GX-1F SOIL SENSOR INSTALLAION MANUAL
Effective August 18, 2023

Figure 1

Before starting the installation:

1) **Download the GroundWorx Mobile App**
   - For iPhones, download at
     https://apps.apple.com/us/app/groundworx/id1528583100
   - For Android Smartphones, download at
     https://play.google.com/store/apps/details?id=com.mygroundworx.app
   - Or search for "GroundWorx" in the App Store (Figure 1)

2) **Login into the GroundWorx Mobile App**
   - Check your email for login credentials. The *"GroundWorx Login Credentials"* email will include your username and temporary password for logging into the mobile app.
   - You will also receive a *"New Facility available"* email granting permission to your facility (company, course, farm, sports complex, campus, etc.).
   - GroundWorx recommends downloading and logging into the mobile app (from your home, office, etc.) prior to starting the onsite Sensor installation.

3) **Acquire tools for digging the hole:**
   - GroundWorx recommends using the following tools:
     o If the being placed in a turf area, a 7" Hexagon Turf Plugger
     o 6" Earth Auger. GroundWorx recommends the "Seymour General Purpose Post Hole Auger, 6-Inch Spread, High Carbon Steel Blade" which can be purchased at Plumbersstock.com
     o Shovel and/or Post Hole Digger

4) **Build a plan to complete the entire installation in one day:**
   Once proficient in this process, average installation per Sensor will be approximately 15-20 minutes!

Summary of Installation Steps:

Step	Title of Step	High-Level Summary
1	Location & Activation	Stand at the installation location. Remove the sticker with magnet to activate.
2	Verify Cellular Connection	Using the Mobile App, verify that the Sensor has a cellular connection.
3	Provisioning	Provision the Sensor following the detailed steps in the Mobile App.
4	Dig the Hole	Using the recommended tools to dig a smooth cylindrical hole.
5	Position the Sensor probe set	Place the Sensor in the hole and press probes into the sidewall. Backfill.
6	Complete the Installation	Using the Mobile App, confirm that the Sensor is reporting measurements

Follow the detailed installation steps below and repeat at each Sensor location !

1) Location & Activation

a. While onsite at your facility, stand at the exact location where you will be installing the Sensor.

b. Take note of the Serial Number (S/N), which is the name of the Sensor (i.e., G1A00000787). You will need the S/N for future steps in this installation process (Figure 2).

c. Locate the power sticker on the side of the Sensor (Figure 2). The sticker is attached to a magnet.

d. Remove the sticker, which will separate the magnet from the Sensor. When you remove the magnet, the Sensor powers on. Place the sticker and magnet in a pocket or away from the Sensor.

e. You will now see a small green LED light that will blink every 2-3 seconds (Figure 2).

f. Ensure that the magnet is not within close proximity of the Sensor.
GroundWorx recommends that you save the magnet for possible use in the future.

g. Hold the Sensor upwards with the top pointing towards the sky for **20 seconds** (Figure 3)

h. After **20 seconds**, place the Sensor on the ground by setting it on its side. Ensure that it is in close proximity to where the hole will be dug (Figure 4).
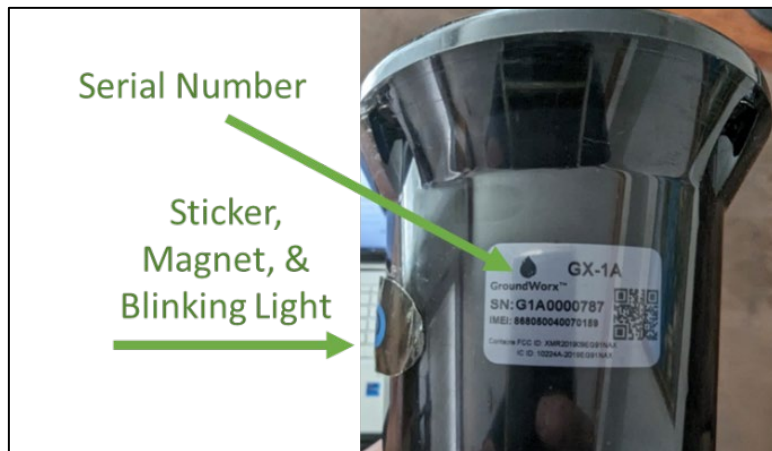

Figure 2

Figure 4

2) Verify Cellular Connection

    a. Open the GroundWorx mobile app.

    b. If you are not logged in, enter your username and password to login.

    c. Ensure you have the "Current Facility" selected. Your Current Facility is in the upper right-hand corner of the mobile app home screen. (Figure 5)

        i. To select a different Facility, tap the Hamburger icon to display options screen. (Figure 5)

        ii. Tap the down arrow key next to the current Facility name. (Figure 6)

        iii. Select the correct facility and then tap the "x" to cancel out of the options screen. (Figure 6)

        iv. The correct Facility is now displayed in the right-hand corner of the home screen (Figure 5)

    d. Tap the "Sensors" icon on the bottom of the screen. (Figure 5)

    e. Find the Sensor Name from the list (review step 1b on the Sensor's name, i.e., G1A00000787).

    f. If the Sensor status is "Inventory" (Figure 7), wait for approximately **1 minute** and refresh the screen by swiping down. The Sensor status will update to "Ready" (Figure 8). If the Sensor does NOT update to "Ready," stop the installation. Skip to the Troubleshooting section of this Install Manual.

    g. When the Sensor status is "Ready" (Figure 8), verify the signal strength as follows:

        i. If the signal strength is between -65 and-98 dBm (Figure 9), proceed to Provisioning.

        ii. If the Sensor signal strength is above-99 dBm (Figure 9), skip to the Troubleshooting section of this Installation Manual.
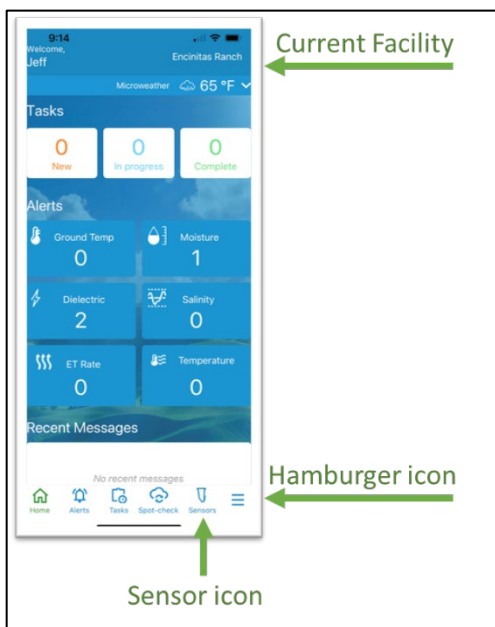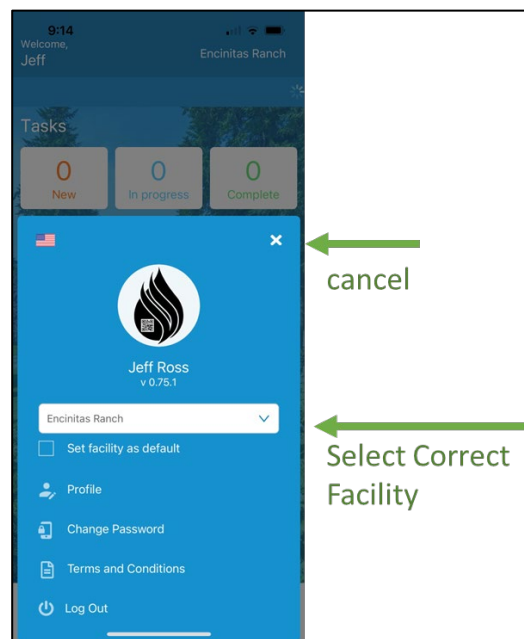

Current Facility

Hamburger icon

Sensor icon

Figure 5

cancel

Select Correct Facility
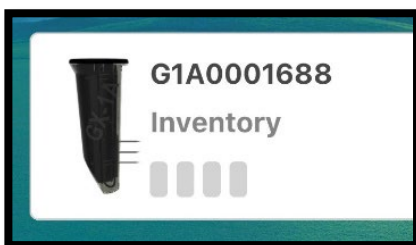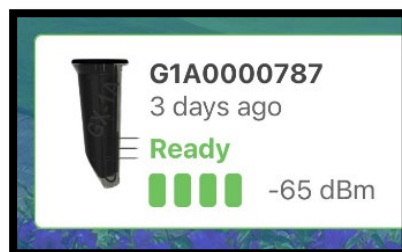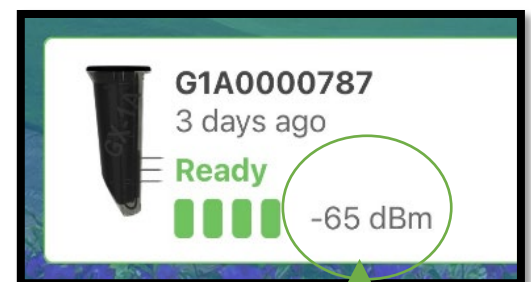
Figure 6

Figure 7

Figure 8

Figure 9

-65 and-98 dBm

3) Provisioning
a. Open the GroundWorx mobile app.
b. Tap the "Sensors" icon on the bottom of the screen. (Figure 5)
c. Find the Sensor Name from the list.
d. Select the Sensor that you are installing (Figure 10) by tapping on the right arrow.
e. The mobile app will then walk you through the remaining installation process which is consistent with the rest of the steps in this Installation Manual.
f. On the 1st Provisioning screen, select "Begin" (Figure 11)
g. On the next Provisioning screen, collect information on the Sensor using the drop-down lists. Items marked with "*" are required fields (Figure 12). When complete, tap the Next button.
h. On the next Provisioning screen, select the GX-1F model and tap the Next button. (Figure 13)
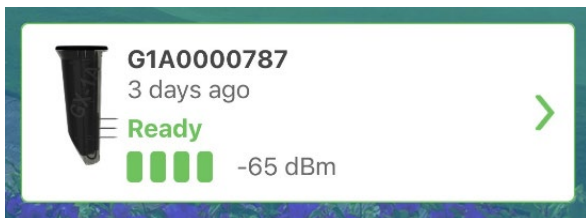i. Secure your smartphone for now and proceed to Dig the Hole.
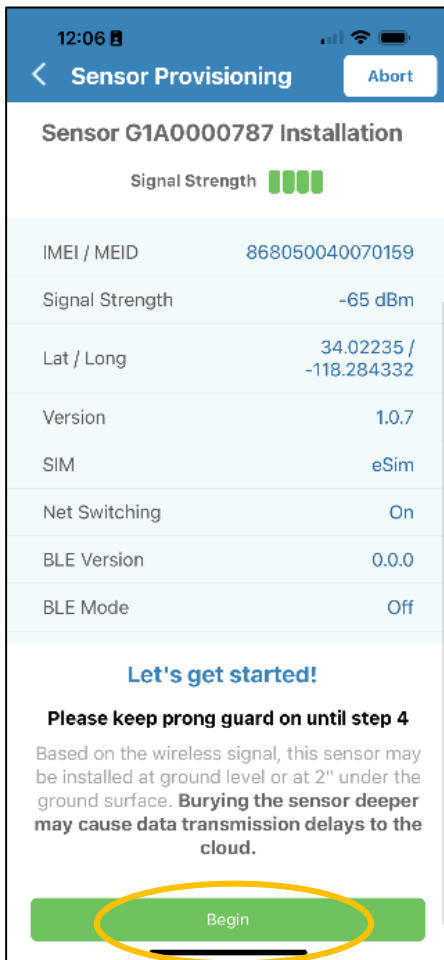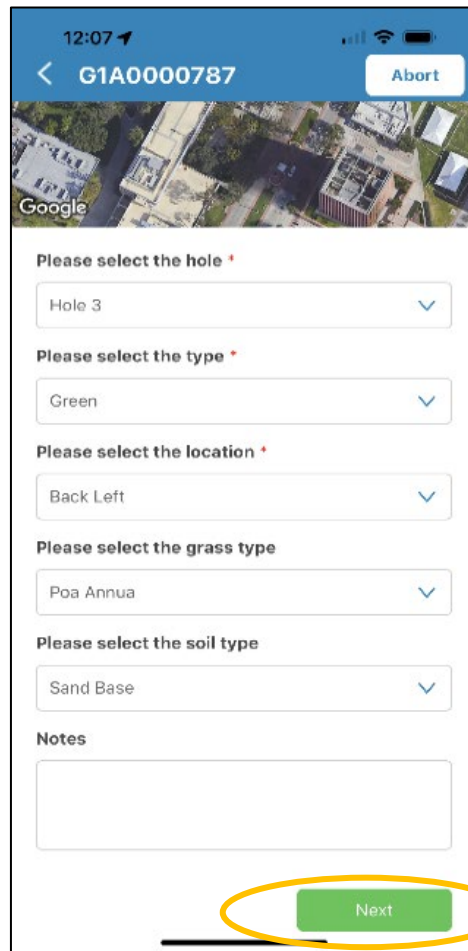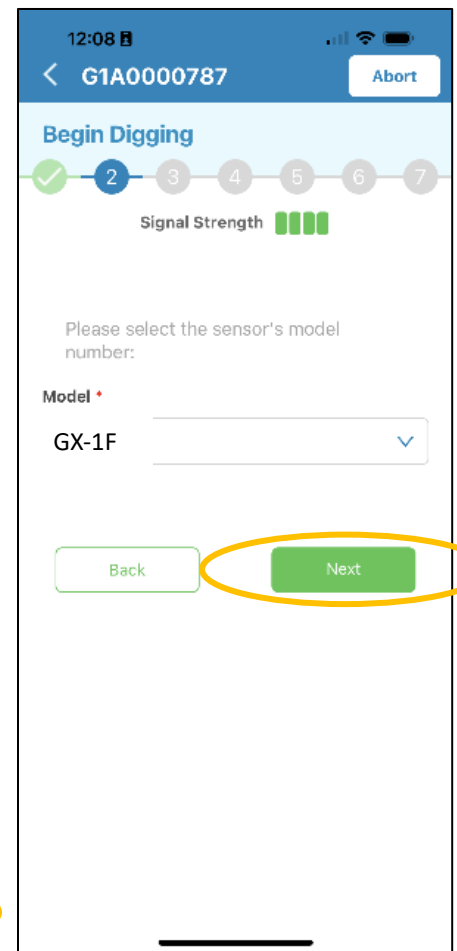

Figure 10

Figure 11

Figure 12

Figure 13

4) Dig the Hole
    a. Remove the Turf (if necessary) with the 7-inch Hexagon Turf Plugger. (Figure 4)

    b. Dig a smooth cylindrical hole.

    c. If this is a tree installation, Dig the hole up to 35 inches deep with the 6" Earth Auger. (Figure 4).

        i. The G-1F sensor body is 11 inches long and the GX-1F tether line is 24 inches. Therefore, the maximum depth is 35 inches (11" + 24")

    d. Proceed to the next step, Place Sensor Probes into the Sidewall.

5) Position the Sensor probe set
    a. Remove the prong guard. GroundWorx recommends that you save the prong guard for potential future use.

    b. Place the sensor probs into the hole based on your desired depth.

    c. Push the prongs into the side wall of the hole.

    GroundWorx recommendation: If this is a tree deployment, insert the sensor with probes facing the root ball of the tree at the root ball/soil interface.

    d. Backfill and compact as you go.

    e. The main body of the GX-1F will be placed into the top of the hole and function as a plug.

    f. Open the GroundWorx mobile app.

    g. Using the slider bar, set the depth (Figure 14)

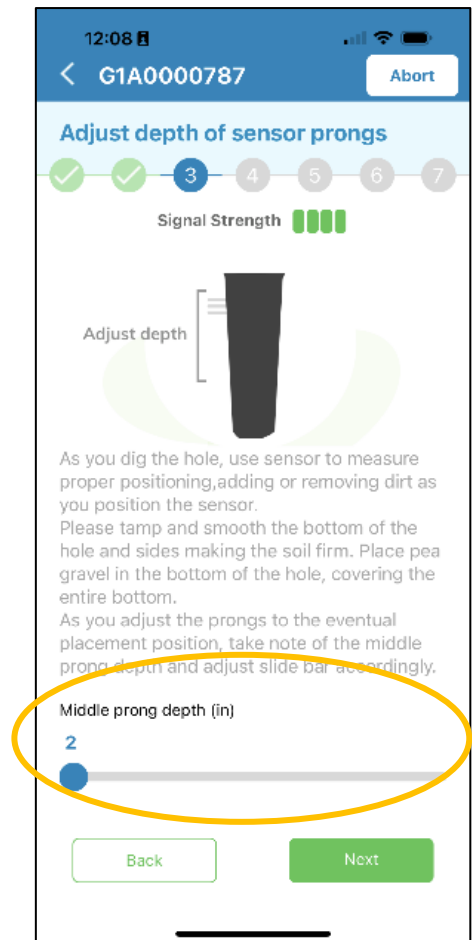   h. Tap the Next button to finish the remaining mobile app provisioning screens.

Figure 14

6) Complete the Installation

a. To Complete the installation, tab Complete Installation on the bottom of the final provisioning screen. (Figure 15)

b. From the Home screen, select the Sensors icon. (Figure 5)

c. Select the Sensor that you just installed (Figure 10) by tapping on the right arrow.

d. Tap the Data Icon in the upper right-hand corner. (Figure 16)

      i. You should see Sensor reading for Temperature, Salinity, Dielectric, and Moisture. The Sensor started reporting measures as soon as you positioned the Sensor in the ground.

      ii. If readings are not taking place after 10 minutes, skip to the Troubleshooting section of this Installation Manual.
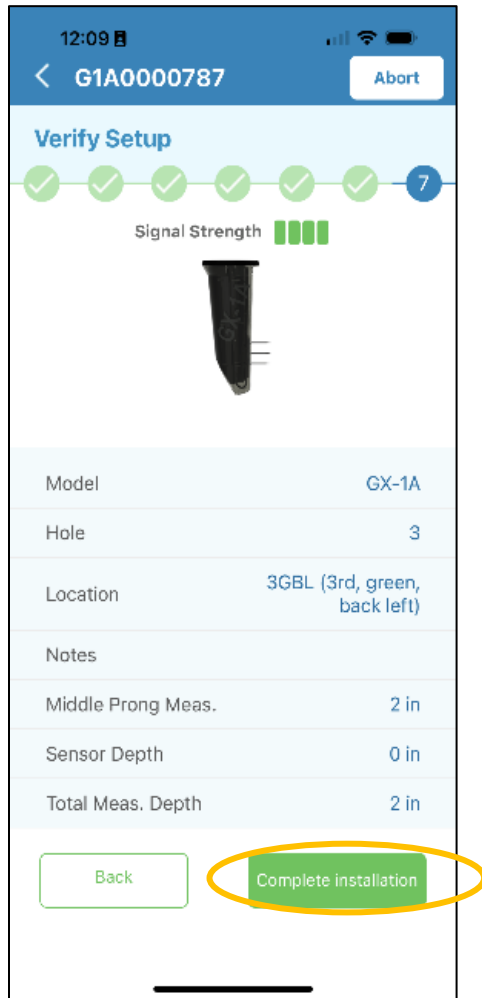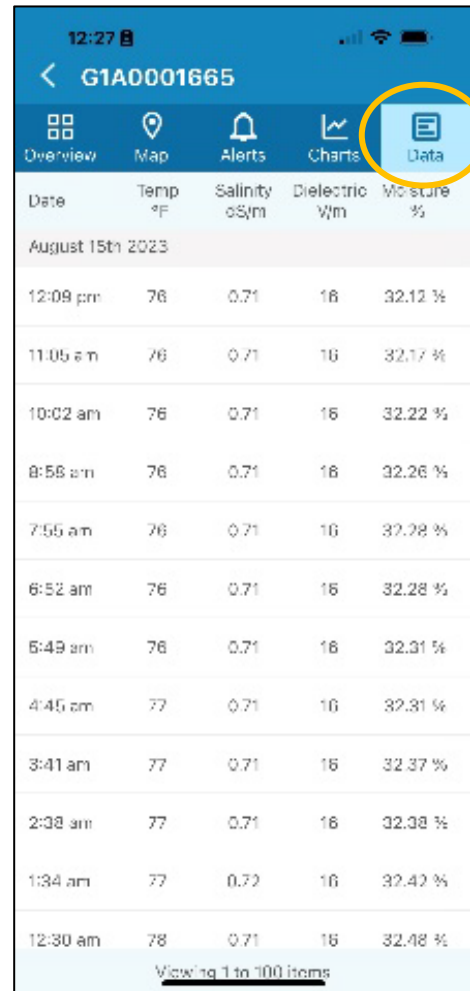

Figure 15

Figure 16

Verify Cellular Connection: Remedies

1) If the Sensor does not appear on the "Ready" screen after 1 minute, stop the installation.
   a. Place the magnet back on the Sensor.
   b. Open the GroundWorx mobile app.
   c. Select the Sensor.
   d. Select "Abort" button to reset the Sensor back to "Inventory." (Figure 17)
   e. Enter your GroundWorx Password to confirm "Abort. (Figure 18)
   f. Move the Sensor to a different location.
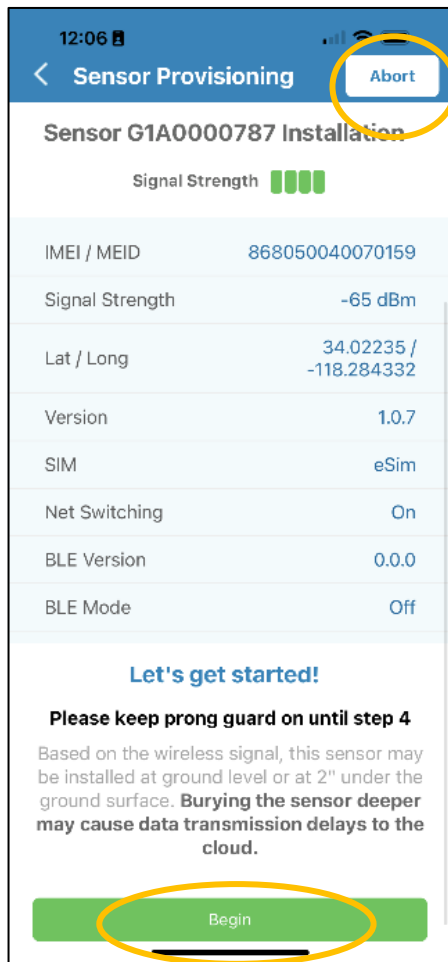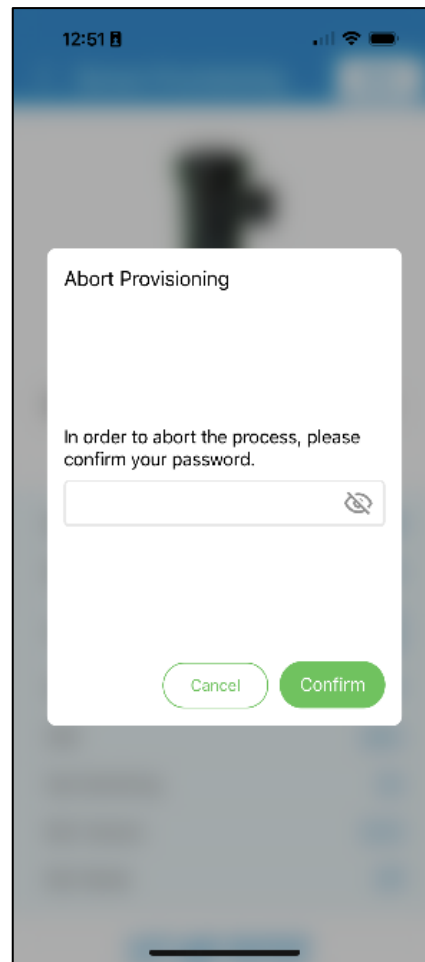   g. Follow same process starting with the Location & Activation step.

Figure 17

Figure 18

2) If the Sensor signal strength is above-99 dBm (Figure 9),
   a. Place the magnet back on the Sensor.
   b. Open the GroundWorx mobile app.
   c. Select the Sensor. Select "Abort" button to reset the Sensor back to "Inventory." (Figure 17)
   d. Input your Password to confirm "Abort. (Figure 18)
   e. Move the Sensor to a different location.
   f. Follow same process starting with Location & Activation

Complete the Installation: Remedies

1) If readings are not taking place, please contact your GroundWorx representative for support.

If you require additional installation assistance:

- Contact your GroundWorx representative.
- Email GroundWorx at support@mygroundworx.com