



# LOCATING 202

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COMMON MISTAKES AND MISCONCEPTIONS WHEN LOCATING SUBSURFACE UTILITIES

PRESENTED BY JEREMY SUMMERVILLE M.S.

STAKING UNIVERSITY CERTIFIED UTILITY LOCATOR

# PRECISION LASER & INSTRUMENT INC.



**SALES**



**TRAINING**



**SERVICE**

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# OUR PARTNERS IN LOCATING

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# PRESENTATION OUTLINE

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- FERROUS METAL LOCATORS VS METAL DETECTORS
- FERROUS METAL LOCATOR BEST PRACTICES
- PIPE AND CABLE LOCATOR FREQUENCIES
- PIPE AND CABLE LOCATOR BEST PRACTICES
- KNOWING WHEN TO MARK (OR NOT MARK)

# FERROUS METAL LOCATOR VS METAL DETECTOR

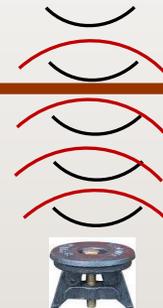
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TYPE: RECEIVER  
DEPTH: UP TO 10'  
VERY LITTLE POWER  
CONSUMPTION



TYPE: TRANSMITTER  
+ RECEIVER  
DEPTH: UP TO 3-4'  
HIGH POWER  
CONSUMPTION



# FERROUS METAL DETECTOR DEPTH

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## FACTORS

- SIZE OF TARGET
- DEPTH OF TARGET
- CALIBRATION OF SENSORS
- DISTANCE BETWEEN SENSORS
- TARGET MATERIAL (STEEL, IRON, GALVANIZED)

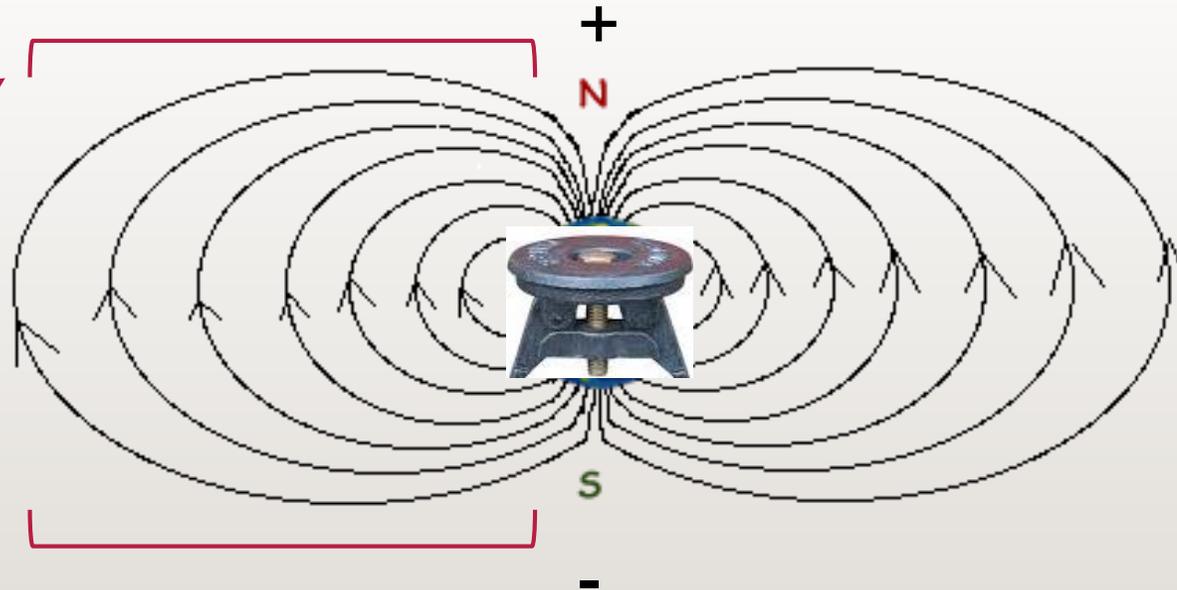
## NON-FACTORS

- SOIL COMPOSITION
- WATER CONTENT

# MAGNETIC FIELD POLARITY

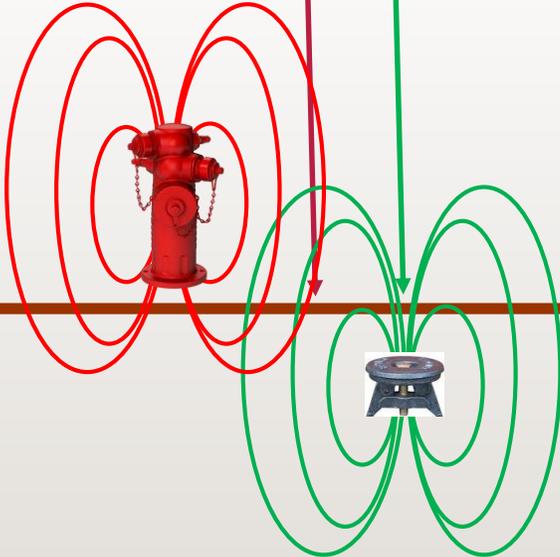
- PRO GRADE FERROUS METAL DETECTORS SENSE POLARITY

A GOOD  
DETECTOR  
SHOULD NOT  
PICK THIS UP!



# CONGESTED VALVE LOCATE

POLARITY SWITCH FIRST HIT



# PIPE AND CABLE LOCATOR

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- WHAT CAN IT LOCATE?
- CHOOSING THE CORRECT FREQUENCY
- CHOOSING THE CORRECT POWER OUTPUT
- CONDUCTIVE VS INDUCTIVE
- PLACEMENT OF GROUND

# WHAT CAN MY PIPE AND CABLE LOCATOR FIND?

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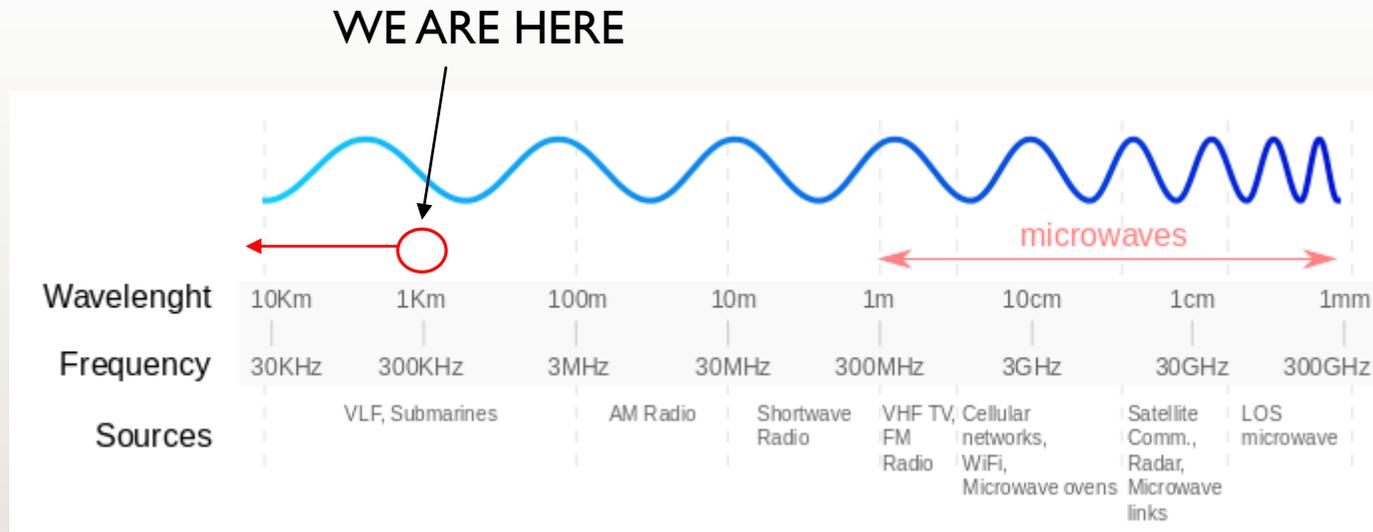
THE ONE MAIN FACTOR WITH ALL PIPE AND CABLE LOCATORS IS...

THE LINE BEING TRACED HAS TO CONTAIN **CONSISTENT METAL**

AND YES, COPPER IS A METAL AND CAN BE TRACED USING A P&C LOCATOR.



# PIPE AND CABLE LOCATOR FREQUENCIES



# FREQUENCY CHARACTERISTICS

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LOWEST

HIGHEST



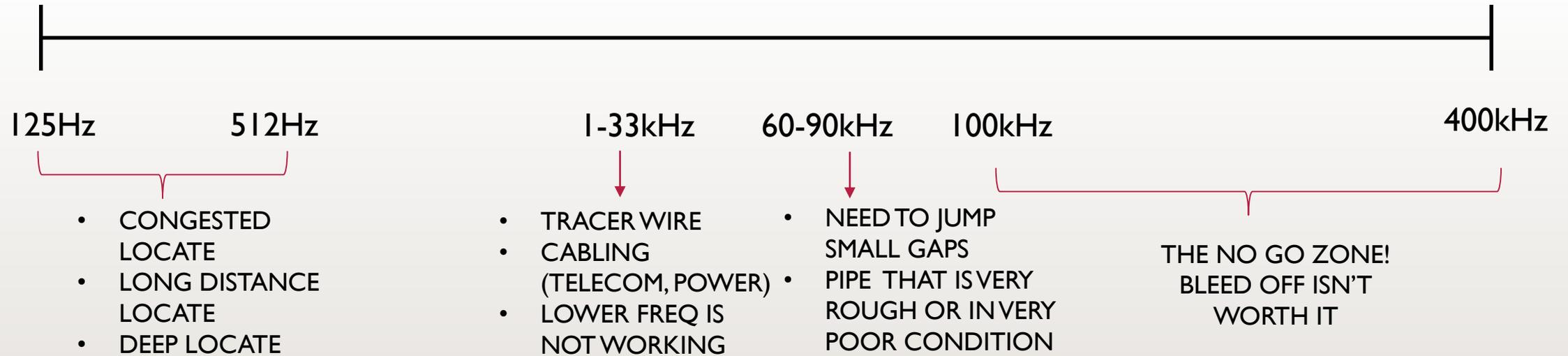
125Hz

400kHz

- LESS BLEED OFF
- LOWER POWER CONSUMPTION
- GREATEST LOCATE DISTANCE
- WEAK SIGNAL
- CANNOT PASS OVER GAPS OR MAKE BENDS WELL

- MORE BLEED OFF
- GREATER POWER CONSUMPTION
- SHORTER LOCATE DISTANCE
- STRONG SIGNAL
- HIGH FREQ CAN JUMP SMALL GAPS OR MAKE BENDS

# CHOOSING THE CORRECT FREQUENCY



# CHOOSING THE CORRECT FREQUENCY

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- IF UNSURE START LOW AND WORK HIGHER
- NEVER START THE LOCATE IN A HIGH FREQUENCY
- REMEMBER THAT HIGHER FREQ = MORE BLEED OFF
- KNOW YOUR LOCATE AND CHOOSE THE APPROPRIATE FREQ.

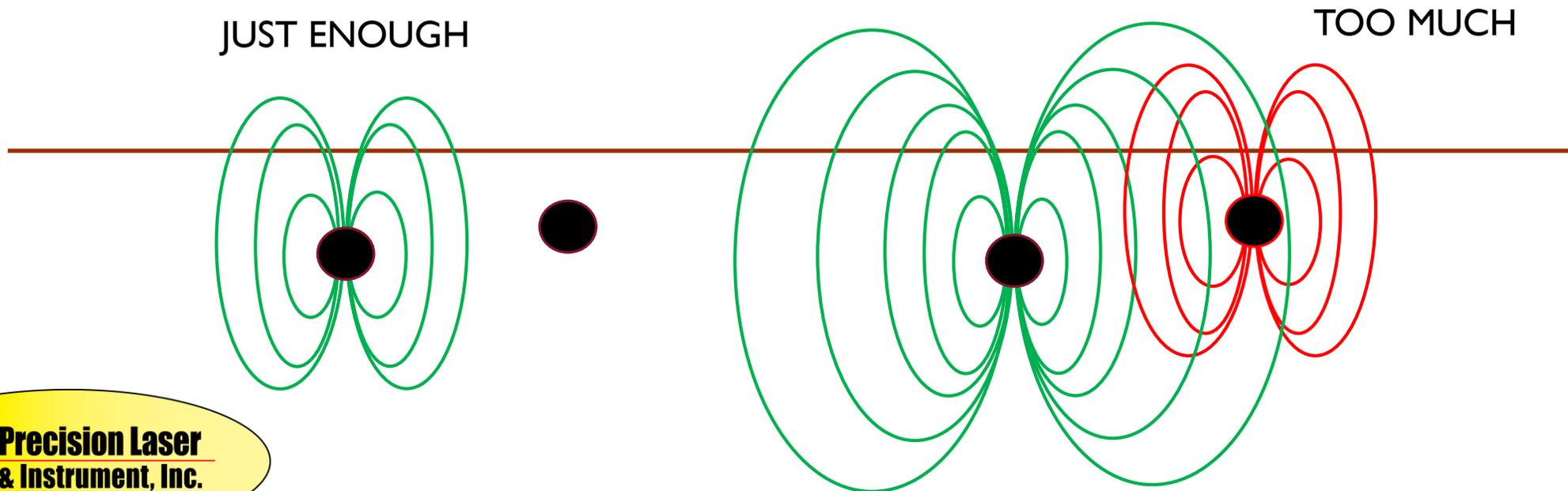
# CHOOSING THE CORRECT POWER OUTPUT

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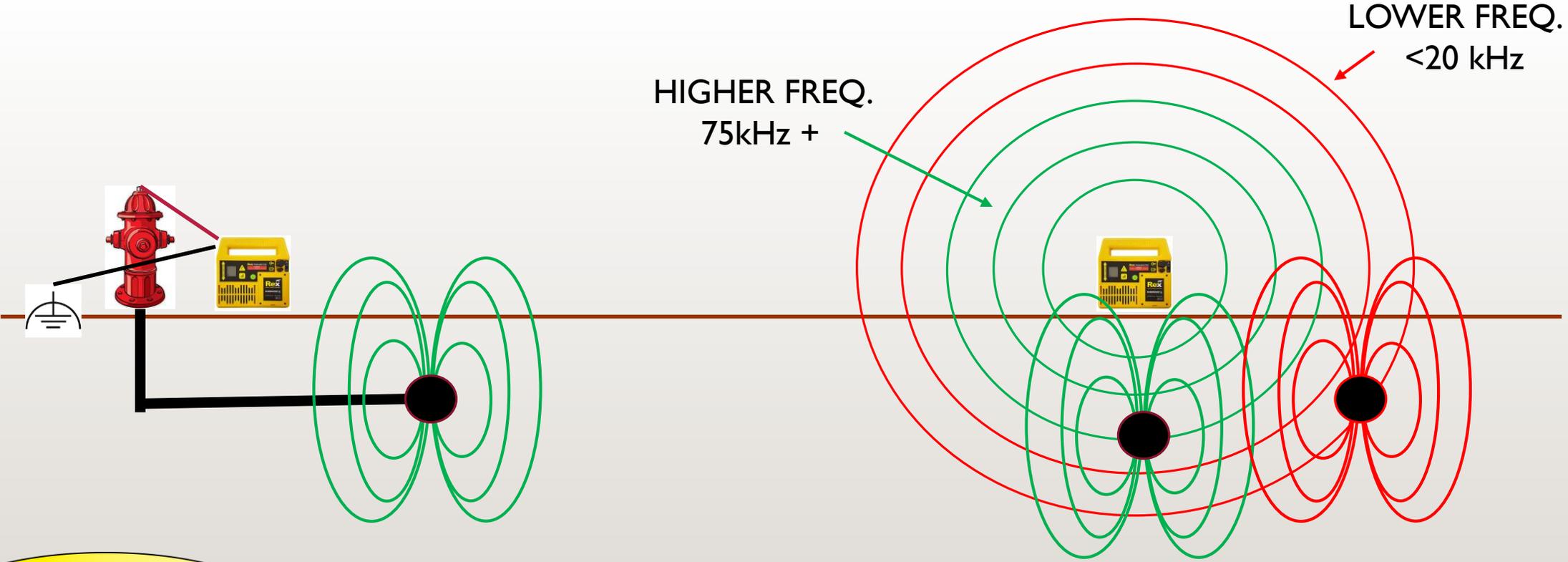
- START AT THE LOWEST OUTPUT
- INCREASE POWER IF YOU:
  - EXCEED OUTPUT DISTANCE OF LOWER POWER OUTPUT
  - EXCEED DEPTH CAPABILITY OF LOWER POWER OUTPUT
  - NEED TO JUMP SMALL GAPS IN THE LINE
- KEEP IN MIND...INCREASING POWER WILL INCREASE BLEED OFF

# FREQUENCY AND POWER

- THE BEST PRACTICE... START LOW AND WORK HIGHER AS NEEDED
- POWER SHOULD ALWAYS BE INCREASED BEFORE FREQUENCY
- LIMIT FREQUENCY AND POWER TO ONLY WHAT IS NEEDED



# CONDUCTIVE VS INDUCTIVE



# EASIER DOES NOT MEAN CORRECT

DON'T BE THAT GUY (OR GIRL)

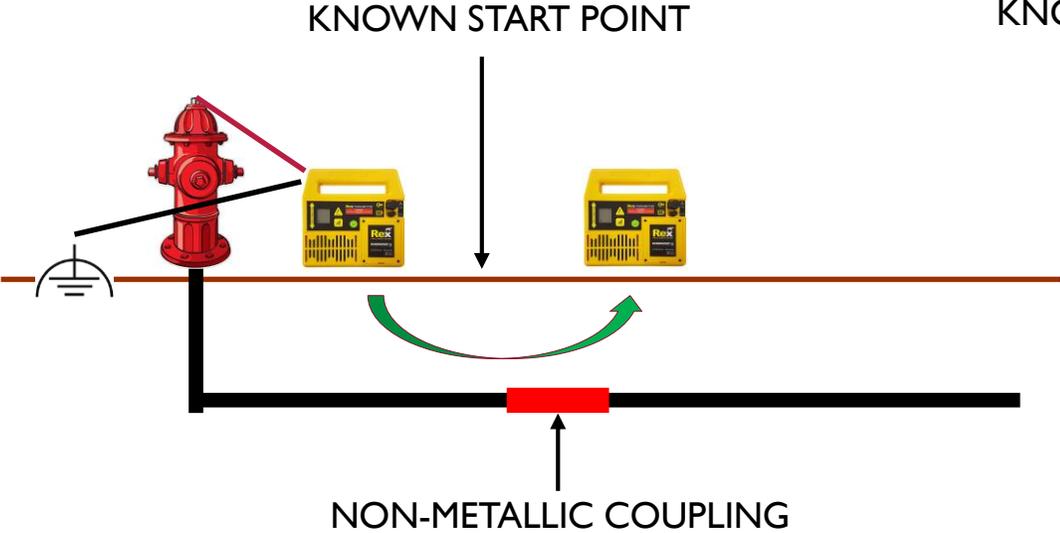
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- INDUCTIVE IS EASIER, BUT FAR FROM THE BEST
- ALWAYS USE INDUCTIVE AS A LAST RESORT
- HAVE A KNOWN START POINT
- USE HIGHER FREQUENCIES

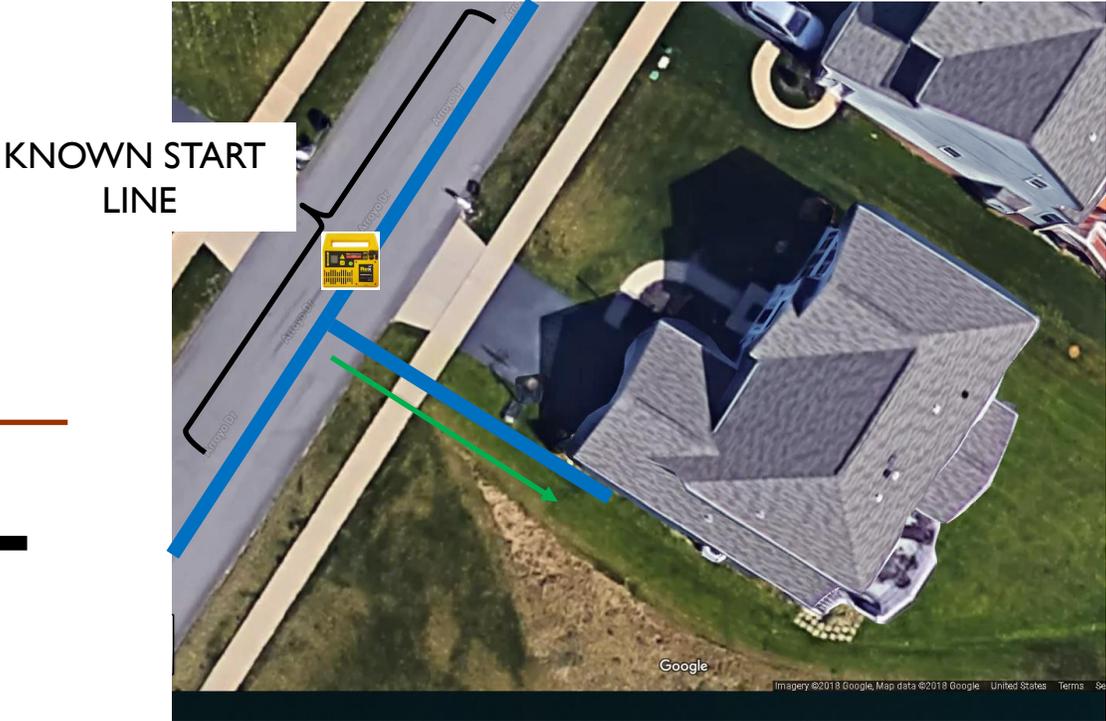


# WHEN TO USE INDUCTIVE

KNOWN POINT SOURCE



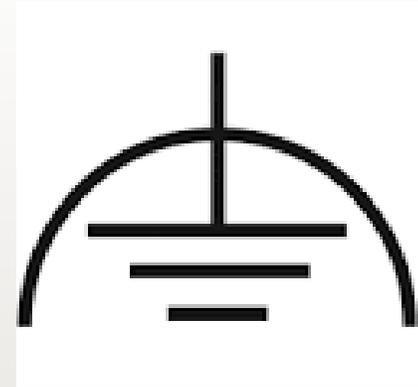
KNOWN LINE SOURCE



# GROUNDING

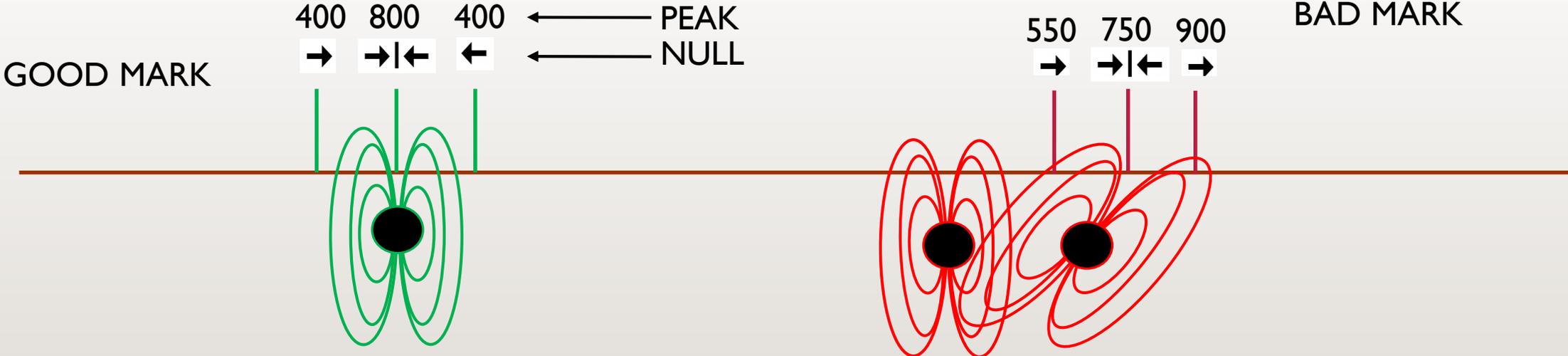
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- METAL TO BARE EARTH
- MORE CONTACT = BETTER GROUND
- 90 DEGREE RULE
- DO NOT CROSS OTHER UTILITIES WITH GROUND
- YOU CAN GROUND IN LINE



# TO MARK OR NOT TO MARK?

## PEAK VS NULL TEST



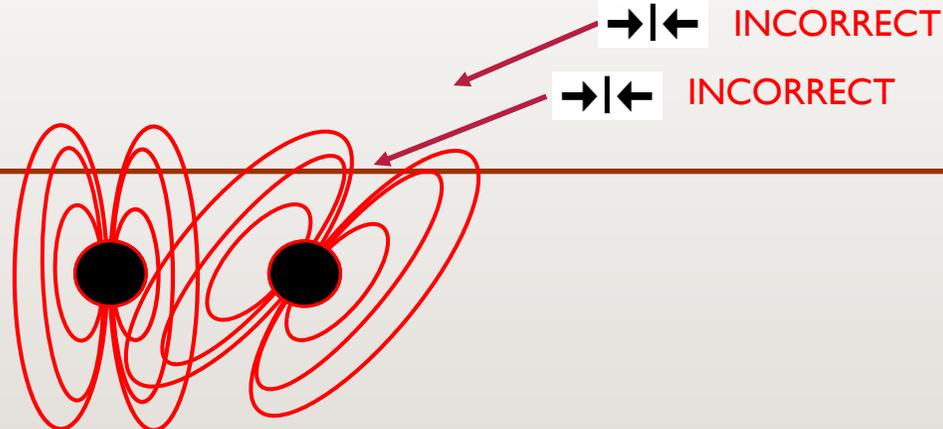
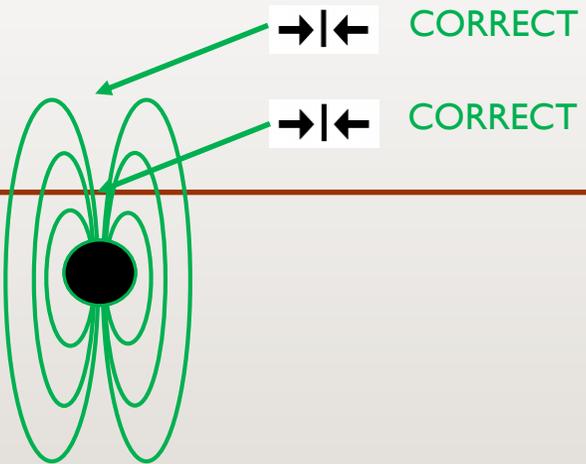
# TO MARK OR NOT TO MARK?

## NULL TEST

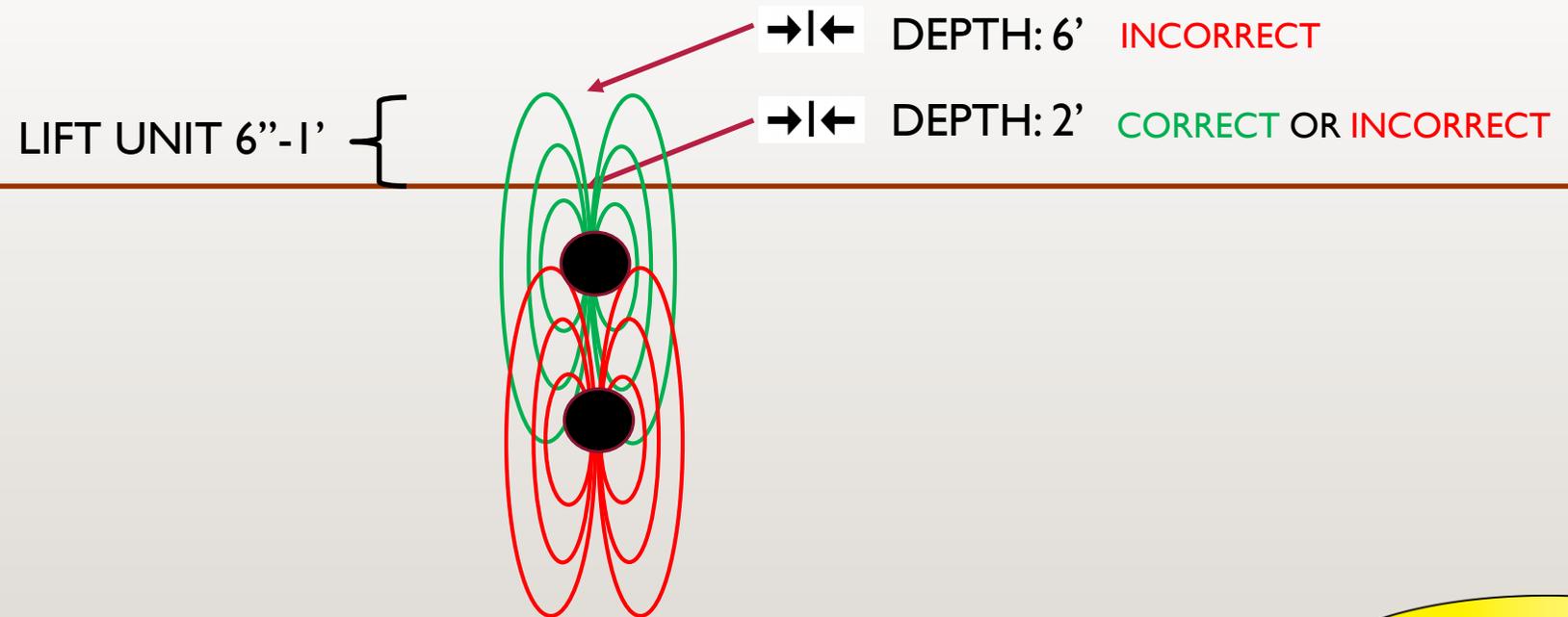
GOOD MARK

BAD MARK

LIFT UNIT 6"-1'



# DEPTH TEST



# DETECTING NON-METALLIC UTILITIES

## PERSONAL DISLIKES



Voodoo Magic

Nobody Knows



Sewerin  
Stopper

Accoustic



Sensit  
Ultra Trac

Accoustic



Sewerin  
Combiphon

Accoustic



Jameson:  
Puncture  
Duct Rodder

Radio Freq.



Subsurface  
Instruments  
AML Pro

Radio Freq.

Method:

# DETECTING NON-METALLIC UTILITIES

## MY GO TO OPTIONS



LeicaDS2000  
GPR Cart



GSSI Utility Scan Pro  
GPR Cart



US Radar Quantum  
GPR Cart



Subsurface Instruments  
LD-18

Method:

Multi-frequency  
radio signal.  
Density analysis

Partially shut  
main line valve.  
Acoustic  
reverberation

# CONTACT INFORMATION

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