Explanation of Test Results

The Absence of Coliform bacteria from water is an indication that the water is bacteriologically safe for human consumption. Water that has a Presence of coliform bacteria may contain disease-causing organisms and should not be consumed. Until the problem is corrected, drinking water should be sanitized by boiling or another appropriate method. Bottled water can be used as an alternative to sanitization of contaminated water.

If testing shows the Presence of fecal coliforms or *E. coli* bacteria then the water is even more likely to contain disease causing organisms and should not be used for drinking, personal hygiene, or preparation of food.

Coliform bacteria are used as an indicator of safe drinking water for a number of reasons. These bacteria are found in large numbers in the intestines of warm-blooded animals, and are found in polluted water roughly in proportion to the amount of fecal contamination. Coliform bacteria are also generally hardier than pathogenic bacteria hence their absence indicates the absence of pathogenic bacteria.

Fecal coliform bacteria are a subgroup of coliform bacteria that grow at higher temperatures than regular coliforms and are found predominantly in fecal matter.

E. coli bacteria are fecal coliform bacteria that are found only in the intestines of warm blooded animals such as birds and mammals. Hence *E. coli* bacteria are a very good indicator of fecal contamination. Additionally, some strains of *E. coli* such as *E. coli* O157 H7 are able to cause disease.

My water tested Positive for Coliform Bacteria. Now What?

When drinking water is contaminated by coliform bacteria there are two possible reasons why this has occurred:

1. The well is new or has recently had repairs. These wells often show contamination by coliform bacteria and the problem can usually be corrected by disinfection with chlorine bleach.
2. A well may be contaminated because of poor construction, shallow depth, or damage incurred to the well casing. If this is the case disinfection may not correct the problem.

If the well is contaminated because of poor construction or design, the following should be considered:

1. Is the well deep enough?
2. Is the well tightly cased? Is the casing cracked or damaged?
3. Is the well cap tight?
4. Is the top of the well and cap below ground level? If so special protection is needed.
5. Are there any outdoor toilets, septic tanks, cesspools or sewer lines near the well? If so then this is a definite hazard.
6. Is irrigation water close to the well? Does surface water drain towards the well?
7. Is the well in a lava formation? Contamination can travel quite far in crevices in this situation.
8. If you have a sprinkler system does it have a backflow prevention device? Is it functioning properly?
9. Are there any water filters or softeners attached to the system? Poorly maintained filters can discharge more bacteria than they remove.

Disinfection of a Contaminated Well.

Regular household bleach (unscented) can be used to disinfect a contaminated well. The following procedure is adequate for most situations but *heavy contaminations can take multiple chlorinations to completely disinfect.*

1. For a 6-inch well dilute 2 gallons of bleach into 5 gallons of water. A larger well will take proportionally more bleach to disinfect.
2. Power off, remove the well cap, and pour bleach water solution down into well being sure to wet down the entire inner casing. Rinse the brass 'pitless' with non-bleached water to prevent corrosion. Power on, replace the cap, and secure tightly.
3. One at a time, open each tap until the odor of bleach is detected and then shut off the tap. Do this with all taps both hot and cold water. Be sure to run shower, bath, washing machine and outside taps as well.
4. Allow the bleach solution to remain in system at least 8-12 hours before proceeding to next step.
5. Open taps again and allow water to run until the odor of bleach is no longer detected. This may take between 8-24 hours depending on well size and amount of bleach used. *If on a septic tank system run the outside faucets first until bleach is no longer detected and then run inside faucets. Do not flush bleach onto the ground over a drain field.*
6. Heavy turbidity and organic debris can increase the resistance of bacteria to disinfectants. Dissolved chemicals in the water such as organic compounds, inorganic and organic nitrogenous compounds, iron, manganese, and hydrogen sulfide will all reduce the effectiveness of the disinfectant.

At this point another sample of the water system can be taken. When taking the sample be sure to follow the sampling procedure on the back of the chain of custody provided by the lab. Doing so will help to ensure that the results of the test represent the true condition of the water source.