

### GPR Systems for Geophysics and Environmental Assessment



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### GPR FOR GEOPHYSICS & ENVIRONMENTAL ASSESSMENT

Geologic and environmental investigations are integral in determining the geology of any work site. Ground Penetrating Radar (GPR) remains one of the safest, quickest, and highest resolution survey options available for non-destructive subsurface exploration.

Researchers and professionals have been using GPR for geophysical investigation for nearly a century and the applications are seemingly endless. From depth to bedrock, ground water exploration, and ice and snow investigation to geomorphology, bathymetry, stratigraphy and sedimentation, structural investigation (along with geohazards), and prospecting, GSSI offers a wide range of antenna frequencies with never before seen depth penetration and data quality.

GSSI began as a geophysical company in 1970 and we continue to produce GPR products for the geophysical market that make exploration and investigation easier.





### **GEOLOGY & GEOPHYSICS**

Ground penetrating radar (GPR) offers an accurate, non-destructive solution to mapping the subsurface of the earth. With GSSI GPR antennas, it is simple to locate features of interest and subsurface layers in real time, up to 100 feet or more.

RECOMMEN EQUIPMENT	DED -	TYPICAL USES
SIR 4000	100 MHz*	Bathymetry, Sinkholes
	200 HS	Bathymetry, Sinkholes
	3200 MLF*	Bedrock Profiling, Stratigraphy, Ground Water Exploration

\* Not sold in USA



### **BEDROCK PROFILING**

Ground penetrating radar can be used for depth to bedrock investigations under favorable soil conditions. When applicable, GPR is a fast and inexpensive survey solution to visualize bedrock depth for initial investigations. Further investigations can provide the correlation between geomorphologic variability and bedrock characteristics.

**Example:** GPR data shows steeply dipping bedrock fracture sets within metamorphic bedrock.



### **GROUND WATER EXPLORATION**

Ground penetrating radar makes data collection easier from overburden conditions, placer exploration, boundaries of highly conductive aquifers, and other factors that control groundwater flow. GPR is also an effective tool for water table mapping and determining bedrock fracture sets that contain water.

**EXAMPLE:** This data illustrates a well-defined water table. Surface elevation has been corrected using topographic data in RADAN 7. Data was collected with SIR 4000 and 200 MHz antenna.



### BATHYMETRY

Ground penetrating radar is an effective tool in freshwater investigations including water column investigations, water depths, water bed and bottom mapping, and even sub bottom structures under ideal conditions with several deployment apparatuses.

**EXAMPLE:** 2D data set collected down a river with GPS positioning in Vermont USA. This data was collected with a SIR 4000 by placing a 200 MHz antenna in a raft alongside a power boat. Data is shown in RADAN 7.



### STRATIGRAPHY AND SEDIMENTATION

GPR is an ideal tool for characterizing subsurface stratigraphic features such as sandbar structures, historical river channels, depth of overburden and vertical and lateral lithological variations, just to name a few.

**EXAMPLE:** Data illustrates numerous glacial fluvial depositional features. Data set was collected in the McMurdo Dry Valleys in Antarctica.



### SINKHOLES

Sinkhole investigation is a popular application for GPR and is used extensively in karst regions around the world. GPR can quickly and accurately determine the lateral extent of karst features.

**EXAMPLE:** Data shows a sinkhole structure that was collected with a SIR 4000 and a 350HS antenna. The feature located on the bottom left is the throat of the sinkhole which shows downwarping of soils that lay just above the feature. This downwarping indicates that the layer above is broken and that the soils are filtering into the throat.



### ICE & SNOW INVESTIGATIONS

One of the original uses of GPR technology was to evaluate ice thickness and boundary conditions in ice flow models. Modeling ice flow, snowpack/seasonal snow depth, internal stratigraphy, and snow water equivalent investigations are now streamlined and straightforward with the use of enhanced technological features that provide increased depth penetration and higher-resolution data.

RECOM EQUI	IMENDED PMENT	APPLICATION
SIR 4000	100 MHz*	Glaciology studies
	350 HS	Ice roads, Snow depth monitoring
	900 MHz	Ice roads, Snow depth monitoring
	3200 MLF*	Glaciology studies

\* Not sold in USA



### **GLACIOLOGY STUDIES**

Research scientists use ground penetrating radar to study the internal structure of glaciers. The properties of ice allow for large penetration depths while producing strikingly high-resolution data sets of glacial ice. GSSI has taught researchers in Antarctica how to use GPR equipment for ice and snow investigations since the early 1970s.

**EXAMPLE:** Data was collected with a 40 MHz GSSI MLF antenna on a glacier in McKinley, Alaska USA. The data shows a clearly defined bedrock horizon at 200 meters deep.



### MINING

GPR is the most accurate and efficient method used to gather high-resolution images of the subsurface, making it the perfect tool for the mining industry. Mining professionals worldwide rely on GSSI's technology to aid them in mining safety, salt mining, sand and gravel mapping, rock quality, and mineral exploration.

RECOMMENDED EQUIPMENT		
Controllers	Antennas	
SIR 4000	100 MHz*	
	200 HS	
	3200 MLF*	

\* Not sold in USA



### MINE SAFETY

Mining professionals use ground penetrating radar to accurately locate underground structures before drilling, blasting or carrying face operations. GPR is instrumental in helping to identify overhead separations in order to prevent ceiling collapses. In deep mine applications, GPR is invaluable for identifying geologic features that may be potential areas for rock bursts, such as fractures, shear zones and faults.





**EXAMPLE:** Data illustrates a clearly defined salt shale boundary in a Central United States salt mine. This data example was collected with a 400 MHz antenna.

## STRUCTURAL INVESTIGATIONS

Ground Penetrating Radar is a very effective tool in the delineation of rock fabric, detecting voids, depth of compaction, and identifying karst features and sinkholes in the subsurface. Dam investigations can provide information on sediment build up, rip rap monitoring, and leak and void detection.

RECOMMENDED EQUIPMENT LOW FREQUENCY SURVEYS			
CONTROL UNIT		ANTENNA	
SIR 4000	3200 MLF*	400 MHz	200 HS
	100 MHz*		350 HS

\* Not sold in USA

RECOMMENDED EQUIPMENT HIGH FREQUENCY SURVEYS		
CONTROL UNIT ANTENNA		
2600 MHz	300/800 DF	
1600 MHz	900 MHz	
Integrated 26	600 MHz	
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### DAM SAFETY

GPR is one of the many effective geophysical tools for investigating voids, fissures, and fractures in dam infrastructure. GPR offers a way to non-destructively test and investigate defects within concrete or earthen dam structures like spillways, rip rap, buttresses, etc. These defects or deformations can occur because of water saturation, erosion, water load, or any number of engineering faults which can put human life in danger.



**EXAMPLE:** Post-processed GPR data (left) shows areas of possible voids. This data example was collected with the StructureScan Mini XT.



Cua Dat Irrigation Dam is one of the largest irrigation dams in Vietnam. A concrete inspection survey was conducted by the Department of Geophysical Application Research - Institute of Ecology and Works Protection. The scope of this survey was to scan the entire surface of the dam, and the work was conducted over the course of several years. Some of the work could only be done when the water in the Reservoir dropped to levels that provided access to the surface of the dam usually covered by water.



### **ENVIRONMENTAL ASSESSMENT**

Ground penetrating radar can be used to detect building foundations, voids, and structural integrity in subgrade. In environmental remediation, GPR is used to define landfills, contaminant plumes, and other remediation sites with long-term geotechnical installations and other mitigative monitoring.

TYP	USES:

- Site Assessment
- Landfill Delineation
- Underground Storage Tanks (USTs) and Drums

RECOMMENDE	
SIR 4000	200 HS
UtilityScan	350 HS



### UNDERGROUND STORAGE TANKS & DRUMS

Civil engineers, environmental consultants and environmental remediation specialists use GPR to locate the position and impact of underground storage tanks.

**EXAMPLE:** Data collected with the UtilityScan system (350 MHz) at a gas station in the Northeastern United States. Data shows multiple gas tanks located under a concrete slab.





# AGRICULTURE & FORESTRY

GPR can be used for many different applications in the agriculture and forestry industries. A few common applications include imaging root systems, locating drainage tiles, and surveying underground drainage structures on golf courses.

In addition to our commercial systems, we have a history of creating custom solutions for our research partners.

RECOMMENDED EQUIPMENT		
SIR 4000	200 HS	
UtilityScan	350 HS	
	900 MHz	



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### **DRAINAGE TILES**

Locating farm drainage networks is typically a difficult and time-consuming task. The traditional solution was to dig or probe to find the position of drainage tiles. Ground penetrating radar provides a faster and more accurate survey method to locate and map drainage tiles.

**EXAMPLE:** Data illustrates a drainage tile shown as a 2D profile and 3D plan view map. Data was collected with a 400 MHz antenna.





### **INVASIVE SPECIES** MONITORING

Ground Penetrating Radar can provide a cross-sectional profile of the subsurface and stratigraphy in any suitable environment. With higher frequency antennas, animal burrows can easily be detected using 2D or 3D grids to map invasive or pest species. The effective application of GPR for high-resolution definition of soil stratigraphy and disturbances in soil is made even easier with the GSSI higher frequency HyperStacking antennas.

RECOMMENDED EQUIPMENT		
SIR 4000	200 HS	
UtilityScan	350 HS	
	900 MHz	



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### ANIMAL BURROWS

GPR is used in biological investigations as a non-invasive and non-destructive technique. Geophysical mapping of features such as insects nests and turtle burrows has proved valuable for the understanding of these subsurface systems for ecological, environmental, or engineering purposes.

**EXAMPLE:** This turtle nest was closely monitored using a 900 MHz antenna to ensure it was not disturbed.





# **FUNNE**



GPR has seen increasing use by global security for the detection and monitoring of clandestine tunnels under national borders and other sensitive areas. The key benefit of using GPR for tunnel detection is that the technology quickly produces visual records that can be effective in monitoring at-risk areas and identifying the presence of new subterranean structures.

RECOMMENDED EQUIPMENT		
SIR 4000	100 MHz*	
	200HS	
	200HS	

\* Not sold in USA



**EXAMPLE:** The data example was collected on an international border and shows a clear example of how a user can differentiate a hand dug tunnel from a drainage pipe. The right target shows a high amplitude hyperbolic target. The left target shows a low amplitude hyperbolic feature with a flat top. The picture on the left represents the low amplitude flat top hyperbolic feature.







### RUGGED, HIGH-PERFORMANCE GPR CONTROLLER

The SIR<sup>®</sup> 4000 is GSSI's professional-grade, rugged (IP65) control unit that is designed to interface with both digital and analog antennas. The SIR 4000 works seamlessly with most GSSI antennas and can be used in numerous applications including; glacial ice surveys, identifying animal burrows, and mapping glacial fluvial deposits.

NUMBER OF CHANNELS One	ANTENNA OPTIONS Compatible with most GSSI digital and analog antennas
WEIGHT 4.5 kg (10 lbs)	STORAGE CAPACITY 32 GB
OPTIONAL SOFTWARE RADAN 7	ACCESSORIES SIR 4000 carry harness

#### The SIR 4000 Advantage

The SIR 4000 offers a multitude of data collection modules including Quick 3D, StructureScan and Expert Mode. The SIR 4000 also provides a simple user interface, plugand-play GPS integration, and convenient data transfer options.

GPS integration is hassle-free through a serial port connection, allowing GPSenabled collection along simple or complex tracklines. The user interface is easy to navigate while still providing powerful in-field filtering options to maximize data interpretation. The SIR 4000 records raw, unfiltered data as well as display parameters, which makes evaluating pre-processed field data easier. Alternatively, users can postprocess data from scratch.

### SIR 4000 FEATURES

### Modular Design, Flexible Solutions

Field scientists know that unpredictable site locations are part of the work. To acquire the best data possible, they need reliable, powerful, and user-friendly GPR equipment. The SIR 4000, combined with GSSI antennas and numerous cart and survey wheel options, meet and exceed these requirements.

### **TYPICAL USES**

**Bedrock Profiling** 

Sinkhole Areas

Water Table Mapping

Bathymetry

Mine Safety

**Crevasse Detection** 

Environmental Assessment

#### FCC, RSS-220 and CE Certified

#### Accurate and Reliable Performance

The SIR 4000 offers unique collection modules including Expert Mode (analog antennas), Digital 2D (digital antennas), Quick 3D (analog antennas), and Digital 3D (digital antennas). Whether you want single or gridded 2D profiles (Expert Mode, Digital 2D), or effortless 3D field collection (Quick 3D, Digital 3D), the SIR 4000 is the ideal solution for efficient data collection and visualization.

#### **Premier Software Features**

The SIR 4000 incorporates advanced display methods and filtering capabilities for in-the-field processing. These include an intuitive Manual Gain process (for optimizing data display) and on-screen linear gain, high-and-low pass frequency filtering, and background removal. You'll also have access to a multitude of collection parameters including scans/unit, time and depth range, and dielectric constant. The SIR 4000 includes a real-time hyperbolic matching feature so you can quickly and accurately calculate soil dielectric in the field.

### DATA VISUALIZATION

**EXAMPLE:** Stratigraphic analysis of fluvial deposits in Northeastern United States. Data collected with SIR 4000 and 200 HS antenna.



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### INNOVATIVE WIRELESS, RUGGED SYSTEM

The GS System is our next-generation high-performance, purpose-built GPR system designed for applications that require deeper depth penetration. This system features a modular design that allows the user to select which controller best suits their needs; the rugged SIR 4000, combined with our new WiFi module, or the Panasonic Toughpad G2 Tablet with a custom user interface. Both controllers will be connected to the digital, wireless antenna via the HS Module. The HS Module incorporates system electronics, an internal GPS, and connectivity ports via an IP65 rated housing.

<b>MAX DEPTH</b> 21 M (70 ft)	ANTENNA FREQUENCY 200 MHz
<b>WEIGHT</b> 17.9kg (39.6 lbs)	STORAGE CAPACITY SIR 4000: 32 GB Panasonic Toughpad G2: 512 GB
OPTIONAL SOFTWARE RADAN 7	ACCESSORIES Multiple GPS options, GPS Mount, Wheel Kit, Transit Case, Survey Wheel

### 200 HS Antenna

The 200 HS antenna uses GSSI's patented HyperStacking<sub>®</sub> technology which improves signal to noise performance and increases the antenna depth penetration under ideal soil conditions. The GS System is suited for geophysical, geotechnical, or environmental applications that require high reliability under challenging survey conditions.



### **GS SYSTEM ADVANTAGE**

### Acquire Data Wirelessly

The 200 HS improves survey efficiency and in-field use. The HS Module is the communication bridge from the antenna to the controller. With the WiFi Module, users can use their existing SIR 4000 controller to run the GS System. For multi-person surveys, the WiFi range can reach distances of up to 15 meters (50 feet) within line of sight between the controller and antenna.

### **TYPICAL USES**

Water Table Mapping

**Bedrock Profiling** 

Stratigraphy

Bathymetry

Sinkhole Areas

Deeper Utility Detection

Archaeological Investigations

#### FCC, RSS-220 and CE Certified

### HyperStacking Technology & Improved Depth

The GS System uses GSSI's proprietary HyperStacking<sub>®</sub> technology to provide clear, high resolution data of subsurface features. In ideal soil conditions, the 200 HS achieves greater depth penetration, nearly double than conventional GPR antenna designs.

### **Optional Survey Accessories**

Several accessories enhance the ease of use for data collection in challenging survey conditions. These options include a GPS mount and a four-piece wheel kit that can decrease the wear of the antenna on prepared surfaces such as gravel and asphalt. An optional rugged transit case is designed to hold the HS Module, wheel kit, tow handle, batteries and battery charger, and the SIR 4000 WiFi Module or the Panasonic Toughpad G2 Tablet.

### **CONTROLLER OPTIONS**

### SIR 4000

The SIR 4000 is a high-performance GPR data acquisition unit that is designed to operate with all of GSSI's analog and digital antennas. When coupled with the new WiFi Module, the SIR 4000 becomes a field-proven controller for the GS System by allowing users the ability to connect wirelessly to the 200 HS antenna. The high-definition screen is designed to be clearly visible in bright field conditions. The WiFi Module attaches to the back of the SIR 4000 and has



user-replaceable WiFi antennas to limit any potential field down time. This IP65 rated control unit also provides users the ability to connect to the antenna via a digital control cable during challenging field conditions or where WiFi is not permissible.



### Panasonic Toughpad G2

The Panasonic G2 is a rugged Windows 10 tablet that comes with newly designed software for the GS System. The tablet weighs 1.4 kg (3 lbs), features an easy to use interface, and has an integrated geographic information system (GIS) map mode. The GIS map mode will display the GPR data collected on the left side of the screen and a location map on the right side of the screen. This will provide position information using a user-selected GPS and serves as a tool to visualize the survey layout.







### COMPACT GPR SYSTEM FOR GEOPHYSICAL INVESTIGATIONS

GSSI's UtilityScan is a full-featured, easy-to-use, and highly portable GPR system. UtilityScan is a cost-effective GPR solution ideal for a range of near surface applications which include shallow stratigraphy, ledge mapping and clearing shallow bore holes. The system provides excellent resolution, unparalleled data quality, and enhanced depth penetration. UtilityScan incorporates our patented HyperStacking technology, which provides better data in less-than-ideal soil conditions and exceptional resistance to external noise. A state-of-the-art real-time

<b>MAX DEPTH</b> 10 m (35 ft)	ANTENNA FREQUENCY 350 MHz
WEIGHT 15.4 kg (34 lbs)	STORAGE CAPACITY up to 64 GB with micro SD card
OPTIONAL SOFTWARE RADAN 7	ACCESSORIES Multiple GPS options, Transit case, Model 626 survey cart Model 656 survey cart,

gain algorithm optimizes field data, meaning you'll spend less time setting up the system and more time collecting data.

#### The UtilityScan Advantage

The modern user interface is intuitively designed and quickly mastered, making it ideal for all skill levels. This is a major benefit when introducing GPR in the classroom or in field school settings.

UtilityScan connects to the 350 HS antenna via WiFi. The control unit is a Panasonic G2 Toughbook with an internal GPS. The G2 can interface with an external Bluetooth GPS for enhanced spatial resolution.

### UTILITYSCAN FEATURES

### Rugged System for Construction Environments

UtilityScan is rated IP65 and built to meet your job site needs. It can withstand the most challenging survey environments including rain, dust, and extreme cold down to -20°C (-4°F). The Panasonic G2 tablet screen is designed for rain and glove use. For areas where Wi-Fi is prohibited, this system includes a rugged Ethernet cable that can be used for communication between the tablet and antenna.

### **TYPICAL USES**

Detect voids and underground storage tanks

Identify soil and foundation characteristics

Locate shallow objects

Scan utilities - metallic and non-metallic

FCC, RSS-220 and CE Certified

#### Integrated Advanced Sensor

UtilityScan can be configured with an optional LineTrac<sub>®</sub> power detection module. LineTrac is designed to identify and trace the precise location of underground electric and RF-induced utilities. This allows the detected power or induced frequencies data to be overlaid on the radar data, providing reliable positioning and target information to the user. These technologies are integrated into one seamless system to aid in target recognition and mapping, a first for the utility detection industry.

### Warranty and Support

At GSSI, we fully back our products to ensure our customers get the maximum value for their investment. UtilityScan comes with a two-year warranty and complimentary training from our staff of dedicated, professional trainers during the warranty period. With every purchase, we provide unmatched technical support for the lifetime of your system.

### ACCESSORIES



### Transit Case

This Pelican case features custom-cut foam and is designed to hold the UtilityScan system as well as its components and accessories. The case is designed to easily transport the system whether you're throwing it in the back of your truck, shipping it across the country or checking it on a plane.



### **Optional Survey Carts**

**Model 626:** three-wheel cart (shown above) that includes a specifically-built center-positioned bracket to hold the UtilityScan system chassis and is best suited for uneven surfaces and grassy field areas.

**Model 656:** four-wheel cart that is suited for rugged terrain survey conditions.



### MAP MODE

With Map Mode on UtilityScan, you can simultaneously pick targets and view their corresponding location on the GIS map shown on the right side of the screen. You can select the window size of the data and the map, or keep it split evenly as shown. The map shows an overview where the user located three different types of utilities. The dark green line represents the path that was taken when collecting the data.

Data on the left side of the screen shows a typical utility at 1.25m in depth and shows a nicely defined base layer at .4m in depth.

The blue dot on the data image is a water line.



### **3D IMAGE**

On-screen 3D data collection mode allows you to define an area of interest. You can easily define the time slice depth and thickness in the field with the 3D data on the screen. The map window can be minimized to view your 3D display full screen.

Data image shows a horizontal yellow line that is a water line located at 1.25m in depth, collected with 3D mode. This grid is 6x9 meters. The arrow on the left is the vertical position of the target. The + and - is how you control the thickness of the time slice.





### SATELLITE & AERIAL IMAGERY

UtilityScan software automatically saves a sample image (Target 1990 in the image below) for every target designated within the software. These in field targets can easily be exported into commonly available geo-browsers. These browsers can be used to create images for reports in the office or in the field.

Image shows a water line (blue), sewer line (green) and an electrical line (red). The yellow line is the GPS track taken by the user.



### LINETRAC<sub>®</sub>

Data was collected using UtilityScan enabled with LineTrac option. Data shows multiple underground power lines (**BLUE BOXES**) entering large commercial buildings. The other targets visible in the data are non-powered utilities. **GREEN LINE** at the bottom of the data represents the measured response from the powered conduit.



### GSSI ANTENNAS FOR GEOLOGY, GEOPHYSICS AND ENVIRONMENTAL ASSESSMENT

### A Wide Range of GPR Antennas for All Your Project Needs

Here at GSSI, we manufacture many different analog and digital antennas, giving you the freedom to choose the right combination of depth penetration and resolution. High frequency antennas provide higher resolution, but typically offer limited penetration. Lower frequency antennas collect deeper data, but they do not image small targets or closely-spaced soil boundaries. Whatever your survey requires, we've got you covered.



### ANTENNA FREQUENCY, APPROXIMATE DEPTH PENETRATION, AND APPROPRIATE APPLICATION

APPLICATION	PRIMARY ANTENNA	SECONDARY ANTENNA	APPROXIMATE DEPTH
Geologic Investigations	100 MHz (analog)* 200 HS (wireless)	MLF (16-80 MHz)*	0-30 m (0-90 ft)
Shallow Soils	900 MHz (analog)	350 HS (digital) 400 MHz (analog)	0-4.5 m (0-15 ft)
Subsurface Utility Engineering	350 HS (digital)	270 MHz (analog) 200 HS (wireless)	0-5.5 m (0-18 ft)
Crevasse & Snow Studies	100 MHz (analog)* 200 HS (wireless)	350 HS (digital)	0-305 m (0-1000 ft)
Agriculture & Forestry	900 MHz (analog)	350 HS (digital) 200 HS (wireless)	0-5.5 m (0-18 ft)

\* Not sold in USA

### **RADAN SOFTWARE**

### Make the Most of your GPR Data

RADAN<sup>®</sup> 7 is GSSI's state-of-the-art GPR post-processing software. A powerful and versatile software platform, RADAN excels at processing 2D GPR profiles and creating 3D time slice datasets. RADAN is a Windows<sup>™</sup> based program, making it a familiar and easy-to-use environment for all levels of experience.

Post-processing GPR data is a critical component of surveys. RADAN provides intuitive processing methods for optimizing GPR data and removing noise and other unwanted data components. Creation of gridded time slice data is quick and straightforward, allowing you to rapidly assemble data and spend more time on analysis and interpretation. Exporting data to other software is just as easy; you can integrate your data into a geospatial framework or develop report and publication graphics.

### **Advanced Features**

- Enhanced, easy-to-use 3D capabilities (with 3D Module), GPS and 3D data integration, and multiple export methods
- Powerful 2D profile processing, including advanced Migration, Frequency Filtering, Background Removal, and numerous Range Gain options
- 2D Interactive environment for digitizing targets and layers for export
- Interconnected 2D and 3D data for enhanced analysis
- Google Earth export for GPS-encoded GPR tracklines and 3D time slices

### **RADAN INTERFACE**

**EXAMPLE:** Data collected with a 200 MHz antenna near a beach in coastal Massachusetts USA showing paleo-aeolian dune in sands.



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### TRAINING IS A BIG PART OF WHAT WE DO



### THE GSSI ACADEMY ADVANTAGE

There is no substitute for in-person, hands-on equipment and software training. Our GSSI Academy team is comprised of five professional GPR trainers who instruct 120+ in-house hardware and software classes each year. Additionally, all GSSI Academy staff are technical support specialists and ready to discuss any and all aspects of GPR. GSSI creates world-leading GPR equipment, and GSSI Academy creates world-leading GPR operators.

### OUR APPROACH

Serious professionals know that proper training on the equipment and in the application area is key to long-term success and the avoidance of costly claims. Our professional trainers provide exceptional instruction because you deserve the best.

### **OUR FACILITIES**

With more than 465 sq. m (5,000 sq. ft.) of dedicated training space at our HQ, and a training location in Nevada, our trainers hold more than 120 classes a year. Our HQ facilities include two classrooms, a specialized concrete forms room, and a first-in-the-industry 70.6 sq. m (760 sq. ft.) indoor utility pit. We bring real-world conditions into a safe learning environment.



### SPECIALIZED CLASS: GEOLOGICAL INVESTIGATIONS WITH LOW FREQUENCY ANTENNAS

This 2-day class will cover GPR method and theory with a special focus on using low frequency antennas for a variety of geologic applications. A fieldwork component will include hands-on data collection at a site within an hour of Nashua, NH. This site has interesting geological features. Once data collection is finished, class participants will then post-process the collected datasets and learn how to interpret the data back at GSSI.

Please visit the GSSI Academy on our website for the full class offerings and schedule.





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