FLUIDS

'We Built an App': Keeping Track of Louisiana's Flood-Tossed Tombs

w = 30 inch

L = 90 inches

B

h

33 inch = total height

Weight of concrete burial vault = 2200 lb.
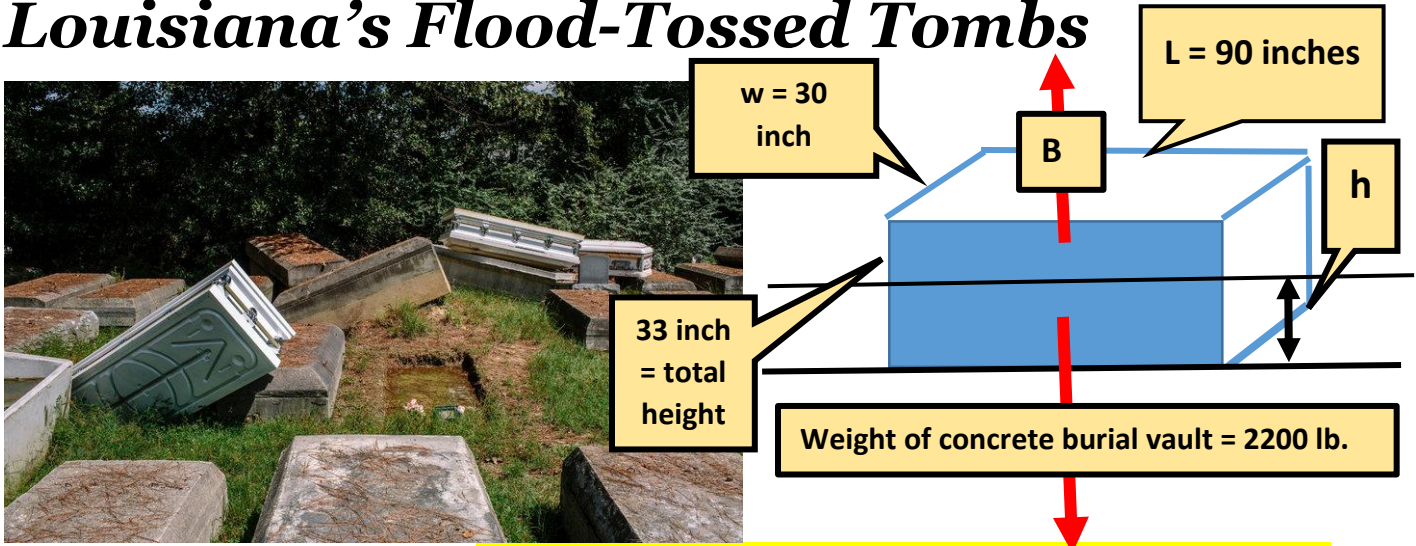
A number of coffins had either been **moved or washed away by floods this year in Denham Springs,**
DENHAM SPRINGS, La. — On a steamy hot afternoon, Arbie Goings was out looking for the itinerant dead.
Mr. Goings, a veteran of disaster mortuary work, has been acting for the past few weeks as a "cemetery recovery consultant" here in the part of Louisiana that saw the worst of recent flooding. **The cemetery here was certainly in need of recovery: coffins were strewn about, floodwater-filled graves sat empty and there was no way to tell which coffin went where.** What possibly lay in store, as Mr. Goings had discovered multiple times over the last decade, were searches through waterlogged funeral home records, wrenching family decisions about the opening of coffins, the dreadful risk of wrong guesses and the prospect that no definite identification could be made at all.

The quickest solution would be to bury the dead six feet deep. But the practice of interring in aboveground vaults — which has nothing to do with a high water table, despite what the tour guides in New Orleans may say — is a tradition that goes back centuries in Louisiana, one that would not be easily given up. In some places where the Gulf of Mexico is encroaching, grave sites have been covered with concrete to keep them from floating away. Some tombs have been tied down with industrial straps.

INTRODUCTION: Purpose of this application is to show that these concrete burial vaults will float when less than 33 inches of water submerges them. Objects are buoyed(B) up by weight(W) of fluid displaced (Archimedes principle). Consider a standard concrete vault to have a weight of 2200 lb.

QUESTIONS: (a) Convert length(L) and width(w) into feet? (b) Find depth (h) of water which would float these concrete burial vaults?

HINTS: 12 inches = 1 foot, density = weight/volume, $\rho = W/V$, ρ (water) = 62.4 lb./ft.^{3} , $W = \rho V$, $B = W$
 $V = L\,w\,h$,

ANSWERS: (a) L = 7.5 ft., w = 2.5 ft., (b) h = ~ 1.88 feet or 22.56 inches, thus the concrete burial vaults would float with 10 inches to spare.