Pre-Engineering Remote Inspection

Scenario:
You and your teammates are the only members of the volunteer police force for your small village of ~50 residents. Early this morning, you received two reports of an odd event that occurred in the middle of the night. The reports came from two homeowners who live right on the edge of the town reservoir.

Both reports describe hearing a loud whistling noise followed by an explosive splashing sound around 3AM coming from the middle of the lake. As the only public officials for your village, your job is to figure out the origins of the occurrence.

Unfortunately, you and your teammates cannot swim. Even if you could swim, the water is deep, extremely cold, murky and moderately toxic because of the abandoned mine that used to dump slag material into the water. So you want to avoid contact with the water as much as possible. Town records state that the lake has a maximum depth of 24 feet at its center where the bottom is relatively flat.

You only have a limited supply of tools since your police force has an annual budget of ~$0. Your team has managed to borrow a small row boat, a 12 foot tape measurer, a flashlight, a knife, 30 feet of PVC pipe, a permanent marker, 33 feet of rope and you found a 20 lbs metal object near the old mine.

In the classroom:
There is a small fish tank filled 8” deep with water to simulate the 24 foot depth of the lake (What scale is this model?). You have a ruler to act as the measuring tape, but you are only allowed to use the 1st 4 inches since your tape measurer is only 12 feet long. As the rope, you will receive an 11 inch piece of string, as the PVC pipe a 10” straw, and as the metal object you will be given a small brass weight. You may use a pen or marker anyway that may be helpful. We are making the assumption that whatever caused the splash, is now at the bottom of the lake.

For the remainder of the class period, you must discuss with your teammates a way to figure out what made the loud splashing. Remember that we are not speculating on *what* is in the lake, but we must determine *how* to find out what is in the lake with the given constraints of the situation. We will interpret the results of our technique to determine what is in the lake.

At the end of class, submit a ½ - 1 page outline detailing how you plan to determine the mystery object. Next class you will use your technique on the scale model.