studying the chemistry of the waters, but relatively little attention has been paid to the total hydrologic picture, the total water picture of the problem of surface mining. The Indiana University research results have shown that this phase of the effects of surface mining on the environment is providing many new answers and some of them have been startling ones.

The results of this research have already provided significant contributions to our enjoyment of living, as we have seen in the testimony given the last couple of days and also as is shown in the Department of the Interior's report.

There are three things that I want to stress that can result from the hydrologic aspect of surface mining. One is water supply. We can cite, and I believe one of the witnesses did cite, a city that was receiving a water supply from a blast-cut lake in one of the mining areas in Indiana, I believe this was. In addition there are many unknown cities downstream that are receiving their water supply at low-flow times of the year when the streams are low and this water is bleeding off from the piles of cast-overburden or spoil banks.

We feel that these create a natural man-made ground water acquifier because we have the moutainous areas or the hills of disturbed heterogeneously mixed material that is open and porous. It receives the precipitation and it builds up a ground water mound underneath it and when the streams go dry in the unmined areas late in the summer and the fall this water continues to bleed off into the streambeds and feeds the cities downstream whether they know it or not. They probably don't have cognizance of the fact that this is where their water is coming from, but they have been drinking it for years.

The next point is flood control. Flood control obviously depends upon the physical situation but nevertheless we have found that flood control is very definitely a factor that should be investigated. In a report published a year and a half ago I cited this. This is a report called "A Quarter to Zero," that was published in the Mining Congress Journal and, as I mentioned, the paper that is to be given next week will dwell a little bit more on this particular facet.

The recreational facet of hydrology, of course, is obvious to all of us because even in the arid States of the West, if we do not possess a boat that we can haul on a trailer, now we feel somewhat out of place. Certainly in the Eastern part of the country, where the precipitation is greater and where we normally think of hydrologic problems as being much greater, recreational advantages are just as important.

Certainly, much additional research needs to be done in all of these areas by universities, by industry, and by governmental agencies. With the answers thus produced, we will be able to understand more fully the total effect of surface mining on the environment and to design better ways through which this process can and should be regulated.

In the meantime, awareness of our ignorance of the answers to some of these questions and awareness of the need for acquiring such answers should provide the incentive for us to enact worthwhile legislation such as that embodied in Senate bill 3132, which the Indiana University Water Resources Research Center recommends, subject to the reservations and modifications that I have discussed, dealing with Federal versus State regulations, and with the need to reevaluate