Explanation of the Well Replacement Program

The Well Replacement Program for the investigation and replacement of private water supplies contaminated with chloride is administered by the Well Section within the Bureau of Highway Maintenance. The Well Section is comprised of a Systems Engineer and two Engineering Technicians, who perform their duties statewide under the general supervision of the Bureau of Highway Maintenance Administrator. The program adheres to RSA 228:34 (formerly Chapter 229:11-a), which was enacted in 1965. Replacing of private water supplies began nearly 50 years ago in connection with right-of-way impacts and is continuing today.

Upon receiving a complaint from a property owner that suspects chloride contamination of a well, an Engineering technician is assigned to visit the site and initiate an investigation. During the first visit the technician explains the program in detail and gathers all of the pertinent information relative to the water supply. Also on the first visit, the technician draws a free-hand sketch of the property, indicating the physical location and approximate dimensions of all of the facilities on the property and indicating observed drainage. And, most important, the technician takes a sample of water and delivers it to the laboratory for a standard drinking water analysis.

The laboratory returns the results to the Department of Transportation in about four weeks and the Systems Engineer reviews all of the initial data. Particular attention is given to the date of establishment of the well, adequacy of its construction, the proximity of any underground disposal facility and observed drainage patterns. If the well was established after July 1, 1965 and is within 50 feet of the right of way or any highway drainage facility, the property owner is advised that the investigation is discontinued because of the ineligibility of the water supply. Should the full analysis results indicate bacteria contamination, the property owner is advised and provided directions outlining the procedure for disinfecting the water supply. Once disinfection is completed and the Department is notified, the technician resamples for bacteria. Once bacteria is cleared, the investigation may continue. If the bacteria contamination persists, the investigation is discontinued. If the full analysis results indicate the presence of nitrates, coliform bacteria or other indications of possible contamination by sewage, the water supply technician will most likely perform a dye test on the next visit. In this procedure dye is flushed into the septic system and another water sample secured 1,2,3 and 7 days later. Should the dye test appear when this sample is examined under the laboratory's fluoremeter, the investigation would be discontinued and the property owner cautioned relative to the septic contamination and the ineligibility of the well (since the salts in septic effluent can contribute chloride ions in the well as can the sodium chloride that is used for deicing the highways).The Department will not assume responsibility for unpotable water supplies. Another cause for discontinuance of the investigation at this point would be low chlorides, say 30 ppm or less,as this is consistent with normal groundwater. New Hampshire Department of Transportation will reopen the investigation at any time that we feel the chlorides have significantly increased.

If the water supply is not disqualified by reason of the foregoing, the technician continues to visit and take samples on approximately a monthly basis--these samples are checked for chlorides only by this Department's lab. The chloride content usually fluctuates with seasonal changes in precipitation and groundwater tables--for this reason we prefer to sample for a period of at least a year (unless there is some obvious cause such as the location of a highway maintenance headquarters or large piles of salt in the immediate neighborhood).

The Department assumes responsibility (on behalf of the state) for a private water supply when the chloride content becomes sustained above 250 ppm, which is the level established by the U.S. Public Health Service's Drinking Water Standards of 1962. (The Department utilizes chloride content as the indicator of effects from the highway since chlorides in natural groundwater normally don't exceed 30-50 ppm. Sodium is not considered as an indicator due to its natural occurrence in groundwater at irregular levels.) The obligation is discharged by one of the means listed in the statute. In the event the obligation is fulfilled by a payment of a damage award, which must have the approval of the Governor and Council, the property owner must sign a release absolving the state of future responsibility for the water supply. In some instances only partial responsibility is assumed on behalf of the state, when it is determined that excessive chloride contamination from highway operations has further lessened the quality of a water supply that is already unsuitable due to other natural causes, such as insufficient quantity, excessive levels of other minerals such as iron and manganese, etc.

In most instances chloride contamination has occurred to old, shallow wells and the corrective action has been the construction of deep drilled well replacements. Such construction is accomplished following the Department's standard contracting procedures, and the work done by private contractors is supervised by the Engineering Technician.