

## Analog Sonde Locating - On the Job

Please note: These instructions should be considered guidelines, not gospel. Every locating job presents unique challenges, and although most will yield to "textbook" procedures as described here, many will require a creative approach. We strongly advise that you familiarize yourself with the **fundamentals of analog locating**. Armed with this knowledge, you will be able to reason your way through most locating challenges.

We are available to help!  
Don't hesitate to call us at **800-541-9123** if you get stuck.

---

Before starting any locating job, please follow these simple steps. An ounce of preparation here can prevent a ton of embarrassment and lost time.

- **Survey the area** - before turning on any transmitter, turn your receiver on, flip the switch to "Far", and turn the sensitivity all the way up. Walk around the area where you will be locating and check for sources of noise or interference. Buried power lines, nearby computers, other electrical sources can all cause the receiver to respond as though there is a transmitter in the area. Mark any of these "hot spots" so you won't be fooled by them when you're locating.
- **Test your equipment** - put the battery in your transmitter and throw it on the ground, then turn on the receiver and turn up the sensitivity. Be sure you are getting full range out of your equipment. You should be able to walk 12 feet away from a flushable transmitter, 15 feet from a -10 transmitter or 25 feet away from a -20 transmitter and get a signal on the meter (at maximum sensitivity). Anything less than this requires fresh batteries and another run through this test.

You'll be glad you took the time!

---

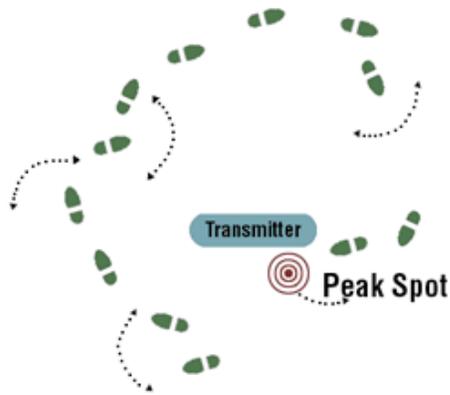
Your best locating success will involve moving the transmitter in small increments. Push it 5 to 10 feet, locate it using all the steps, then repeat this process until you have reached your final locate position. It's easy to be fooled about the route of a line when you can't see it, and you can waste a lot of time retracing your steps if you lose track of the transmitter.

If you are locating a septic tank using a flushable transmitter, follow our flushing guidelines. If the tank is close to the building you should find it pretty quickly. If you suspect it is farther away, and its direction is uncertain, it can be helpful to tie a string or fishing line to the transmitter before flushing it, letting it go only 5 to 10 feet on each flush so you can follow it better.

### Find the Peak Spot

Take the receiver in your hand and turn the sensitivity knob all the way up and flip the toggle switch to "Far". Hold the receiver parallel to the ground at waist height. Walk around the area you expect the transmitter to be in, moving the receiver in an arc, back and forth.





Listen to the strength of the signal and look at the right half of the meter. Try to maintain a meter reading in the middle of the scale (between 0 and peak 4). When it reaches full scale and you are unable to turn it down any further, flip the toggle switch to "Near". As you move closer to the transmitter, continue to maintain a meter reading in the middle of the scale. When you reach what seems to be the maximum signal, and every direction you move from there has a lower signal, you have reached the Peak Spot.

Mark this spot, then move off in another direction and repeat the locating procedure. Keep doing this until you always return to the same spot. You should be able to narrow this rough-in area to within a few inches.

If you're just locating a septic tank, and knowing its depth is not critical, you are ready to dig. The Peak Spot you have marked is directly above the transmitter, near the inlet baffle. Also be aware that if the transmitter is turning in the tank, it is virtually impossible to determine its depth.

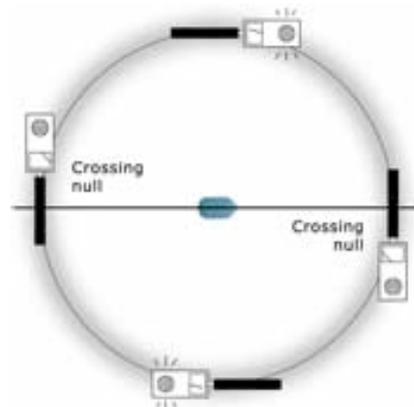
If you need to know the lay of the line or the depth of the line, read on.

## Determine the Lay of the Line

Before you can determine the depth of your transmitter, you must establish the lay of the line. **Do not skip this step!**

Step 4 or 5 feet away from the Peak Spot you marked. Hold the receiver straight in front of you at waist height, as before, but don't wave it back and forth, just hold it straight. Adjust the sensitivity so that the meter reads about the middle of the scale. Walk in a circle around the Peak Spot, keeping your inside shoulder pointing at the Peak Spot. This would be called a "pylon turn" if you were flying an airplane.

As you walk the circle slowly, watch the meter and listen to the sound. At two distinct points in the circle, the signal strength will suddenly drop, then come back up as you move further. These are "null" points. Take the time to precisely determine these points, and mark them (the point is directly below the center of the rod). You will find that they are directly across the circle from each other, and describe a line that passes right through the peak area.



You have just identified the two "Crossing Nulls", and the line between them indicates the lay of the line the transmitter is in. Technically, we can only be sure that this line is parallel to the axis of the transmitter, but it is usually safe to assume that the transmitter is parallel to the line at that point, and we will assume for the moment that the line is running straight through that point, along the line of the Crossing Nulls.

If you are in the middle of pushing the transmitter 5 or 10 feet at a time and don't need to know the depth yet, it's time to push it another 5 or 10 feet, with a good general idea of which direction it is heading. If it takes a bend, you'll still have a good idea of where to look for it.

## Determine the Precise Depth

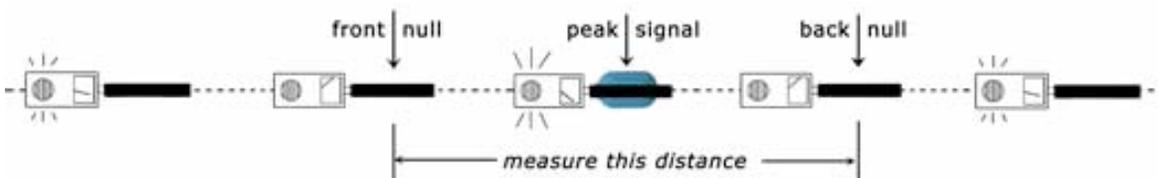
When you have reached the final point of your transmitter's travel and have carefully established the Crossing Nulls and marked them, as above, you are ready to determine the depth. Walk away from the transmitter along the line that goes through the Crossing Nulls. Walk from the center out to the maximum range of the transmitter, with the sensitivity all the way up in the "far" position. When in doubt, walk further away. Hold the receiver level straight in front of you, at waist height, heading toward the Peak Spot, and increase the sensitivity until you have a signal around center scale on the meter.



Bend down so that the receiver is close to and parallel to the ground, and walk slowly toward the Peak Spot along the line between the Crossing Nulls. Adjust the sensitivity as you go so that the meter stays around center scale (switch between "Far" and "Near" positions as needed). At some point before you reach the Peak Spot, you will notice a sudden signal drop-off. This is called the "Front Null", and you should mark it carefully. Confirm it by backing up a few feet and approaching the spot again.

Continue walking, with the receiver straight in front of you and close to the ground, toward the other Crossing Null marker. As you pass over the Peak Spot on your way there, you will encounter the peak signal. Keep moving in the same direction (adjusting the sensitivity to keep the meter needle in the center), and you will find another sudden signal drop-off. This is the "Back Null", and it should be about the same distance from the Peak Spot as the Front Null was. Mark this spot also.

Now you can determine the depth. Simply measure the distance between the Front Null and Back Null and multiply by 0.7. It's that simple.



To pinpoint the exact location of the transmitter, find the Center Null. This is done by walking back along the line between the Front and Back Nulls, toward the Peak Spot, with the receiver rod pointing straight down. When you cross over the center of the transmitter, you will find another sudden signal drop-off, which is the Center Null. The transmitter is directly below this point. Call in the backhoe (or hand your helper the shovel if it's not that deep) and go to lunch!

---

When in doubt, give us a call! **1-800-541-9123**

---