WATER

In Ellis County, groundwater provides water for nearly all of the County's domestic water needs, and is the County's most valuable resource. Groundwater is a resource lying beneath the earth's surface. Because it is stored below the earth's surface, it is protected from contamination and evaporation. This protection is valid until this resource is tapped for our use or subjected to contaminates that penetrate this barrier.

In the past, large volumes have been contaminated to the point of being unusable as domestic water supplies. To protect this resource the county environmental code was adopted, which included provisions for the protection of our water supply.

The following are guidelines to be used in the development of safe/sanitary on-site water supplies in Ellis County.

Before the development of a water supply, the developer **is required** to complete a permit application. This action provides an opportunity to review pertinent information with the developer, and to direct the development toward a safe uncontaminated water source. A permit is also required if an existing water supply is to be reconstructed.

Groundwater when protected by the overlaying soil is generally safe to drink. To assure that quality; a well site must be chosen away from contamination sources that might penetrate the natural barrier. After choosing a satisfactory site the well **has to** be constructed to prevent contamination from reaching the aquifer when the overburden is penetrated.

The most important item to consider when establishing a water supply, is the location. The well site **shall** be remote from sources of contamination. The attached drawings show some contamination sources, and prescribes minimum separation distances. (**Figures 1,2, & 3)**. In some cases these separation distances are arbitrary and are best supplemented by local information.

In locating a well site, the following items shall be considered:

1. **Surface slope**-- Does surface water flow away from the well?
2. **Contamination Sources**--Are there current sources of contamination, and/or will future development add contamination sources?
3. **Utility access**-- Can the production point be readily accessed by required utilities?

After selecting the well site and the water source has been established, the following items **shall** be completed.

1. The well must be drilled and cased with approved well casing.
2. The space between the well casing and the borehole should be at least 3"greater than the outside diameter of the well casing and be provided with an approved grout seal.

3. The upper end of the well casing shall be extended a minimum of 12 inches above the final finished grade.
4. The well casing shall not be penetrated for any reason, other than the sanitary discharge of produced water.
5. No well casing shall terminate in a pit, basement, garage, or crawl space.
6. When the well is completed the casing shall be provided with a vented sanitary well seal.

See figures 4 & 5
Figure 4 illustrates a typical well pump pit completion. If a pit is used: The pit must be separated from the well by at least 2.0 feet.
Figure 5- illustrates a typical pump house completion.

When all connections have been completed, the well and piping system **must** be properly disinfected to provide a bacterially safe water supply. Simple & effective well disinfection may be accomplished by using chlorine and following the disinfection procedures below:

Well Disinfecting Procedure

Disinfecting is necessary when sampling has indicated the presence of bacteria, and/or when a well has been opened for service or repair. Before a well is chlorinated, it should be carefully examined to insure that it is not being contaminated. If there is any means for dirt, surface water, insects or other contaminants to enter the well, chlorinating it will only provide a temporary solution to the problem. If appropriate, the well construction should be brought up to current State Standards so that it is properly drained, sealed, and vented. Because reconstruction can introduce bacteria, disinfecting must be completed before the well is put back into service. The procedure is as follows:

1. Remove the sanitary well cap and pour five gallons of the appropriate strength chlorine solution into the well. See the chart on the back for calculation of the proper solution strength. Put the well cap into the empty solution container to keep it clean.

2. Attach a garden hose to the nearest sill cock or hydrant, and run water until bleach or chlorine solution is smelled. Use some of the solution to clean the end of the hose. Run some solution into the bucket to cover the well cap. Direct the end of the hose into the open well casing and run water into the well so that the solution will wash down the interior of the casing and any piping or cables present. Allow the water to run for five minutes, then close the valve. Wait five minutes, then turn on the water for two minutes and shut off for two minutes. Repeat with one minute, and with 30 seconds.

3. Close the valve and reseal the well casing.

4. Go to each additional outside outlet and open the valve until chlorine is detected then close the valve. Repeat this procedure at all inside points of discharge in the distribution system, such as faucets, toilets, showers, etc. Chlorinated water should be distributed throughout the entire water system.

5. Allow the chlorinated water to remain in the system for at least 12 hours (or overnight). Avoid use of the system during this time.

6. Return to the outside valve, flush water until there is no detectable chlorine odor, and close the valve. Repeat this procedure at all other points of discharge, as previously described to flush the entire water system.

Resume normal water use. After three or more days, the water should be free of chlorine, and may be sampled.

When the well has been completed, and properly disinfected, please call this office, for a final inspection of the well and water sampling. A screening analysis is completed at this time to determine the current water quality, start a water supply history, and determine if additional samples are required. If all code perimeters are met, a water supply permit will be issued.

FIGURE 1

Potential Source of Pollution	**Separation Distances (in Feet)**	
	Minimum Required	**Recommended**
Sealed Sewer Line (Cast iron, tight line, etc.)	10	50
Unsealed sewer lines	50	>400
Septic tanks (watertight)	50	>100
Lateral Lines and septic absorption field	50	>400
Pit privies	50	>400
Stables, livestock pens, lagoons and manure piles	50	>400
Streams Lakes and ponds	50	>100
Fertilizer and fuel storage (above or below ground)	50	>400
Seepage pits (prohibited after May, 1996)	50	>400
All other wastewater systems	50	>100
Property Line	25	> 50
Public water supply sources (i.e. wells)[3]	100	>100
Building/Structure (termite treatment)[4]	50	>100
Pesticide storage, mixing and disposal Repeated use areas	50	>400

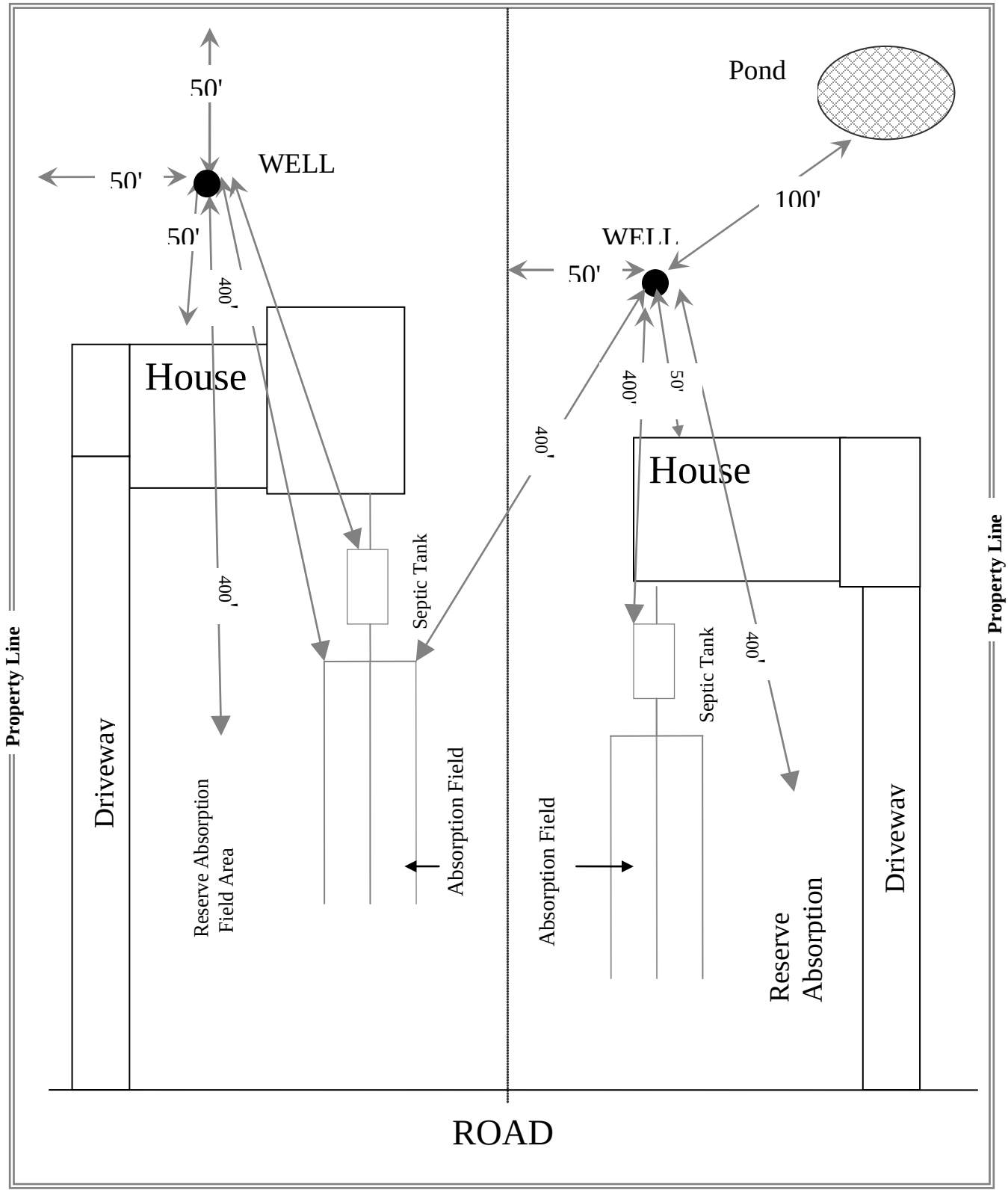
[1] Required by K.A.R. 28-30-8

[2] Separation distances that help assure more adequate protection from contaminants other than bacteria.

[3] From Policies, General Consideration and Design Requirements for Public Water Supply Systems in Kansas

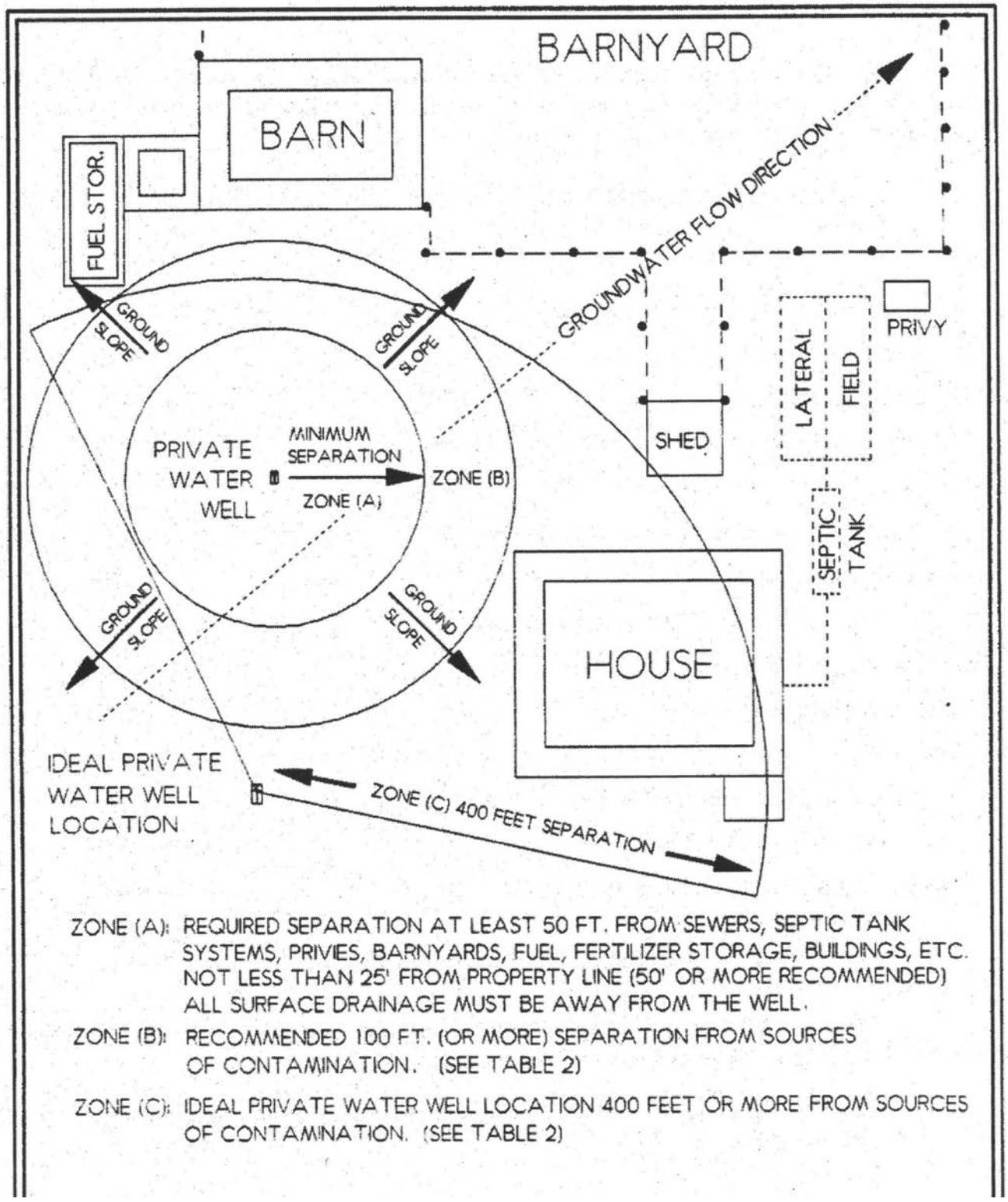
[4] Required when injecting liquid pesticide, see manufactures label. These distances do not assure contamination will not reach well.

FIGURE 2



NOTE: IN ORDER TO MEET THESE SEPARATION DISTANCES A LOT SIZE OF AT LEAST 2 ACRES IS NEEDED.

FIGURE 3



ZONE (A): REQUIRED SEPARATION AT LEAST 50 FT. FROM SEWERS, SEPTIC TANK SYSTEMS, PRIVIES, BARNYARDS, FUEL, FERTILIZER STORAGE, BUILDINGS, ETC. NOT LESS THAN 25' FROM PROPERTY LINE (50' OR MORE RECOMMENDED) ALL SURFACE DRAINAGE MUST BE AWAY FROM THE WELL.

ZONE (B): RECOMMENDED 100 FT. (OR MORE) SEPARATION FROM SOURCES OF CONTAMINATION. (SEE TABLE 2)

ZONE (C): IDEAL PRIVATE WATER WELL LOCATION 400 FEET OR MORE FROM SOURCES OF CONTAMINATION. (SEE TABLE 2)

Figure 4

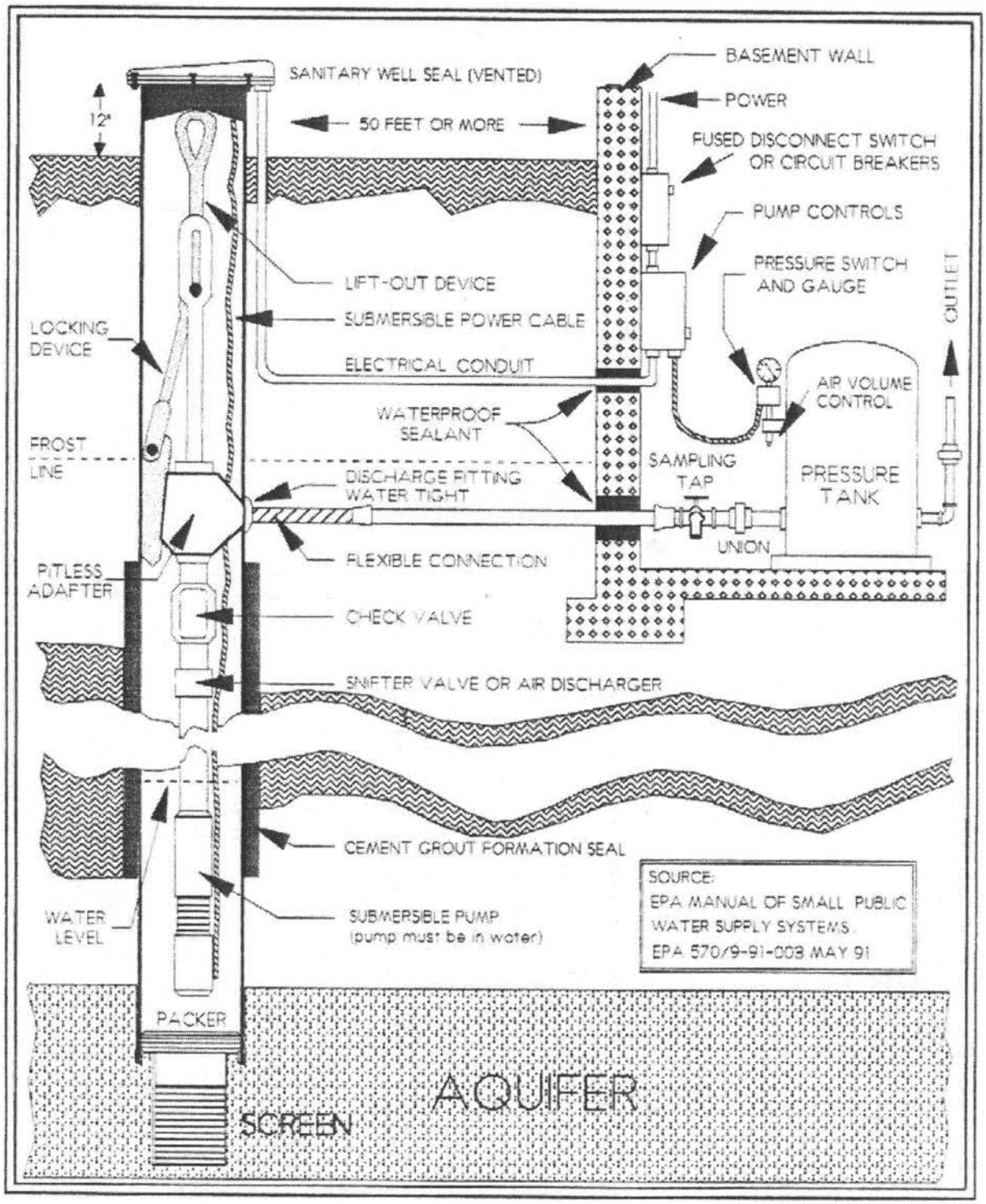
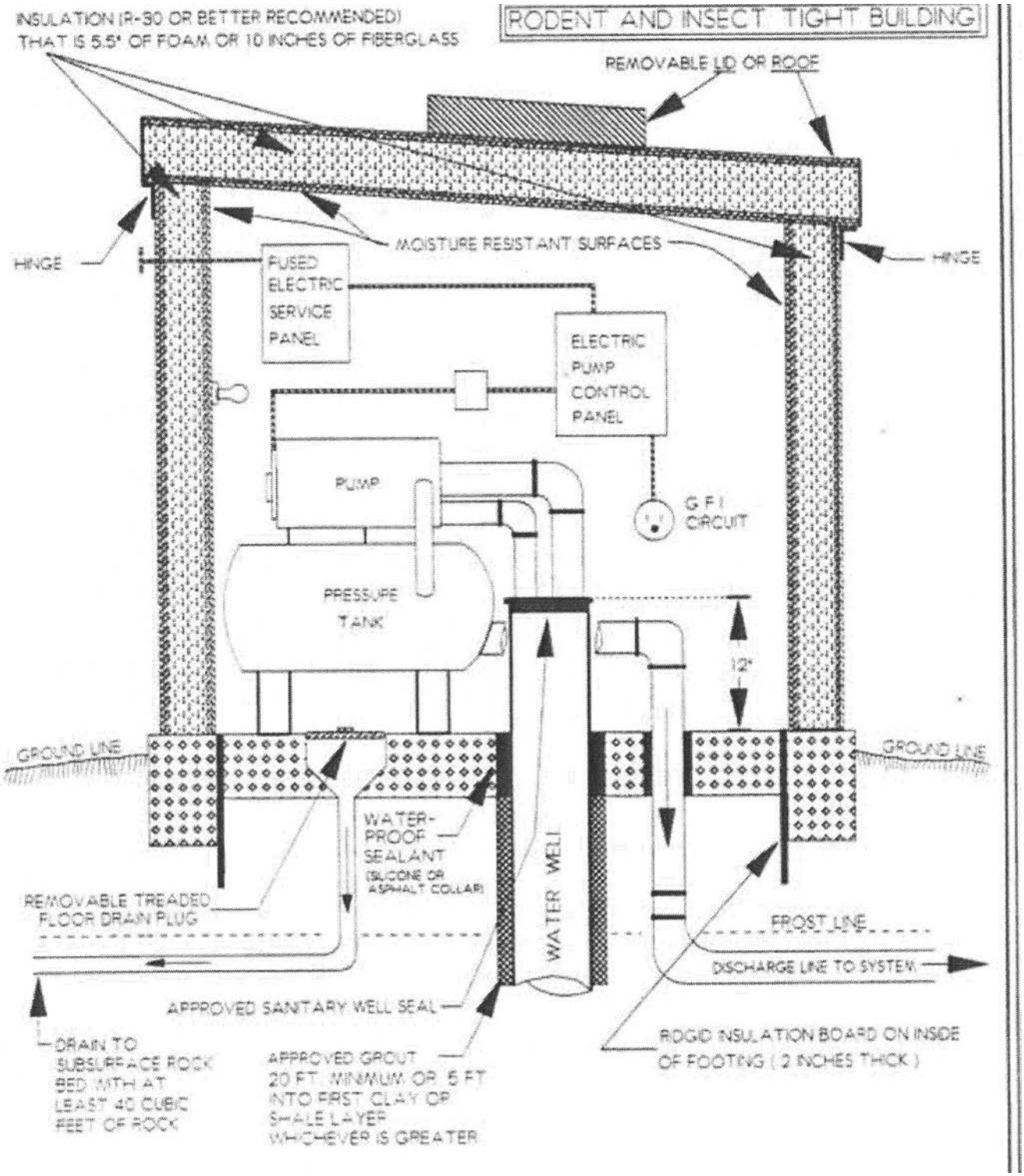
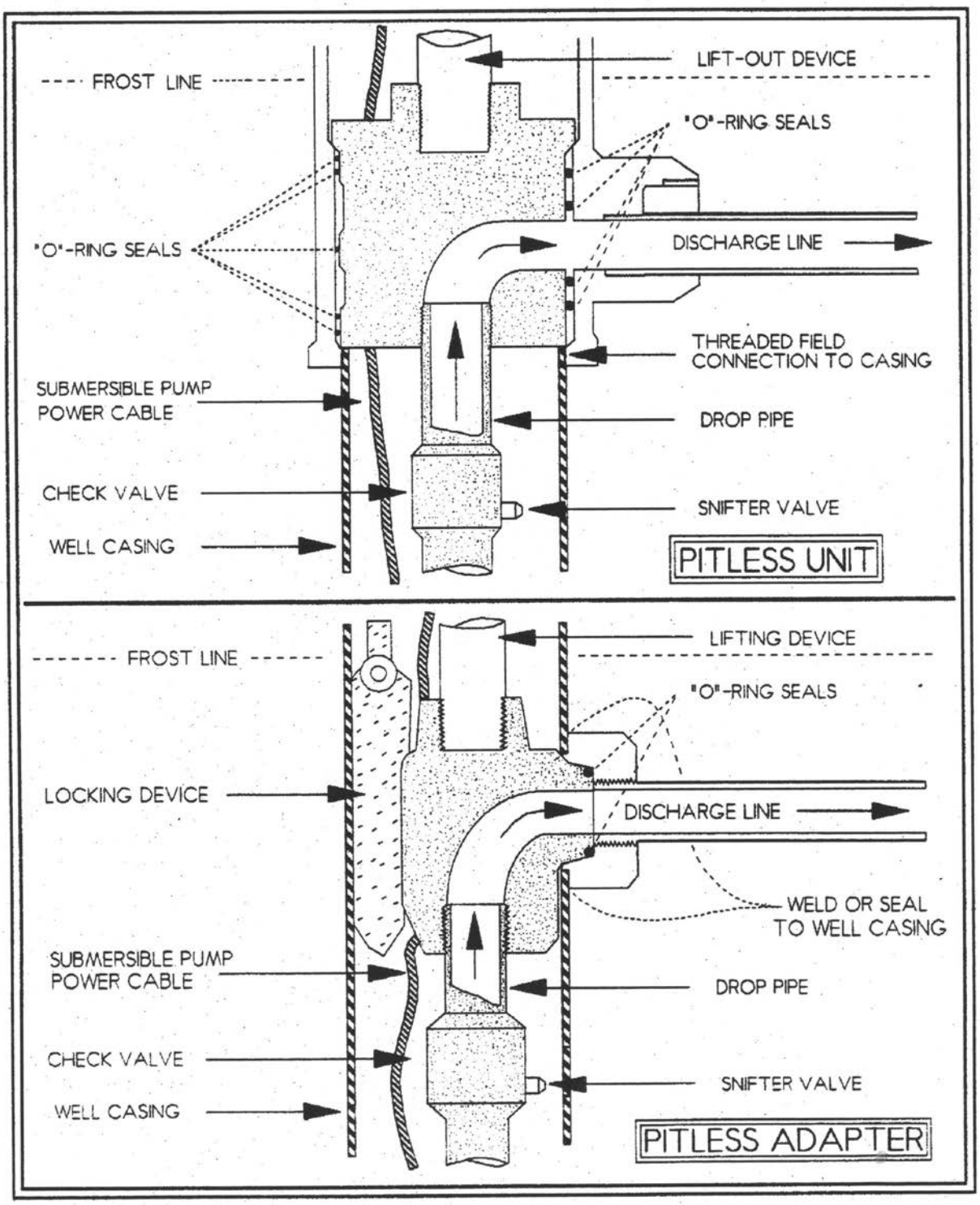
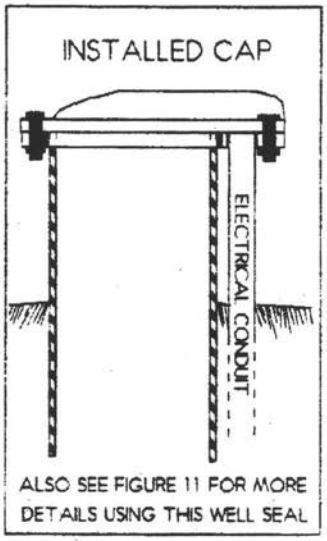

SANITARY WELL SEAL (VENTED)
BASEMENT WALL
POWER
12"
50 FEET OR MORE
FUSED DISCONNECT SWITCH OR CIRCUIT BREAKERS
PUMP CONTROLS
PRESSURE SWITCH AND GAUGE
OUTLET
LIFT-OUT DEVICE
SUBMERSIBLE POWER CABLE
LOCKING DEVICE
ELECTRICAL CONDUIT
AIR VOLUME CONTROL
WATERPROOF SEALANT
FROST LINE
SAMPLING TAP
PRESSURE TANK
DISCHARGE FITTING WATER TIGHT
UNION
FLEXIBLE CONNECTION
PITLESS ADAPTER
CHECK VALVE
SNIFTER VALVE OR AIR DISCHARGER
CEMENT GROUT FORMATION SEAL
SOURCE:
EPA MANUAL OF SMALL PUBLIC WATER SUPPLY SYSTEMS
EPA 570/9-91-003 MAY 91
WATER LEVEL
SUBMERSIBLE PUMP
(pump must be in water)
PACKER
AQUIFER
SCREEN

Figure 5- Pump House

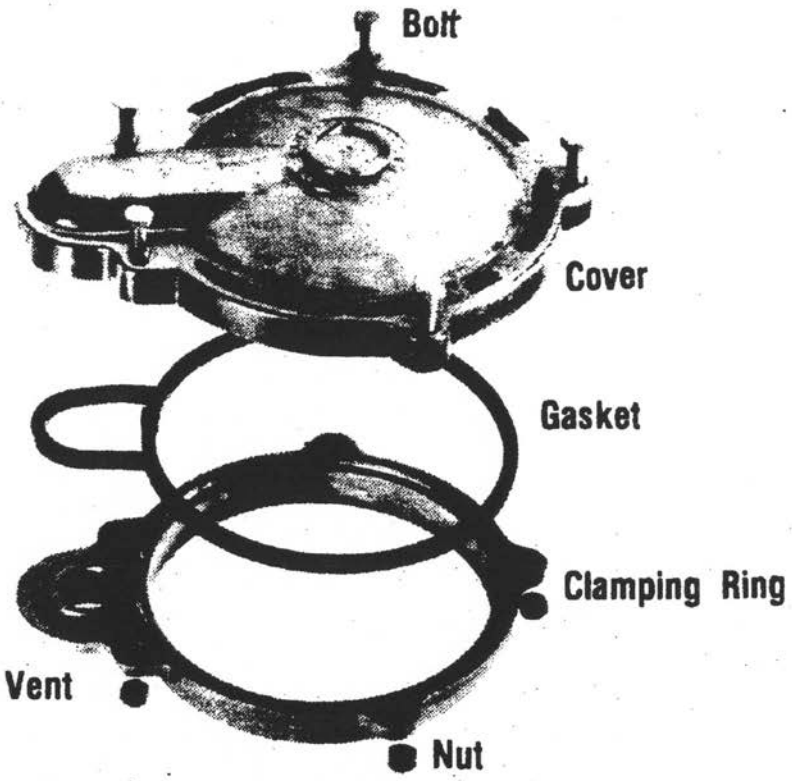


Pitless Unit and Pitless Adapters

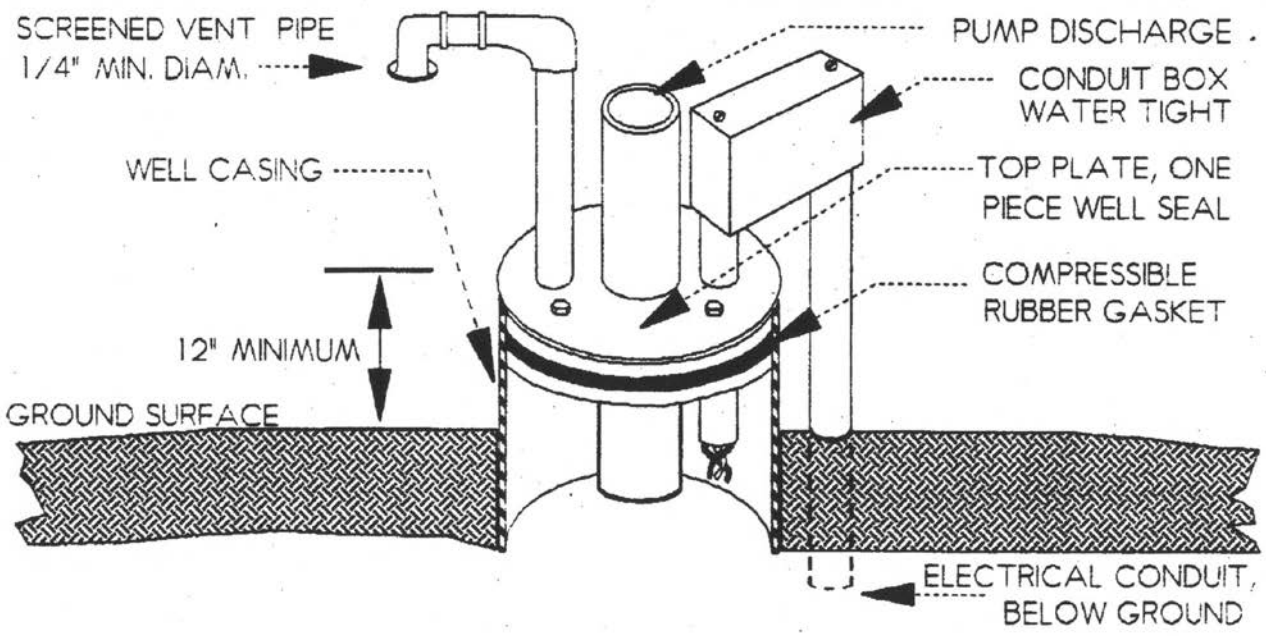




NOTE GASKET GROVE INSIDE THE BASE CLAMPING RING

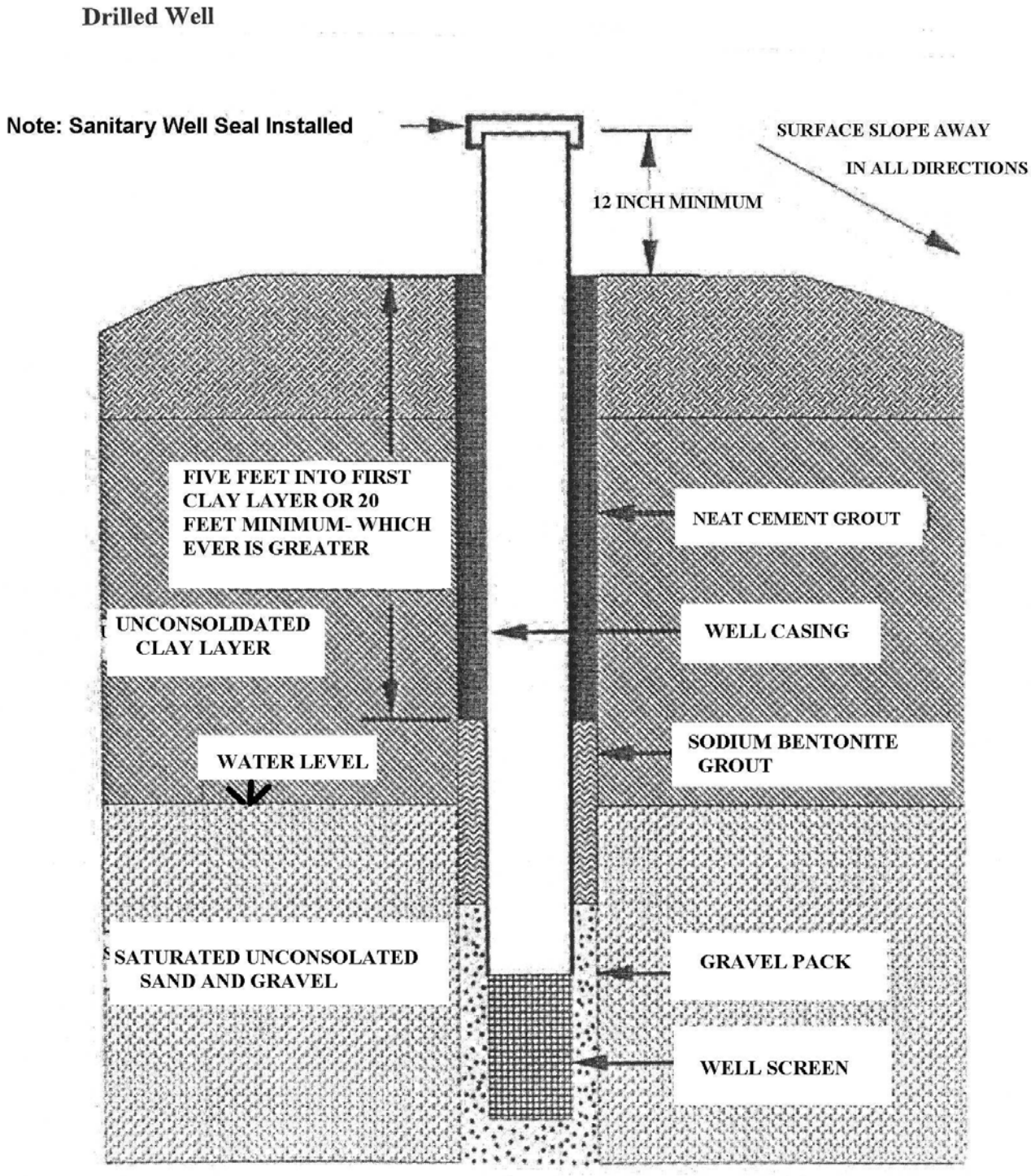


A. WELL SEAL WITH OVERLAPPING CAP AND EXTERNAL GASKET



B. WELL SEAL WITH INTERNAL COMPRESSIBLE RUBBER GASKET

Drilled Well



PERMIT #ELWW_____

Ellis County Environmental Office
718 Main Lower Level - Hays
Phone-(785)628-9449 Fax- (785)628-9448

ELLIS COUNTY PRIVATE WATER SUPPLY PERMIT APPLICATION

Name of Owner:_____ Phone #_____
Mailing Address:_____
City, State, Zip:_____
Site Address:_____
Directions to site_____

Legal Description: (unplatted)Quarter_____ S_____T_____R_____
(platted) Lot___Block_____ Subdivision_____
Driller:_____ Address_____License #_____
Equipment installer:_____Address:_____

Application for: New system_____ Modify Existing System_____
Type: Domestic_____ Stock_____ Lawn & Garden_____ Other_____
Abandoned Holes: Yes_____ No____ If Yes are they plugged in accordance with Article 30_____
Permit Fee Submitted: Yes_____ No_____ Receipt #_____

Drawing of Facilities: Show house relative to well location, the wastewater system, feedlots or other potential sources of contamination. Please include distances.

I hereby submit this application for an individual water supply system and certify the above information to be factual and true. I further certify, if the application is approved, that the facility will be constructed and used in accordance with the approved plans, the requirements of the Ellis County Environmental Code. The Ellis County Environmental Office will make a final inspection after the system has been completed and has been disinfected. A water sample will be taken at that time. The permit fee covers the cost of the nitrate & bacteria test.

"WHEN WELL IS COMPLETED THIS OFFICE MUST BE NOTIFIED"

_____ _____
Signature of Applicant Date

Plans approved by:

_____ _____
Ellis County Environmental Office Date