on" is positioned to pump a specified volume of effluent. The high water control float is then mounted about 3" above the upper pump-on control. (Note: Care must be taken to insure that floats do not become fouled by other components in the tank such as the electric power cord or the lifting rope.)

The pump outlet pipe should be connected to the supply manifold with a threaded PVC union (or dresser coupling) to allow quick removal. The gate valve must also be installed in the supply line (within the pumpchamber) to allow final adjustment of the pressure. If effluent will be pumped down hill, a 1/4" siphon-breaker hole must be drilled in the bottom of the supply line before it leaves the pump tank. This breaks any vacuum in the system and prevents the inadvertent siphoning of effluent out of the tank. This hole is very important.

(22) ELECTRICAL CONNECTIONS: The pump and high water alarm must be placed on separate electrical circuits. (If the pump circuit fails, the alarm must still be able to operate.) Follow the manufacturers' recommendations for the proper fuses or circuit-breakers. All electrical connections must be made outside the pumping chamber. Power cords from the pumps and controls should be plugged into a NEMA approved outdoor receptacle mounted outside of the pumping chamber. The receptacle must not be located inside the pumping chamber due to the corrosive and explosive gasses that may form from the sewage.

Electrical connections may be made inside the pumping tank only if wired inside a sealed, water tight box. Some level control switches have a box built into the housing, but are more expensive than the plug-in devices.

Wiring between the pumping chamber and the house should meet State and local code requirements. A lightning arrester is recommended to protect the pump and controls from electrical surges.

(23) PROPER OPERATION CHECK: After all components have been installed and connected, the system should be checked for proper operation. With electrical power turned off, fill the pumping chamber with water from a garden hose (or allow effluent to accumulate) until the liquid rises to the level of the high-water alarm float. Turn on the electrical power. The alarm light should go on in the house, and the pump should start operating. The alarm light should go off when the liquid level falls below the high-water float. The pump should turn off when the liquid reaches the lowest float control. Be sure the pump is still completely submerged.

(24) PRESSURE HEAD ADJUSTMENT: The pressure head must be adjusted to match that specified in the design. The pressure head is measured as the height liquid will rise above the turn-up elbow when the pump is running. To adjust the head:

(a) Glue a 4' length of pipe (preferably clear) to a threaded adapter that will screw onto the turn-up adapters. (Call this the "test tube".)

(b) Replace the turn-up cap with the "test tube".

(c) Turn the power on to allow liquid to rise in the "test tube".

(d) Adjust the ball valve beginning at the end of each lateral until the effluent reaches the desired height in the "test tube". Remember to include the distance below the ground surface to the lateral line when measuring the height. The pressure head should be 3' for each line. This is the height above the lateral the liquid should be in the temporary "test tube". Continue to adjust valves until all test tubes have an equal amount of liquid.

(25) FINAL LANDSCAPING: After the T & J System is installed, the following should be checked to insure that the system will not be overloaded with excess rain water and run off:

(a) The distribution field is shaped to shed rain water and is free of low area.

(b) Gutter and downspout drains are directed away from the system.

Any problems should be corrected before approving the system.

Finally, the entire area should be planted with grass according to specifications.

DESIGN SPECIFICATIONS - T & J PANEL SYSTEM
Dr. Jeff Poore - Rainbow Lane - Lake Norman
Iredell County January 29, 1990

Daily design waste flow:	360 gpd ✓
Septic tank size:	1,500 gal. (2 compartment) 1250 min.
Pumping tank size:	1,000 gal. 1250 min.
Effluent loading rate:	0.30 gpd/sf
Total linear feet and diameter of laterals	200 ft. of 1-1/4" dia. PVC and T & J 16" high panels ✓
Total length and diameter of supply manifold:	40 lf - 2.0" dia. PVC
Number and length of laterals:	1 lateral at 35 lf; 1 lateral at 56 lf 1 lateral at 55 lf; 1 lateral at 44 lf ~~1 lateral at 10'~~ NO
Number of panels:	46 ✓
Hole size:	5/32" ✓
Hole spacing:	1 hole per panel ✓
Total number of holes:	46 ✓
Flow rate through the system:	~~23.0 gpm~~ 19gal/min ?
Elevation head (pump to end of manifold):	10'
Pressure head:	3' → 2
Friction head:	0.50' No → more
Total head:	13.5' No → 16'-17'
Pump requirements:	23.0 gpm at 13.5'; use Myers 4/10hp SSM4M pump 19gal/min at 17'TDH
Dosing volume:	166 gal.
Depth of water pumped per dose:	7.6" (125-150gal/cycle)
Pump run per dose:	7.2 min.
Check valve:	yes ✓
Syphon break hole:	no ✓

SEEDING SPECIFICATIONS

3:1 SLOPES OR FLATTER

1. Apply agricultural lime at the rate of 30 lbs/1000 sf.
2. Apply 10-10-10 commercial fertilizer at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate:

DATE	TYPE	PLANTING RATE
8/15 - 11/1	Tall Fescue	200 lb/ac or 7 lb/1000 sf
11/1 - 3/1*	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Abruzzi Rye	25 lb/ac or 1/2 lb/1000 sf
3/1 - 4/15	Tall Fescue	200 lb/ac or 7 lb/1000 sf
4/15 - 7/30	Mulled Common or Bermuda Grass	30 lb/ac or 1 lb/1000 sf
7/15 - 8/15	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Browntop Millet or	35 lb/ac or 7/8 lb/1000 sf
	Sorghum-Sudan Hybrids	30 lb/ac or 3/4 lb/1000 sf

4. Mulch with straw applied at the rate of 75-100 lb/1000 sf.

* Heavily mulched during January - March period.

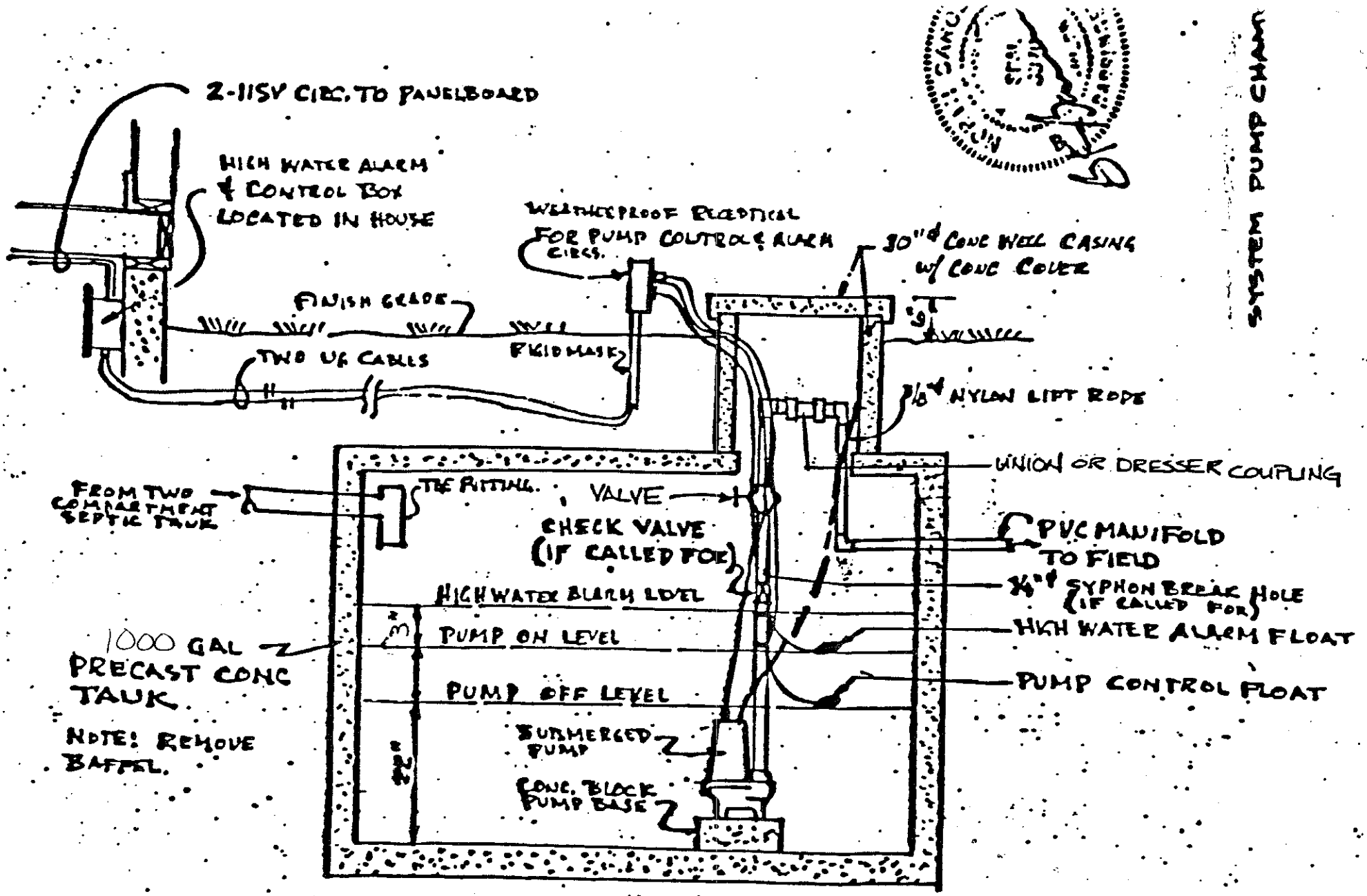
SLOPES GREATER THAN 3:1 TO 2:1 SLOPES

1. Apply agricultural lime at the rate of 50 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizer at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule & application rate:

DATE	TYPE	PLANTING RATE
3/1 - 6/1	Sericea Lespediza (scarified) and	50 lb/ac or 11 lb/1000 sf
3 - 4	Add Tall Fescue or	150 lb/ac or 3-1/2 lb/1000 sf
3 - 6	Add Weeping Lovegrass	5 lb/ac or 1/8 lb/1000 sf
6 - 9/1**	Tall Fescue and	60 lb/ac or 1-1/2 lb/1000 sf
	Brown Top Millet	35 lb/ac or 7/8 lb/1000 sf
	or Sorghum	30 lb/ac o 3/4 lb/1000 sf
	Sudan Hybrids	
9 - 3/1	Sericea Lespediza (unhulled-unscarified)	70 lb/ac or 1-3/4 lb/1000 sf
	Tall Fescue	150 lb/ac or 3-1/2 lb/1000 sf
	Millet or Sudan	20 lb/ac or 1/2 lb/1000 sf

** Temporary - Reseed September 1 at recommended rates.

4. Mulch with 3" straw applied at the rate of 50-90 lb/1000 sf and anchor with asphalt emulsion tack coat applied at the rate of 14-28 gal/1000 sf or 800-1200 gal/ac.



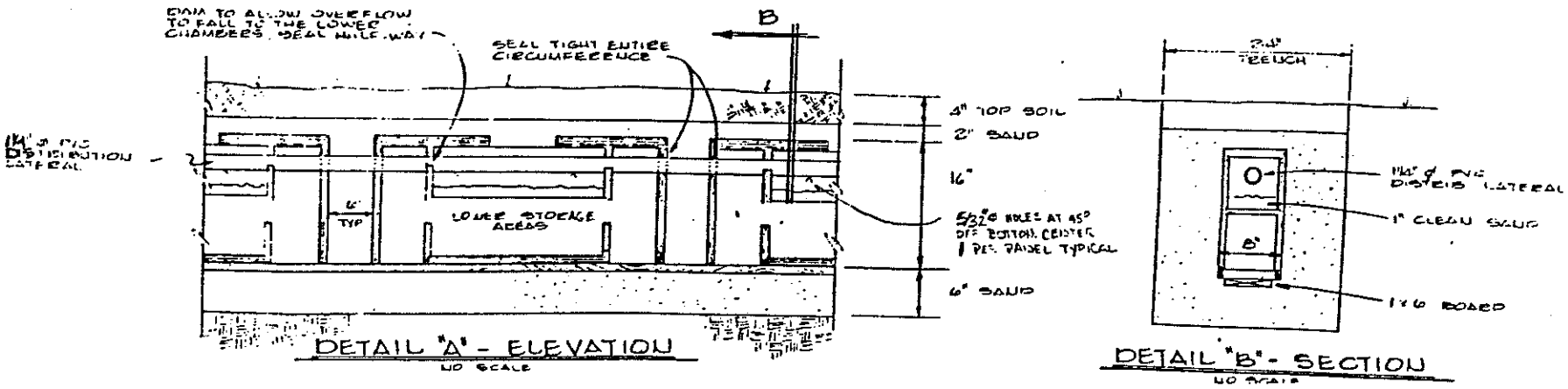
PUMPING CHAMBER DIAGRAM

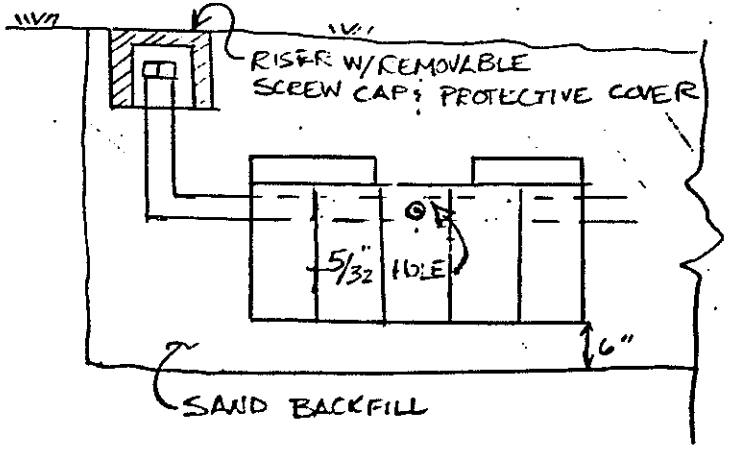
NO SCALE

1000 GAL TANK

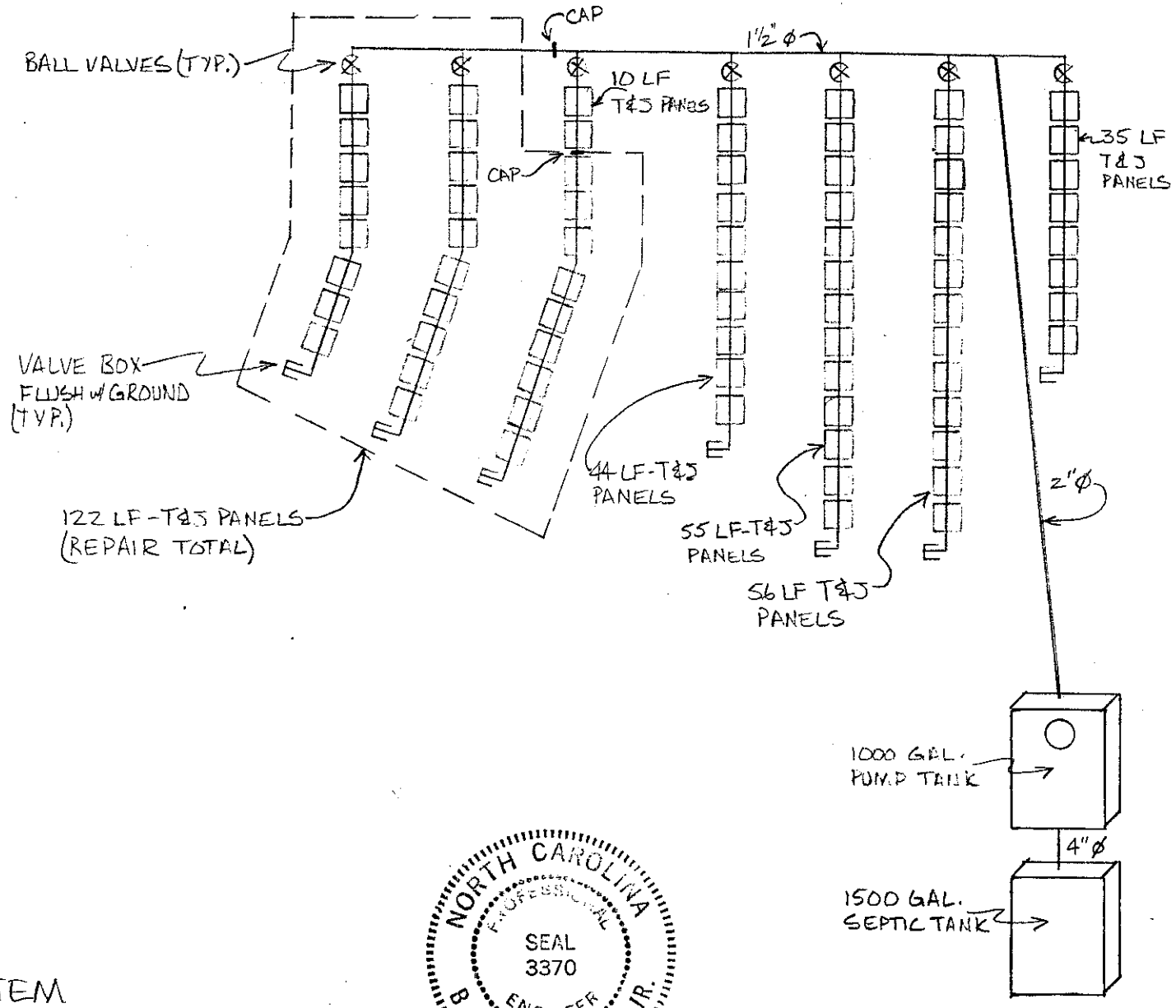
SYSTEM PUMP CHAMBER

T & J PANEL AS MFGE'D
BY STATESVILLE
CONCRETE PRODUCTS





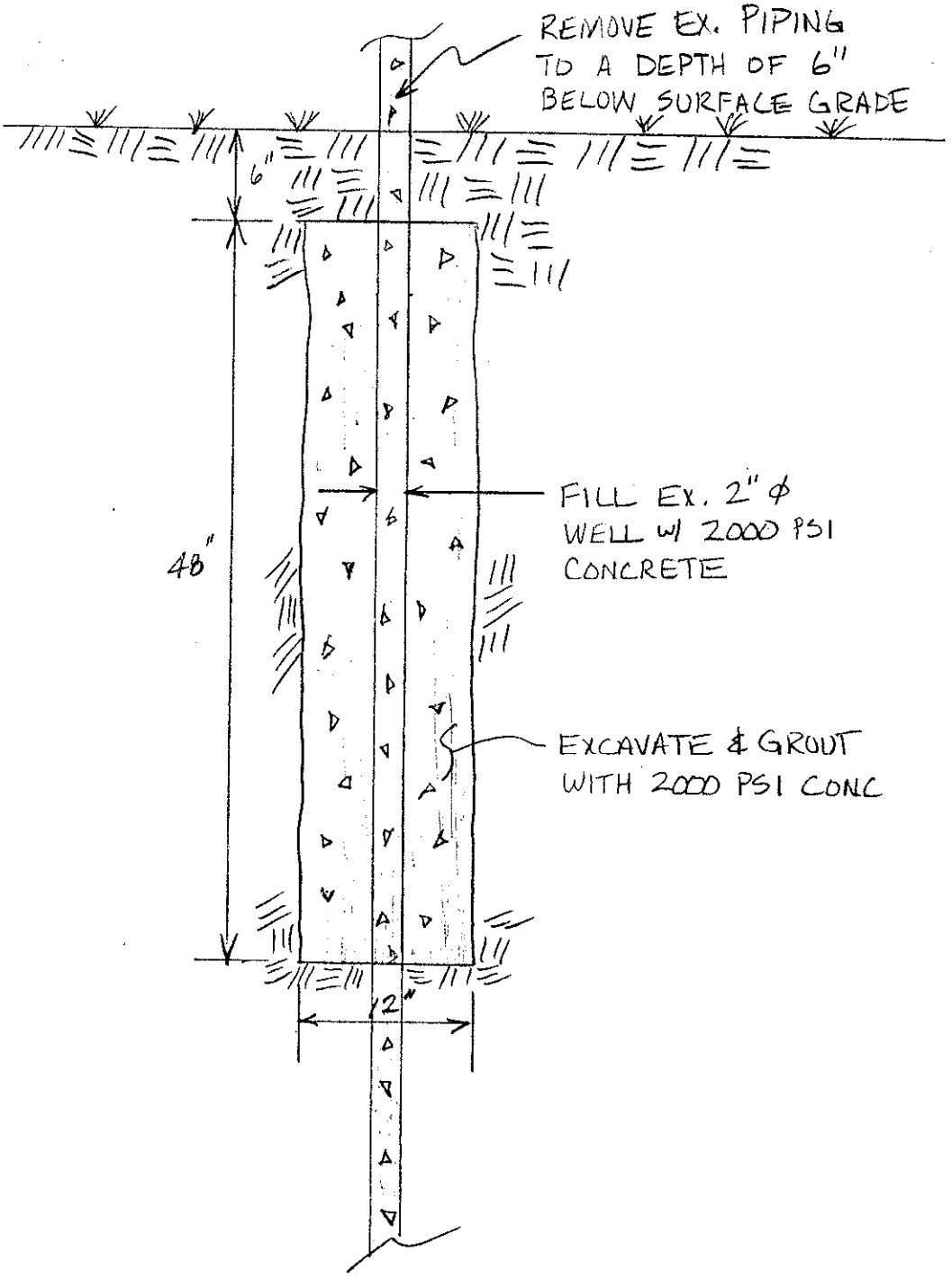
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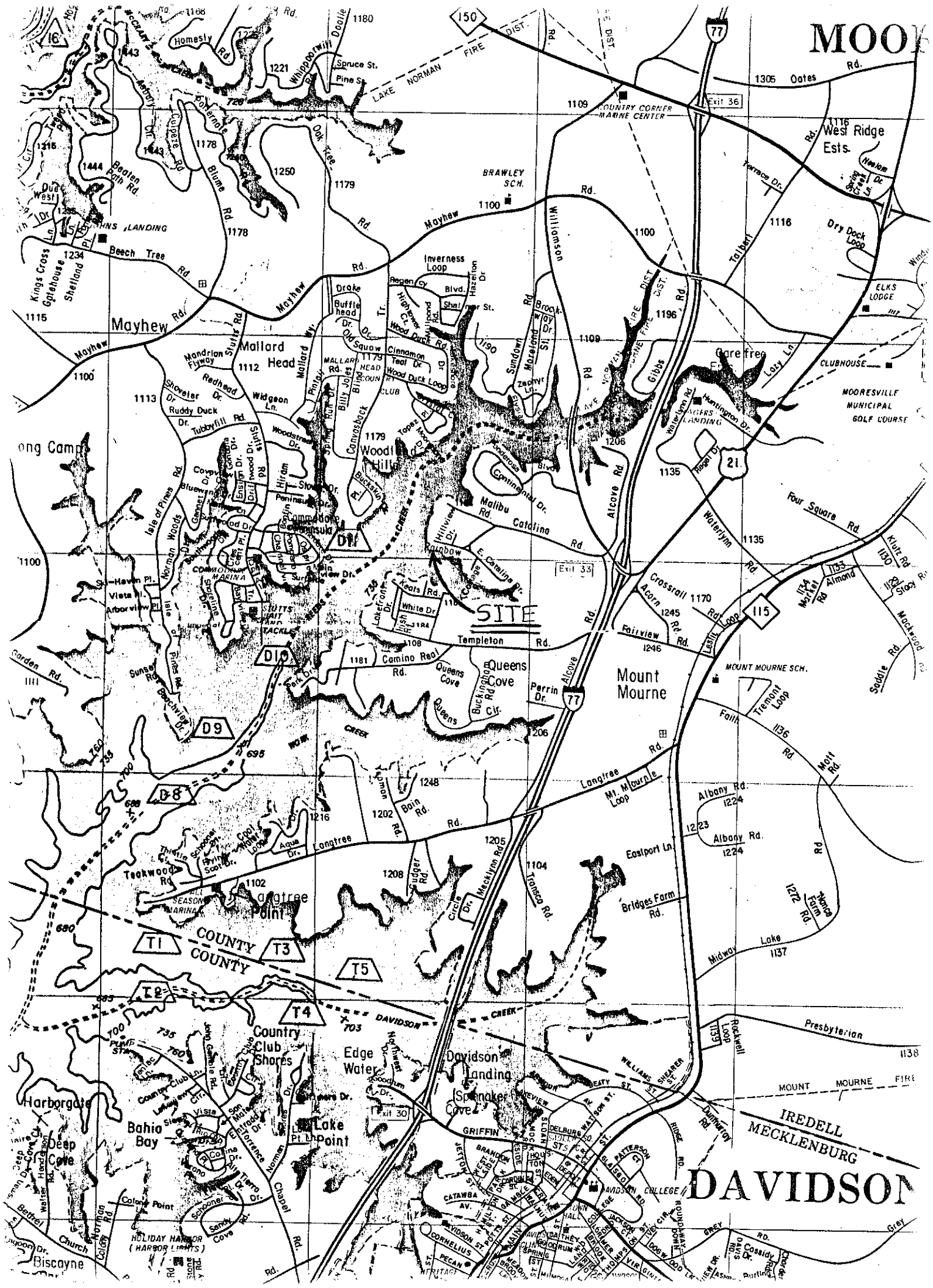
NORTH CAROLINA PROFESSIONAL SEAL 3370 ENGINEER B. K. BARRINGER, JR.

T&J PANEL SYSTEM
FRANK JEFFERSON POORE, JR.
DAVIDSON TOWNSHIP, IREDELL CO., N.C.
BLOCK "B" CATALINA COVE
LOT # 5

B.K. Barringer, Jr. P.E.
104 Westfield Center
MOORESVILLE, NORTH CAROLINA 28115
(704) 664-7888



EXISTING 2" WATER WELL
ABANDONMENT DETAIL


SITE
Exit 36
Exit 33
Exit 30
Mayhew Rd.
Beech Tree Rd.
Mallard Head
Woodland Hills
Carefree Est.
Mount Mourne
Davidson
Lake Norman
Country Club Shores
Edge Water
Davidson Landing
Spinnaker Cove
Harborgate
Bahia Bay
Deep Cove
Biscayne
Templeton Rd.
Alcove Rd.
Williamson Rd.
Talbert Rd.
Langtree Rd.
Bain Rd.
Camino Real Rd.
Queens Cove
Buckingham Rd.
Malibu Rd.
Catalina Rd.
Waterlynn Rd.
Four Square Rd.
Fairview Rd.
Crossrail
Acorn
Tremont Loop
Albany Rd.
Eastport Ln.
Bridges Farm Rd.
Midway Lake
Presbyterian
Rockwell
Mount Mourne Fire
Iredell
Mecklenburg
Davidson College
Country Corner Marine Center
West Ridge Ests.
Dry Dock Loop
Elks Lodge
Clubhouse
Moorresville Municipal Golf Course
Mount Mourne Sch.
Brawley Sch.
Lake Norman Fire Dist.
Coves
Point
Shores
Water
Landing
Cove
Bay
Deep
Harborgate
Biscayne
Davidson
Mount
Mourne
Carefree
Woodland
Hills
Mallard
Head
Edge
Country
Club
Shores
Davidson
Landing
Spinnaker
Cove
Bahia
Bay
Deep
Cove
Harborgate
Biscayne
Mount
Mourne
Carefree
Woodland
Hills
Mallard
Head
Edge
Water

IREDELL COUNTY HEALTH DEPARTMENT
Environmental Health Division

INSPECTION REPORT

FOR: FRANK J. POORE JR. DATE 5/24/91

At your request and as a service to you, the Environmental Health Division made an inspection of the water supply ___, sewage disposal system ✓ for the property located at

CATALINA COVE Lot 5

MOST OF THE SYSTEM INSPECTED IS LOCATED UNDERGROUND AND COULD NOT BE OBSERVED. OUR INSPECTION WAS BASED ON REPRESENTATIONS MADE TO US BY THE OWNER OR HIS AGENT. THE IREDELL COUNTY HEALTH DEPARTMENT WILL NOT BE HELD RESPONSIBLE FOR CONDITIONS EXISTING BEYOND THE SCOPE OF OUR KNOWLEDGE.

WATER SUPPLY

Individual Supply_____ Municipal or County Supply_____

If Individual: (1) Meets guidelines set forth in Division of Health Services Rules, Section .1700 YES_____ NO_____

(2) A sample was taken and the results are Positive Negative for coliform bacteria.

*NOTE: It is the policy of the Iredell County Health Department that no water supply will be sampled that does not meet the guidelines of Division of Health Services Rules, Section .1700 unless requested by a physician.

SEWAGE DISPOSAL SYSTEM

The sewage disposal system shows no evidence of malfunction at the time of inspection: Yes ✓ No ___

*NOTE: If NO, an Improvements Permit for repair of the system must be obtained from the Environmental Health Division.

Conditions checked below should be corrected to improve the function of the system:

_____Improper landscaping resulting in surface water standing over septic tank and/or nitrification lines.

_____Gutters presently empty over area where septic tank and/or nitrification lines are installed.

_____Trees with fibrous root systems are too close to system.

_____System does not have adequate drainfield and/or tank size for modern appliances, i.e., dishwasher, garbage disposal, automatic washer, etc. Recommend additional drainfield.

_____System is very saturated and appears close to failure. Recommend additional drainfield.

*NOTE: THIS REPORT IS NOT A GUARANTEE THAT PROBLEMS WILL NOT ARISE IN THE FUTURE. THIS REPORT DESCRIBES THE APPEARANCE OF THE SYSTEM AT THE TIME OF INSPECTION ONLY. NEITHER THE IREDELL COUNTY HEALTH DEPARTMENT NOR ANY PERSON EMPLOYED THEREBY MAKES ANY WARRANTY, EXPRESS OR IMPLIED, THAT THE INSPECTED SYSTEM(S) WERE PROPERLY INSTALLED OR WILL FUNCTION IN THE FUTURE.

GENERAL INFORMATION

Abuse of the system should be avoided. Examples of abuse include:

1. Use of excessive amounts of water--greater than 60 gallons per person per day.
2. Use of excess bleach or other bacteriocidal agents which would retard bacteriological action in the septic tank, or
3. Failure to pump accumulated sludge from tank every five (5) years, minimum.

Suggestions on how to correct conditions listed above are on the back of this form: YES_____ NO_____

NOTE: A copy of this report should be forwarded by the real estate agent to the prospective homeowner whenever applicable. The undersigned will be happy to discuss the inspection with all parties concerned.

Respectfully submitted: Wesley Sparks RS (Title) Environmental Health Specialist