

Unexpected Setbacks When Excavating - Using GPR For Mitigation: A Case Study

GPR Data Collection:

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Whether constructing on a brand new site or rebuilding on an existing site, there is a possibility of unexpected objects when excavating. With today's technology in Ground Penetrating Radar (GPR), we can adequately mitigate the risk associated with such objects before excavating proceeds. GPR is geophysical method that uses radar pulses to image the subsurface. This method can identify a variety of media including rock, soil, ice, water, structures, utilities and sewer systems. This case study covers the importance of GPR in underground mapping and ways to implement GPR. The case study is on Whiting-Turner's construction of Stanford University's new ChEM-H Building. Chem-H was unique in that there was many underground utilities that required precise verification and I believe that the use of GPR would've been the optimal option for Whiting-Turner to identify and locate the underground utilities.

Key Words: GPR, Excavation, Construction, Radar, Utilities, Surveying

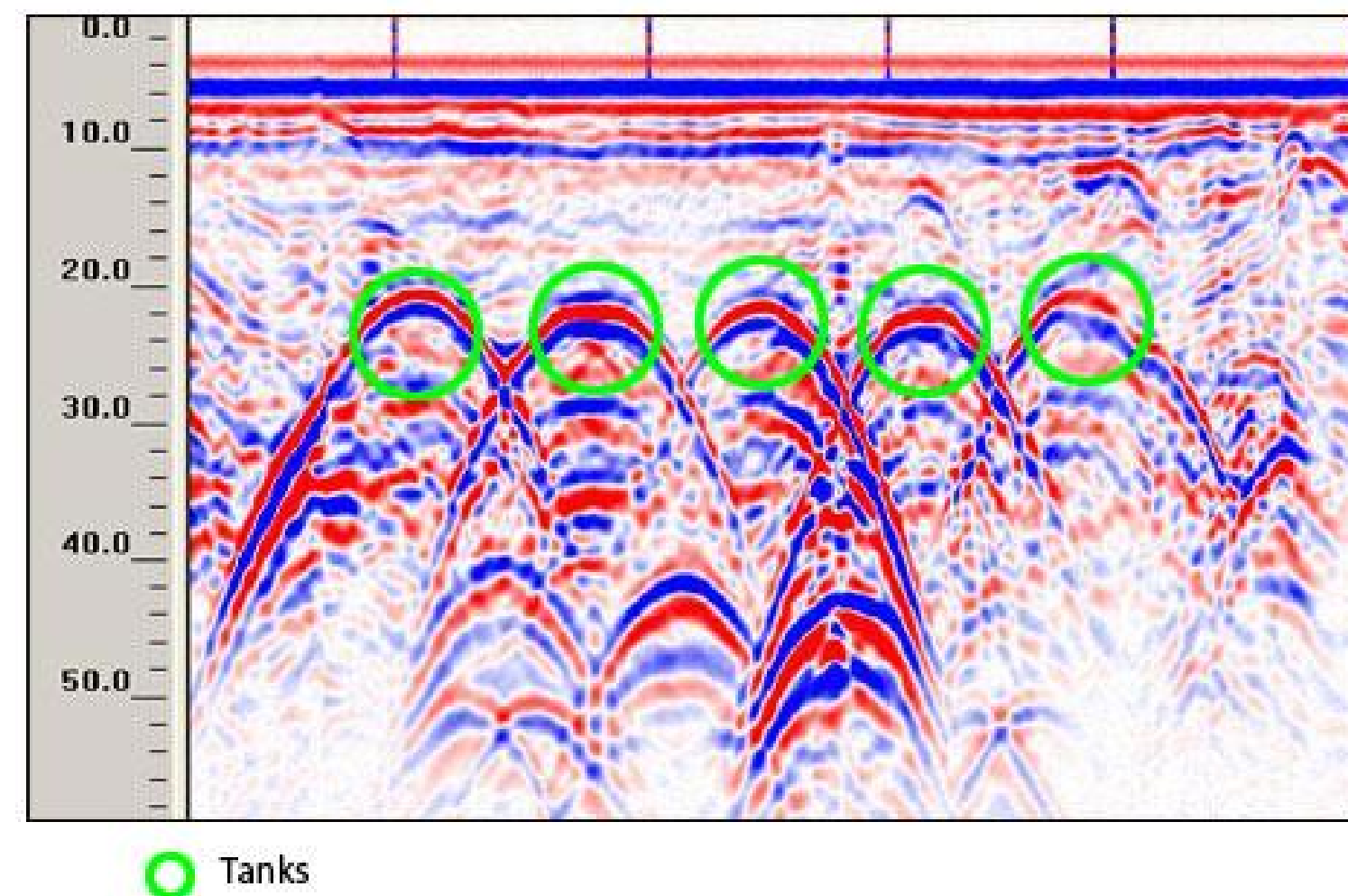


Figure 1: Example of GPR scan showing water tank locations below grade

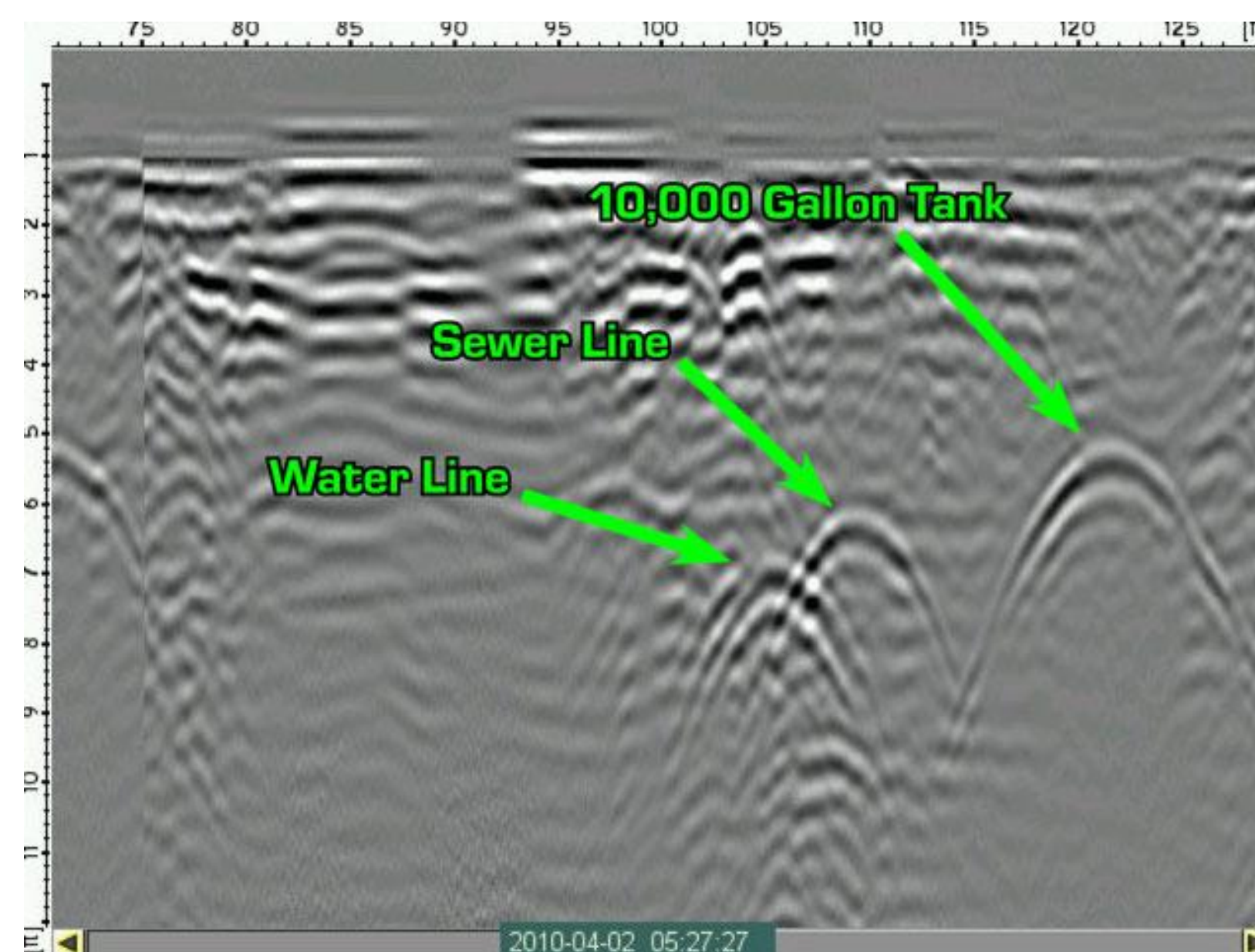


Figure 3: Example of GPR data used to locate utilities

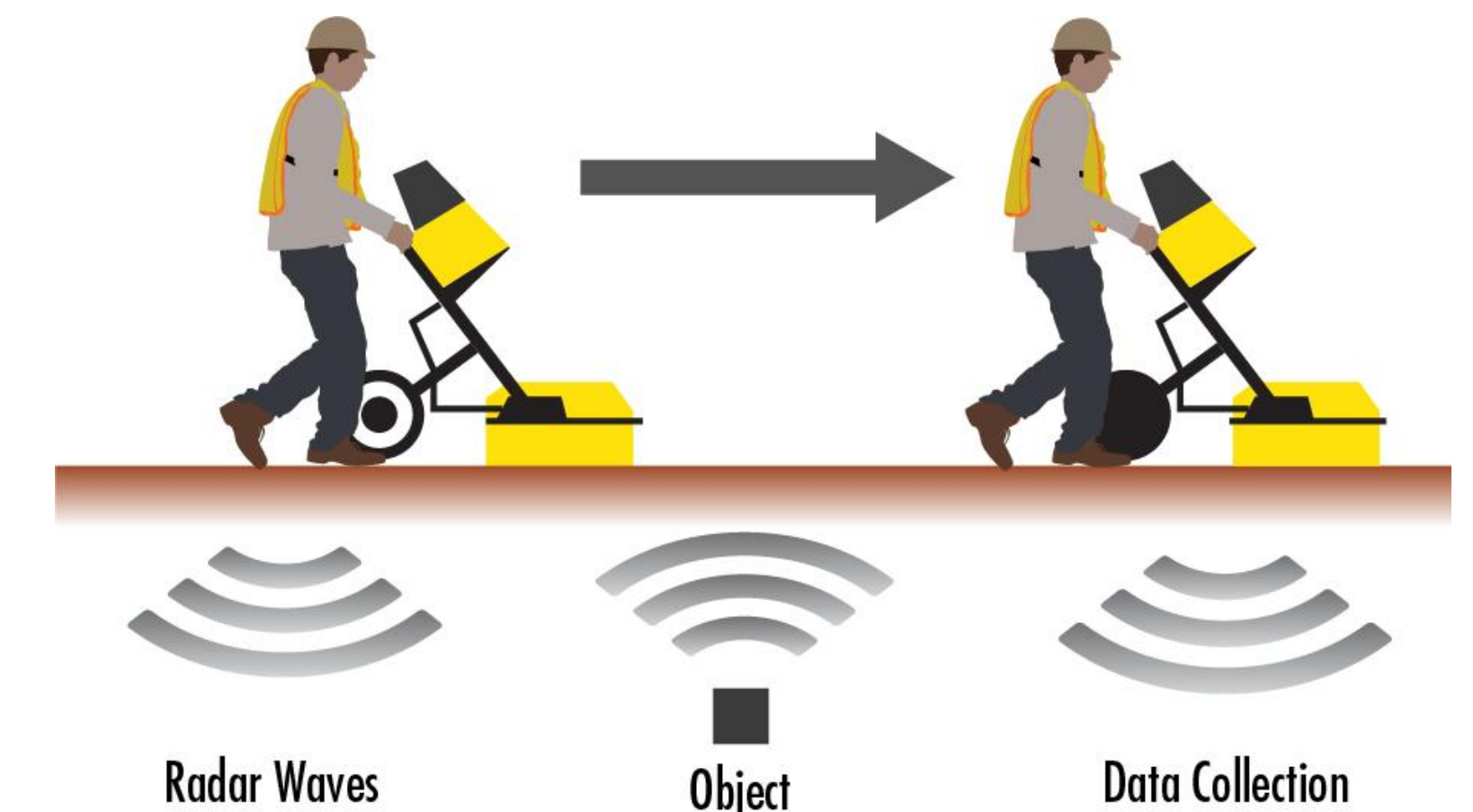


Figure 2: Example of GPR Procedure



Figure 4: Arrow showing Large Ice Tank on ChEM-H site

Construction Applications of GPR

Concrete Inspections
Locating Subsurface Materials
Post Tension Cabling
Rebar
Conduit
Plumbing
Reinforcing Steel

Voids
Locating Utilities
Gas Lines
Communication Lines
Electrical Lines
Water/Sewer
Subsurface Material Detection

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