



LandPKS Soil ID User Manual

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Introduction

LandPKS Soil ID is a free mobile app designed to help anyone characterize and identify soils in the field. LandPKS stands for Land Potential Knowledge System. Whether you are a farmer assessing field status, a land manager inspecting soil conditions, a scientist collecting data across a landscape, or a student learning how to analyze soil, LandPKS Soil ID provides the tools to record, store, and interpret what you observe beneath your feet. No formal soil science training is required; the app is designed to guide you through the process using straightforward instructions and visual aids.

Who is this app for?

LandPKS Soil ID is built for a wide range of users. You don't need to be a soil scientist to use it effectively. The app is designed for:

- **Farmers and agronomists** assessing soil conditions for production decisions
- **Conservation and agency staff** conducting field inventories or compliance monitoring
- **Scientists and researchers** collecting standardized soil observations across a landscape
- **Students and educators** learning to describe and identify soils in the field
- Anyone curious about the soils and land where they live or work

When and why should you use it?

LandPKS Soil ID is designed for use in the field at the location where you are observing the soil. It is most useful when you need to:

- Identify the soil at a specific site and understand its properties and limitations
- Compare your field observations to existing soil map data (such as SSURGO, Web Soil Survey, or HWSD)
- Support land use or land management decisions with site-specific soil information
- Contribute observations to a shared network of field data

LandPKS Soil ID works best when used on relatively unmanaged soils. On managed land, practices such as adding compost or tilling can change the properties of the topsoil. Consider these changes when comparing topsoil observations to soil map profiles.

What can you expect?

To get the most out of LandPKS Soil ID, you will need access to the soil at your site. Observations for multiple soil depths require digging a small soil pit or finding an exposed soil profile. The more observations you record (texture, color, rock fragments, slope) the more accurate your results will be.

LandPKS Soil ID combines your field observations with national soil databases to give you useful information about your site. The app provides:

- **Soil ID:** A ranked list of soil series that most closely match your observations, based on texture, color, rock fragments, and other properties you record in the field
- **Site records:** A saved record of your observations that can be reviewed, exported, and shared with others
- **Comparison to existing soil maps:** A way to confirm whether your field observations match the mapped soil, or identify where the map may not reflect current conditions

LandPKS Soil ID works best as a complement to existing soil surveys, not a replacement for them. It helps you confirm what the map says, flag when field conditions differ from mapped data, and build a record of observations that can support better land management decisions over time.

What Is Soil ID, and Why Does It Matter?

Knowing what soil is present is critical to making sustainable land use decisions. Soil type, climate, and topography together determine the land's potential: what crops might grow there, how much livestock it can support, and how resilient it is to disturbance. Without accurate soil information you risk making harmful management mistakes: amending soil improperly, planting crops that won't thrive, or overstocking livestock.

LandPKS Soil ID streamlines and simplifies the process of soil identification, giving you a solid foundation from which to make land management decisions. This section explains why Soil ID matters, how it improves on existing soil maps, and how to start applying your results.

I have a soil map. Why use LandPKS Soil ID?

Soil maps are a common starting point for soil identification. They cover large areas—sometimes entire continents—and can give you a prediction of what soils are likely to be present at a given location. However, soil maps have real limitations that LandPKS Soil ID is designed to address.

Limitations of soil maps alone:

- **Low resolution:** Soil maps are predictions made at a broad scale. At the field level, they are often inaccurate.
- **Multiple possibilities:** Maps typically list several possible soils for a given location. Without field observations, it can be difficult to know which one is present. A common mistake is to assume the most prevalent soil listed for an area is the correct one.

LandPKS Soil ID improves on soil map predictions by combining map data with your own field observations. Rather than presenting you with a list of possibilities and leaving the interpretation to you, it ranks those possibilities based on what you observe: texture, color, rock fragments, slope, and more.

Here is an example of how this works: a soil map may suggest two possible soil types for your location; one with high clay content, the other more sandy. By digging a small pit and recording the texture class at a given depth, you may be able to determine immediately which one is present. LandPKS Soil ID interprets your observations and updates the ranking of possible soils accordingly, removing the guesswork. For more details on how this process works, see *How Does the Soil ID Algorithm Work?*.

Making decisions based on Soil ID

Once you have identified the soil, you can start applying that information to management decisions. LandPKS Soil ID gives you several ways to act on your results:

- **Look up management practices:** LandPKS Soil ID provides a description of each potential soil identified at your site. For sites in the United States, it links directly to the full soil description provided by the Natural Resources Conservation Service (NRCS), including management information under "Use and Vegetation." For sites outside of the United States, the Soil Info sheet provides management guidance based on your identified soil. Additional decision-support tools will be added to LandPKS Soil ID over time.
- **Ecological site (U.S. sites only):** For sites in the United States and territories, each soil series description includes a link to the associated Ecological Site Description (ESD). Ecological sites describe the ecological conditions typical of a particular soil and climate combination — including expected plant communities, vegetation states, degradation pathways, and restoration trajectories.
- **Seek expert advice:** Soil scientists, agronomists, and other land use experts can interpret Soil ID results and make recommendations for sustainable management. You can share the data by adding an expert to a project in LandPKS Soil ID, or by exporting the data and sending it to them directly.

Soil properties as standalone information

Many of the observations you record in LandPKS Soil ID are valuable on their own, independent of their role in identifying a soil type. For example, determining texture class, the proportional makeup of the soil in terms of clay, silt, and sand, can help you anticipate drainage, water-holding capacity, porosity, and nutrient availability. This information can directly inform decisions about what to plant and how to manage your land, even before a formal Soil ID match is made.

If you are unsure how to interpret your soil observations, consult a soil scientist, agronomist, or local extension service. LandPKS Soil ID is designed to help you collect the right data; experts can help you act on it.

How Does the Soil ID Algorithm Work?

When you enter observations into LandPKS Soil ID, the app does not simply look up soil from a database. Instead, it runs an algorithm that compares what you observe in the field against soils that have been mapped near your location and ranks them by how closely they match. This section explains how that process works, what data it draws from, and why entering more observations leads to better results.

Where does the algorithm get its data?

The algorithm begins with existing soil map data. The databases it draws from depend on where your site is located:

- **United States and U.S. territories:** The algorithm uses SSURGO (Soil Survey Geographic Database), accessed through SoilWeb. SSURGO is the most detailed national soil survey database available in the U.S. If SSURGO data is unavailable for a location, the algorithm falls back to STATSGO, a lower-resolution national dataset.
- **Outside the United States:** The algorithm draws on the FAO Harmonized World Soil Database (HWSD).

Because U.S. soil map data is more detailed, the algorithm is generally more precise for sites within the United States. For sites elsewhere, a wider area of interest is used to account for the lower resolution of global datasets.

Scoring system

Step 1: Location score

The first thing the algorithm does is identify which soils could plausibly exist at your site based on location alone. It draws a circle around your site (1 km radius in the U.S., 30 km radius globally) and pulls the list of all soil types mapped within that area.

Each soil in that list receives a location score based on two factors:

- **Proximity:** How close the mapped soil unit is to your exact site location; soils within your site's map unit score higher than soils in adjacent units.
- **Prevalence:** What proportion of the map unit that soil represents; a soil that makes up most of a map unit scores higher than one that occupies only a small fraction.

The app displays the top 12 soils by location score as your initial list of candidates. This is what you see before entering any field observations.

Step 2: Soil properties score

As you add field observations, the algorithm compares each one against the known properties of the candidate soils. Each candidate receives a soil properties score based on how closely its recorded characteristics match what you observed at your site.

The table below shows which observations are used by each version of the algorithm:

Observation	Used by U.S. algorithm	Used by global algorithm
Slope steepness	Yes	No
Surface cracks	Yes	Yes
Color (at depths)	Yes	No
Texture (at depths)	Yes	Yes
Rock fragment volume (at depths)	Yes	Yes
Bedrock depth*	Yes	Yes

Note that slope steepness and soil color are used only by the U.S. algorithm. All other observations contribute to both the U.S. and global versions. Recording observations at multiple depths strengthens the match, since soil properties often change with depth and those changes are diagnostic for specific soil types.

*Bedrock is not currently a recorded observation in LandPKS Soil ID.

Step 3: Total score and ranking

The algorithm combines the location score and soil properties score to produce a total score for each candidate soil. The Soil Matches list is ranked by this combined score and updates automatically each time you add a new observation. The soil at the top of the list is the closest match to everything the algorithm knows about your site.

None of the observations listed above are strictly required, the algorithm will rank soils with whatever information you provide. However, each additional observation refines the properties score and can significantly shift the ranking. **Entering all available observations gives you the most accurate result.**

Using Soil ID offline

The Soil ID algorithm requires an internet connection to run. If you record observations while offline, the Soil Matches list will not update until your device reconnects. **To avoid delays in the field, it can be helpful to open your site in LandPKS Soil ID before you leave;** this pulls the initial location-based candidate list while you still have connectivity, so it is ready when you arrive.

Projects

Projects are the primary way to organize and standardize data collection across multiple sites in LandPKS Soil ID. When you work within a project, all sites share the same settings; privacy level, soil pit depths, and required observations. This is useful so that data collected by different people at different locations remains consistent and comparable. Projects also make it easier to share your data with collaborators or export it for analysis.

Creating a project

To create a new project:

1. **Navigate to the Projects screen.** This screen lists all projects you currently belong to.
2. Tap **Create Project**.
3. Enter a **project name** and, optionally, a **description**.
4. Set the **data privacy level** (see *Data Privacy*).

The image shows two side-by-side screenshots from the LandPKS Soil ID app. The left screenshot displays the 'Projects' screen, which has a dark green header with the title 'Projects'. Below the header is a green button with a plus icon and the text '+ CREATE PROJECT'. Underneath is a search bar with a magnifying glass icon and the placeholder text 'Search projects'. The main content area lists four projects, each with a title, a subtitle, and two circular icons: a location pin and a person. The projects are: 'Soil 2110 test' (Test, 1 location, 1 person), 'Soil 2110 Spring 2025 Wednesday' (0 locations, 1 person), 'Soil 2110' (Test for class, 1 location, 1 person), and 'Soil 2110' (0 locations, 1 person). At the bottom is a dark green navigation bar with three icons: a location pin for 'Sites', a briefcase for 'Projects', and a gear for 'Settings'. The right screenshot shows the 'Create Project' form, which has a dark green header with a close icon (X) and the title 'Create Project'. It contains three input fields: 'Project Name', 'Project Description', and 'Data Privacy'. The 'Data Privacy' section has two radio buttons: 'Public' and 'Private', with 'Private' selected. A green 'CREATE' button is at the bottom right.

Once your project is created, you can configure its settings, add sites, and invite team members.

Configuring project settings

Project settings are managed through the Inputs tab, which is the first tab visible when you open a project. Only project managers can edit these settings. The following options are available:

← Jornada 010526

INPUTS SITES TEAM EXPORT

NOTE

Soil Pit

Soil Pit Depths
Custom...

Label	Depth (cm)
-------	------------

+ ADD DEPTH

Observation Requirements

☒ **Slope and Landscape**
Includes slope steepness and shape

☐ **Soil Cracks**

☒ **Soil Texture**
Includes texture class and rock fragment volume

☒ **Soil Color**

☒ **Notes**

Data privacy

All sites in a project inherit the project's privacy setting. There are two options:

- **Public:** Site data is accessible to anyone through the LandPKS Soil ID data portal and may be shared with third parties such as soil map maintainers or research databases.
- **Private:** Site data is only visible to project team members.

Important: Changing a project's privacy from Public to Private only affects future access. Data that was previously public may already have been downloaded or shared.

Pinned note

Project managers can add a pinned note that appears at the top of the Notes tab of every site in the project. This is useful for communicating field instructions, collection protocols, or other information that all data collectors should see.

Soil pit depths

Projects control the depth intervals at which observations are recorded. All sites in the project will use the same depth settings. There are four options:

USDA NRCS (default)

The default preset, based on the NRCS/Global Soil Partnership standard. Recommended if you are unfamiliar with identifying soil horizons.

Metric	English
0–5 cm	0–2 in
5–15 cm	2–6 in
15–30 cm	6–12 in
30–100 cm	12–39 in
100–200 cm	39–79 in

BLM monitoring standard

Depths from the BLM Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems. Use this preset if your project follows BLM rangeland monitoring protocols.

Metric	English
0–1 cm	0–0.5 in
1–10 cm	0.5–4 in
10–20 cm	4–8 in
20–50 cm	8–20 in
50–70 cm	20–28 in

Custom

Allows you to define your own depth intervals. Tap + **Add Depth** to add each layer. For each depth, enter an optional label and the top ("From") and bottom ("To") depths measured from the surface, with 0 cm representing the surface.

None specified

Data collectors define their own depths at each site. Use this option when standardized depths are not required for your project, or when you want data collectors to identify soil horizons at each site.

Observation requirements

Project managers can specify which observations are required for every site in the project. By default, projects require all observations used by the Soil ID algorithm: slope steepness and shape, surface cracks, texture class, rock fragment volume, and soil color. To adjust requirements, go to the Observation Requirements section in the Inputs tab, toggle observations on or off, and tap Save.

Adding sites to a project

When a site is added to a project, it inherits all of the project's settings: privacy, soil pit depths, and required observations. There are two ways to add sites.

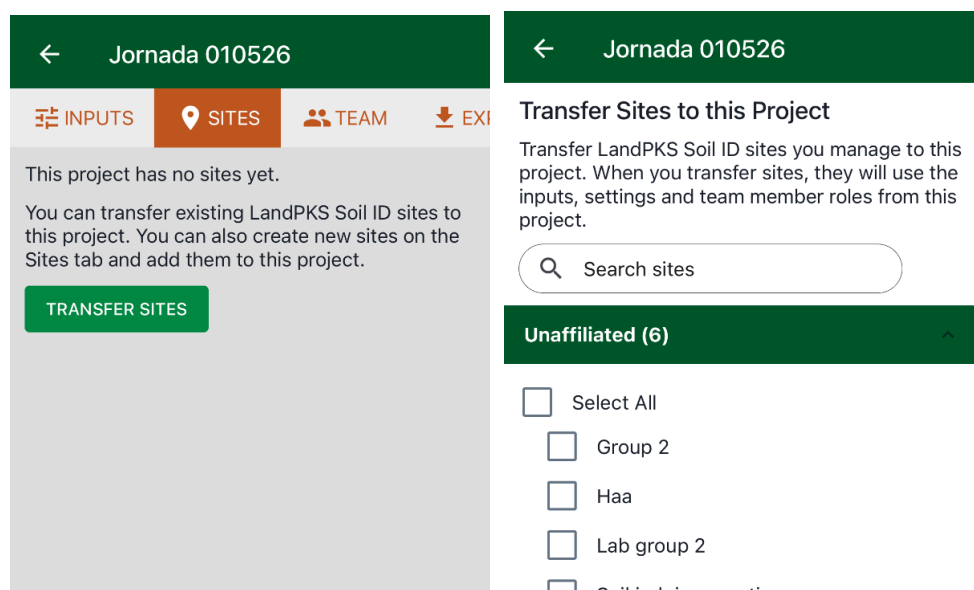
During site creation

When creating a new site, you can assign it to a project directly from the Create Site form. Select the desired project from the list before saving the site.

Transferring existing sites

To move an existing site into a project, you must either own the site or be a manager of the project it currently belongs to. You must also be a manager or contributor for the destination project.

1. Open the **project** you want to transfer sites into.
2. Open the **Sites** tab.
3. Tap **Transfer Sites**.
4. **Select the sites** you want to transfer.
5. Tap **Transfer Sites** again to confirm.



Working in Teams

Projects in LandPKS Soil ID are built for collaboration. Once a project is created, the project manager can invite others to join as team members, each with a defined role that controls what they can see and do within the project. Team membership is managed through the Team tab inside any project.

Adding team members

Before adding someone to a project, note the following:

- Only project managers can add team members.
- The person being added must already have a Terraso account. Accounts can be created by signing in to LandPKS Soil ID or the Terraso web app (app.terraso.org).

To add a team member:

1. Open the project.
2. Select the Team tab.
3. Tap Add Team Member.
4. Enter the email address associated with the person's Terraso account.
5. Select a role for the new member (see user roles below).
6. Tap Add.

Teams tab: Add team members:

← Soil 2110 test

PROJECTS

SITES

TEAM

EXPORT

+ ADD TEAM MEMBER

Manage Team

 Propfe, Joshua (you)

Manager

← Soil 2110 test

Add Team Member

Enter the email address of the person's Terraso account. A Terraso account can be created by installing the LandPKS Soil ID app and signing in.

Email address

Enter a valid email address

NEXT >

Managing team members

Project managers can change a team member's role or remove them from the project at any time. To access these options, open the Team tab and select the team member's name from the list.

Change a team member's role

- Select a new role from the available options.
- Tap Save.

Remove a team member

- Tap Remove from Project.
- Tap Remove in the confirmation dialog.

Note: Removing a team member does not delete their contributed data. All site observations they recorded will be retained in the project.

User roles and permissions

LandPKS Soil ID offers three roles within a project, each with a different level of access. Assign roles based on what each team member needs to do. To check your own role in a project, open the Team tab and look for the label next to your name.

Permission	Viewer	Contributor	Manager
View all data for all sites in a project	✓	✓	✓
Transfer sites into a project		✓	✓
Add and edit data for sites		✓	✓
Add and remove team members			✓
Change team member roles			✓
Change project data privacy			✓
Edit pinned note			✓
Edit soil pit depth requirements			✓
Edit data collection requirements			✓
Edit project name and description			✓
Delete the project			✓

Note: Managers have the same level of access as the person who originally created the project. This means a manager can change the role of the project creator or remove them from the project entirely.

What Equipment Is Needed

Collecting accurate soil data in the field requires the right tools. Having everything prepared before you head out saves time and ensures your observations are consistent and reliable. This section lists the equipment needed to use LandPKS Soil ID and dig a soil pit, organized by what is required versus what is strongly recommended.

Required equipment

Technology

- **Smartphone or tablet with LandPKS Soil ID installed:** Required to record and submit observations. The app requires an internet connection to run the Soil ID algorithm, so consider loading your site before leaving for the field if connectivity at your site is uncertain.
- **Terraso account:** Required to save and sync data. Accounts can be created through the LandPKS Soil ID app or at app.terraso.org.

Pit digging equipment

- **Two shovels:** Having two shovels with different functions makes digging faster and more controlled. A narrow, pointed shovel (such as a Montana Sharpshooter) is effective for breaking up compact soil and dislodging large cobbles. A standard flat-blade shovel is useful for scooping loosened material out of the pit.
- **Measuring tape or ruler:** Required for recording soil pit depth intervals accurately.

Soil observation supplies

- **Squirt bottle with deionized (DI) water:** Needed to moisten soil samples for texture analysis. Use DI water rather than tap water to avoid introducing external minerals or chemicals that could affect your observations.
- **Soil color reference (choose one):** Either a Munsell Soil Color Book or a supply of 3M Canary Yellow Post-it notes is required for recording soil color. See the Soil Color section for guidance on both methods. If using Post-it notes, store them in a dark envelope to prevent sun exposure, and bring at least three unstacked notes per observation.

Recommended equipment

The following items are not strictly required but will improve the accuracy and efficiency of your data collection.

Pit management

- **Tarp:** Placing excavated soil on a tarp as you dig serves two purposes: it keeps material from each depth or horizon visually separate so you can review them, and it makes it easy to return soil to the pit when you are finished.

- **Rock bar:** Useful when digging in rocky or stony soils. A rock bar can pry large stones free and break apart cemented or indurated soil horizons that resist a shovel. Don't use a sieve for breaking up hard soil peds—use the shovel blade instead.

Sampling and analysis

- **500 mL measuring cup:** Collecting a standardized volume of soil from each horizon allows you to estimate rock fragment percentage consistently. Fill the cup to the 500 mL line, then pour the contents through a sieve to separate fine soil from coarse fragments.
- **2 mm sieve:** Used to separate fine earth (particles < 2 mm) from rock fragments. Handle the sieve carefully — they are easily damaged. Never use a sieve to break apart hard soil peds; break those on a shovel blade first.
- **Small containers:** Separate containers for each horizon keep samples organized and prevent cross-contamination between depths. If containers are unavailable, soil can be arranged on the shovel blade or tarp.
- **Soil knife:** A sturdy soil knife (such as a Jori or similar field knife) is useful for extracting clean samples from the pit wall, probing for differences in horizon density and structure, and cutting soil peds for examination.

Other supplies

- **Rag or towel:** Clean your hands thoroughly between texture samples. Residual soil from a previous horizon can contaminate your next sample and lead to inaccurate texture readings.
- **Reference materials:** A texture triangle, soil texturing flow chart, and effervescence class chart are helpful references to have in the field. These can be found in the BLM Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems or printed and laminated as standalone field aids.

How To Choose Site Locations

The site should be placed in a location that is **representative of the area you want to describe**. The goal is to observe soil conditions that reflect the dominant soil and land use, not unusual or disturbed spots.

General guidance for all users:

- Choose an area that is representative of the field, plot, or site.
- Avoid obvious disturbances such as roads, trails, fence lines, livestock concentration areas, old pits, fill material, erosion features, and areas with heavy surface disturbance unless that is a focus of the observations.

User specific guidance:

- **For monitoring plots or formal sampling designs:**
 - When working within a defined plot, the preferred pit location is often **near the plot center**, if allowed by the sampling design.
 - If a central area is designated as a “trample zone” or non-measurement area, placing the pit there helps minimize impacts to vegetation measurements and keeps the pit centrally located for coordination with others.
- **For farmers, land managers, and educators:**
 - Place the pit where soil conditions are most relevant to management decisions, such as:
 - Areas with average crop growth or yield
 - Representative pasture or rangeland areas (see sampling design section for more details on site selection)
 - Locations students can safely access and observe
 - Avoid wheel tracks, or areas influenced by irrigation infrastructure unless those conditions are the focus of the observation.
- **For research and comparative studies:**
 - Select locations that align with your research question and maintain consistency across sites.
 - Record any deviations from ideal placement (e.g., moving the pit due to rockiness or access constraints).

If bedrock or an impenetrable layer is encountered near the surface:

- Stop digging and document the depth of the restrictive layer.
- Move the pit a short distance (approximately 1–3 meters) and try again.
- If shallow bedrock is consistently encountered, record this as a site characteristic in a note rather than continuing to relocate.

The chosen site should balance **representativeness, safety, minimal disturbance, and consistency** with the goals of your LandPKS Soil ID observation.

Adding Your Site to LandPKS Soil ID

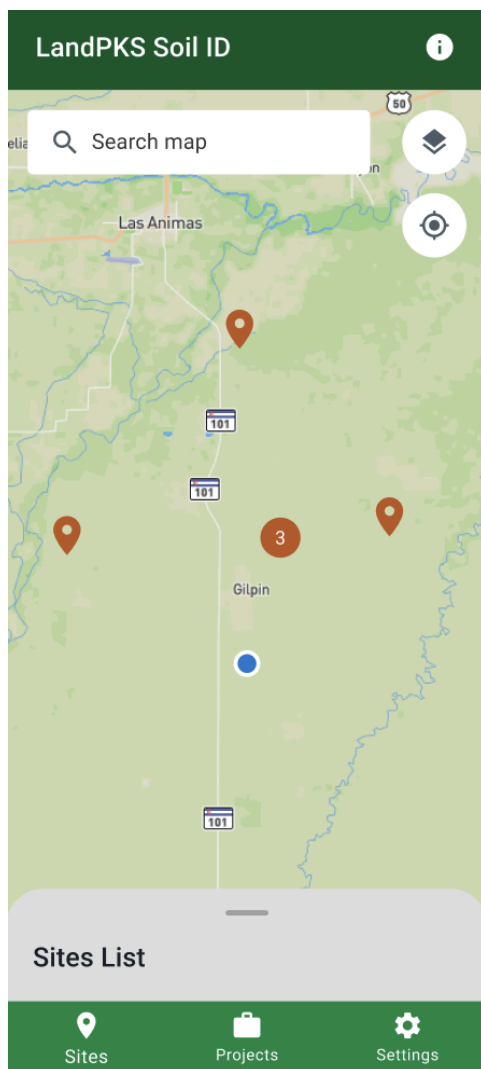
Follow the steps below to create a new site in the LandPKS Soil ID app.

Step 1. Open LandPKS Soil ID and log in

Open the **LandPKS Soil ID** app on your mobile device and log in using your account credentials.

Step 2. Start a new site

After logging in, you will arrive at the **opening screen**, which is where new sites are created.

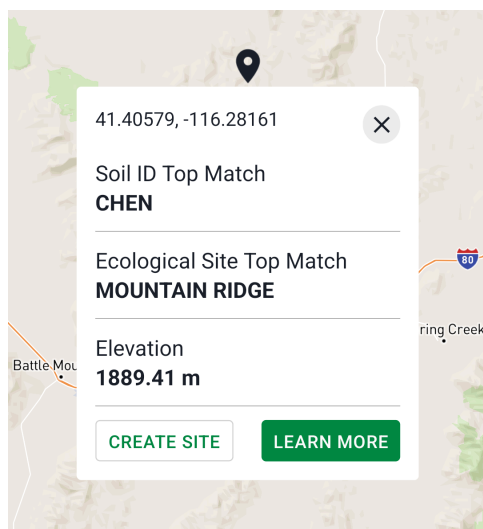


Step 3. Choose a site location

You can define your site location in several ways:

- **Select on map:** Tap directly on the map to place your site at a chosen location.
- **Use current location:** Select the location button (looks like a target, on the right side of screen) to create a site based on your current GPS position. This option is useful when you are standing at the site.
- **Search by address or coordinates:** Enter an address or geographic coordinates (latitude/longitude) into the search bar to locate your site manually.

Once you select a location on the map, a **pop-up window** will appear showing general information about that point, including GPS coordinates, elevation, top soil ID match, and top ecological site match (US). Review this information to confirm you have selected the correct location.



Step 4. Adjust map view (optional)

For improved visibility and site placement, you can change the map display:

- Tap the Layers button in the top-right corner of the screen.
- Toggle to satellite view as needed.

Step 5. Choose how to proceed

From the pop-up window, you have three options:

- **Create Site:** Takes you directly to the site creation screen.

- **Learn More:** Opens a new window where you can explore additional details about the top soil ID and ecological site match. From this screen, you can also choose to create a site.
- **Close:** Closes the pop-up so you can select a different location on the map.

Step 6. Create the site

When you choose **Create Site**, you will be prompted to:

1. Name your site
2. Add the site to a project of your choice.
3. Select a privacy setting at the bottom of the screen.

After completing these fields, select **Create** to finalize your site.

Step 8. Find your site

After creating the site, it will appear in the **Sites List** and on the map on the **Sites** tab (found at the bottom of the main app screens.)

Your sites can be:

- **Searched by name**
- **Filtered by project**
- **Filtered by role (Manager, Contributor, Viewer)**

This makes it easy to locate sites when managing multiple locations or projects.

Step 9. Open the site and add observations

Select the site from the list to open it and begin **adding soil and site observations**.

How To Dig a Soil Pit

Digging a soil pit is the primary method for measuring soil observations with LandPKS Soil ID. A properly dug pit allows you to observe soil horizons, surface conditions, and subsurface features that inform soil interpretation and management. A soil auger may be used as an alternative more rapid method for examining the soil profile.



Option 1: Soil pit excavation

Pit size and preparation

- **Target pit depth:** 150 cm is ideal (or until refusal).
- **Pit dimensions:** Approximately 60 × 60 cm (2 ft × 2 ft).
- Before digging, clearly mark the pit boundaries on the ground.

Establishing the control face

- Choose one side of the pit to serve as the control (profile) face.
- Avoid stepping on or disturbing the soil surface along this face, as trampling can destroy soil structure and lead to misinterpretation.
- Place a visible object (e.g., a bag, flagging, or transect tape) along the control face to prevent accidental disturbance.

- Orient the control face so it is entirely in sun or entirely in shade, which improves visibility when describing horizons.

Digging technique

- Use a sharp-edged shovel (e.g., Montana sharpshooter) to break compacted soil.
 - Lift the shovel and throw it into the soil using the weight of the shovel to break up the soil rather than your own strength, this reduces strain on shoulders, wrists, and back.
- After loosening the soil, use a spade shovel to remove the material.
- Repeat this process until reaching the target depth or refusal.

Dealing with obstacles

- **Large rocks or cobbles:** Use a rock bar to pry them loose.
- **Cemented or petrocalcic horizons:** A rock bar may be necessary to break through or confirm refusal.
- **Bedrock:** stop digging.
- **Cultural artifacts:** Stop digging and follow local guidelines for documentation and reporting.

Managing excavated soil

- Place removed soil on a tarp, keeping it in the same order it was excavated (surface material closest to the hole, deeper material farther away).
- Keep large rocks or cobbles with the soil layer they came from.
- This practice helps visually track changes in texture, color, and rock content with depth.



Option 2: Soil auger use

In locations where many sites need to be evaluated, and where soils are soft, fine-textured, and relatively free of rocks, cobbles, or stones, a soil auger can be an efficient tool for examining the soil profile. Augers are best suited for conditions where resistance is low and the risk of damaging the tool is minimal, allowing for rapid and repeated subsurface observations across multiple locations.

Auger technique

- Insert the auger vertically and rotate it clockwise while applying downward pressure.
- Remove the auger once it is full.
- Empty the soil onto a tarp or flat surface before continuing to the next increment.
- Repeat the process to reach the target depth or refusal.

Managing excavated soil

- Deposit excavated soil in sequence. This is particularly important when excavating with an auger because the hole will not be large enough to observe the soil profile in situ.
- Arrange soil on the tarp in the order it was removed to maintain a sense of vertical position within the soil profile. This sequencing helps interpret changes in texture, color, structure, and rock content with depth, even without a full pit.

Common challenges

- Large rocks and cobbles
- Shallow bedrock
- Petrocalcic or cemented horizons
- Arid/dry soils with high clay content

How To Obtain Soil Samples

In LandPKS Soil ID, soil observations are recorded by predetermined depths or by identified soil horizons. Rather than treating the soil profile as a single uniform layer, you collect and describe a separate sample from each distinct zone from the surface downward. This approach captures how soil properties change with depth—information that is critical for accurate Soil ID matching and for understanding how the soil will behave under different land uses.

When entering observations about a sand pit, you can use depth presets. If you're comfortable with a more advanced technique you can define custom horizons, that is, the places where each layer of soil begins and ends.

Step 1: Identify soil horizons

Soil horizons are layers in the profile that differ from one another in color, texture, structure, or composition. These differences reflect the pedogenic processes that shaped the soil over time. In LandPKS Soil ID, horizons are labeled numerically from the surface downward: Horizon 1 is closest to the surface, Horizon 2 is the next layer down, and so on.

When examining the pit wall, look for changes in:

- **Color:** A visible shift in hue, value, or chroma often marks a horizon boundary.
- **Texture:** A change from sandy to clayey material, or a sudden increase in gravel, indicates a new layer.
- **Structure:** Differences in how soil peds (aggregates) are shaped and held together can signal a horizon change.
- **Root distribution:** A sharp decrease in roots often corresponds to a restrictive layer below.
- **Human disturbance:** Signs of compaction, tillage, or fill material may appear as distinct layers.
- **Rock fragment content:** A sudden increase or decrease in coarse fragments marks a boundary.

Use your soil knife to help identify boundaries. Pull peds from the pit wall at different depths and compare their size, shape, and density. Probe the wall with the knife tip, resistance can change noticeably when you move from one horizon into another.



Soil Profile A (above left) is an example of a notable change in where the roots are growing. Roots stop moving into the soil at around 70cm indicating a change in soil properties at that boundary. **Soil profile B** (above right) is an example of when using colors to determine horizon boundaries would be appropriate.



Soil Profile C (above left) is an example of separate parent materials. Above we can see over bank deposits where when the water overflows, it deposits water and sediments onto the bank, we can also see nice development of soil organic matter (dark surface colors). Starting at about 55 cm we can see that the color drastically changes where we have the soils weather from limestone residuum. **Soil profile D** (above right) is an example where we can see distinct changes in rock fragment distribution in different horizons.

Step 2: Mark horizon boundaries and depths

Once you have identified where horizon boundaries occur, mark them by inserting golf tees horizontally into the pit wall at each transition point. Golf tees give you a clear visual reference when photographing the profile and when measuring depths.

Using a tape measure with 0 cm at the soil surface, record the depth to the bottom of each horizon. These depths correspond to the depth you will enter in LandPKS Soil ID. Take a vertical photograph of the full profile at this stage – capture one pit face from surface to bottom, with the surface either entirely in sun or entirely in shade to avoid mixed lighting.

If horizon identification is not possible: Use one of the preset depth options (see Soil pit depths section above.)

Step 3: Collect a sample from each horizon or depth

Collect a separate sample from each horizon or depth. Using a 500 mL measuring cup gives you a standardized volume that allows consistent comparisons across horizons and sites. Fill the cup to the 500 mL line with material taken from within the horizon, then transfer the sample to a labeled container. Keep each horizon's sample separate to avoid mixing material from different depths.

Clean your hands thoroughly between samples. Residual material from a previous horizon on your hands or tools will contaminate the next sample and affect texture and color readings.

Step 4: Prepare samples for observation

Before recording texture or color, each sample needs to be prepared. Raw samples from the pit contain coarse fragments and organic material that will interfere with both observations.

Sieving



Pass the sample through a 2 mm sieve to separate fine earth from rock fragments. The fine earth fraction (material passing through the sieve) is what you will use for texture and color observations. The material retained on the sieve is your coarse fragment fraction, which you will weigh or estimate by volume to calculate rock fragment percentage. Handle the sieve gently — sieves are easily bent or torn. Break up hard soil peds on a shovel blade before sieving rather than forcing them through.

Removing organic matter

After sieving, remove any visible organic material—roots, plant debris, and charcoal—from the fine earth fraction by hand. Organic matter affects both texture (it feels fibrous and spongy rather than mineral) and color (it darkens the sample). Removing it ensures your observations reflect the mineral soil properties that the Soil ID algorithm is designed to match.

Note: This preparation applies to texture and color observations. For rock fragment volume, work from the unsieved 500 mL sample before removing coarse material.

Slope Steepness and Slope Shape

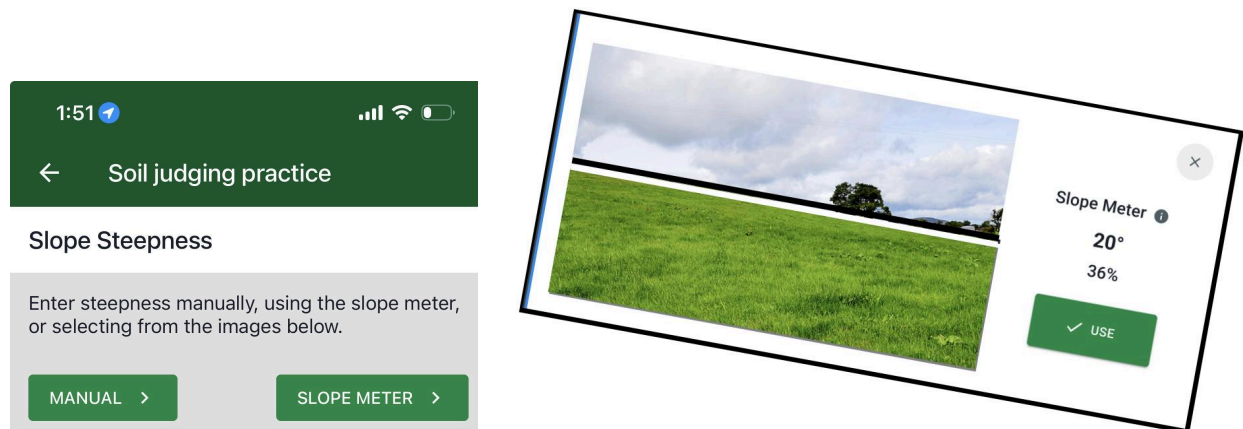
Slope observations are entered under the Slope tab in the site. LandPKS Soil ID records two properties: how steep the slope is, and how it curves. For both observations, think first about how water would naturally flow across the land at your site, the direction and path of that flow is your guide for both measurements.

Note: Slope steepness is used by the U.S. Soil ID algorithm. Slope shape is recorded as part of the site description.

Slope steepness

Slope steepness describes how steeply the land rises or falls at your site, expressed as a percentage. Steeper slopes tend to have shallower, less-developed soils because erosion removes material faster than it can accumulate. Steepness also affects drainage and runoff and helps the Soil ID algorithm distinguish between soils associated with flat terrain versus hillslopes.

Use the Slope Meter in the app to measure slope angle:



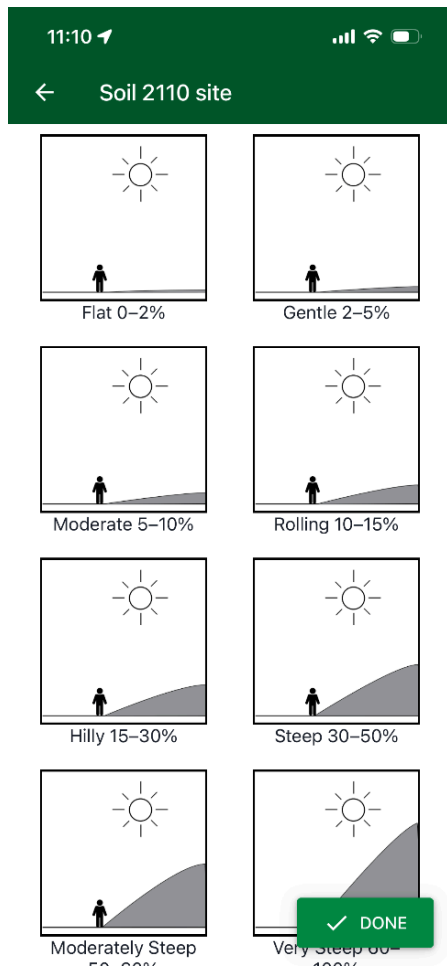
1. Stand facing the site from at least 4 meters away.
2. Identify the direction of the predominant slope at the site.
3. Stand so that you can see the ridge or silhouette of that predominant slope (although you may need to get close to the ground to see it).
4. The direction you are facing should be perpendicular to the direction of the slope, if you hold your arms out to your side, the line they make should be parallel to the direction of the slope.
5. Position your phone so that the solid white line is lined up with the land's slope; try to place the white line along the slope's edge. You may need to crouch down if the silhouette of the slope is not easy to see while standing.

Alternative method: If the land is not too curved and bumpy, you can place a yard stick on the ground at the site and then align your phone on the stick to get the angle of the slope.

Select the range that best matches your measurement:

Range	Example terrain
0-2%	Nearly flat; floodplains, lake beds, playas
2-5%	Gently sloping; most cropland and many rangelands
5-10%	Moderately sloping; rolling terrain
10-15%	Strongly sloping; steeper hillslopes
15-30%	Steep; many undisturbed rangelands and footslopes
30-50%	Very steep; most cultivation not practical
50-60%	Extremely steep
60-100%	Precipitous
100%+	Vertical or overhanging faces

Always measure along the direction water would flow downhill. Tap Done.



Slope shape

Slope shape describes how the land surface curves at your site. LandPKS Soil ID asks you to assess shape in two directions separately: across the slope (side to side) and down the slope (uphill to downhill). Thinking about how water would move across the surface is the most reliable way to identify each.

Shape across the slope

Look across the slope, perpendicular to the direction water flows downhill. Ask: would water moving across this surface spread out, stay parallel, or converge?

- **Concave (hollowed):** The surface curves inward like a valley or swale. Water converges toward the center.
- **Linear (straight):** No side-to-side curvature. Water flows in roughly parallel paths.
- **Convex (rounded):** The surface curves outward like a ridge or nose. Water diverges and spreads away from the center.

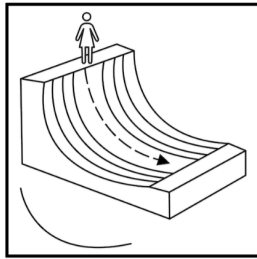
Shape down the slope

Now look in the direction water flows downhill. Ask: does the slope flatten out, stay constant, or steepen as water moves away from the crest?

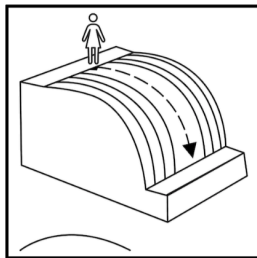
- **Concave (hollowed):** The slope decreases in steepness downhill. The surface flattens toward the bottom, slowing water flow.
- **Linear (straight):** Consistent steepness from top to bottom with no change in gradient.
- **Convex (rounded):** The slope increases in steepness downhill. The surface steepens as water moves away from the crest, accelerating flow.

Select the option that best matches what you observe for each direction, then tap Done.

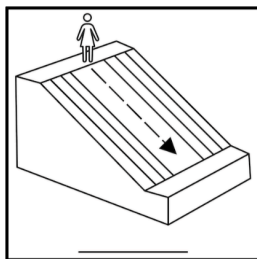
Down Slope



Concave

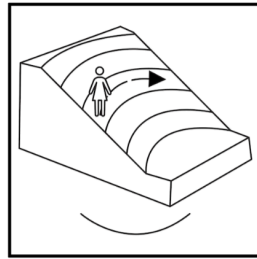


Convex

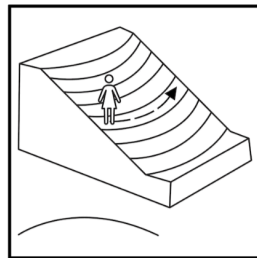


Linear

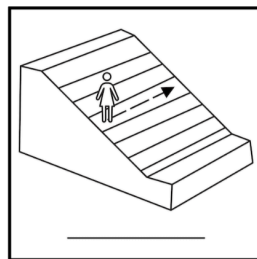
Cross Slope



Concave



Convex



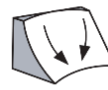
Linear

11:10



Soil 2110 site

Slope Shape ⓘ



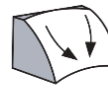
Concave
Concave



Concave
Convex



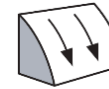
Concave
Linear



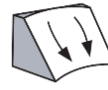
Convex
Concave



Convex
Convex



Convex
Linear



Linear
Concave



Linear
Convex



Linear
Linear



DONE

Surface Cracks

Surface crack observations are entered on the Soil tab in the site. The presence or absence of cracks, and their depth, is a useful indicator for Soil ID because certain crack types are diagnostic of specific clay-rich soils.

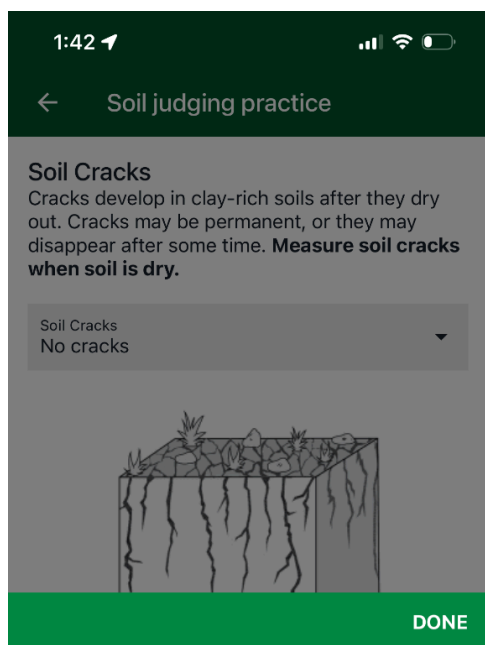
Cracks form when clay-rich soils dry out and shrink. **Always assess surface cracks when the soil is dry**; a recently wetted soil will not show cracks even if it normally has them.



How to record surface cracks

Select one of the three options in the app based on what you observe at the soil surface:

- **No cracks:** No cracks are visible on the soil surface.
- **Surface cracks:** Cracks are visible at the surface but are less than 25 cm (10 in) deep.
- **Deep vertical cracks:** Cracks are at least 5 mm wide and at least 25 cm deep. you should be able to insert a pencil into the crack.



☒ No cracks

☐ Surface cracks only

☐ Deep vertical cracks

What deep vertical cracks tell you

Deep vertical cracks are a strong indicator of shrink-swell clays; clay minerals that expand significantly when wet and contract as they dry. This repeated expansion and contraction is a defining characteristic of Vertisols.

Shrink-swell clays have important implications for land management:

- **Plant establishment:** The repeated shrinking and swelling physically shears roots, which limits the range of plant species that can establish and persist on these soils. Fewer species are adapted to tolerate this disturbance.
- **Drainage:** The high clay content restricts internal drainage. These soils can be waterlogged when wet and extremely hard when dry.

Important: If you arrive at a site after recent rain, the soil may appear crack-free even if deep cracks are normally present. Where possible, note whether the surface is currently dry or recently wetted, and return to record cracks under dry conditions if needed.

Texture Class and Rock Fragment Volume

Why this matters

Soil texture and rock fragment content are two of the most important field properties for understanding how soils function. Together, they influence water holding capacity, infiltration, root growth, nutrient availability, and overall land use potential. Texture describes the proportion of sand, silt, and clay, while rock fragments describe the amount of material larger than 2 mm in the soil.

Needed materials:

- Water source (spray bottle preferred for control)
- Sieve (~2 mm mesh) for removing rock fragments before texturing
- Measuring container (e.g., 1 L cup) for measuring rock fragment volume
- Soil knife or small tool for breaking apart soil peds
- Towel or cloth to clean hands between samples

Part 1: Rock fragments

Rock fragments are particles larger than 2 mm in diameter and are classified as:

- Gravel: 2–75 mm (~up to 3 inches)
- Cobbles: 75–250 mm (~3–10 inches)
- Stones: >250 mm (>10 inches)

These fragments don't hold water or nutrients like fine soil particles, so higher rock fragment content generally reduces soil water storage, nutrient holding capacity and productivity.

How to measure rock fragments

Step 1: Collect a representative sample

- Sample each soil horizon or depth separately.
- Don't avoid gravel, include it in your sample.
- A 1 liter measuring cup works well. Fill to the 500 mL line with sample from the chosen horizon.
- Pour the sample into a sieve.
- Break apart soil aggregates (peds) carefully, don't force material through the mesh.
- Separate fine earth (<2 mm) from rock fragments (>2 mm).

Step 2: Estimate percent rock fragments

- Place the separated soil back into the measuring container.
- Calculate percent by volume. For example: 400 mL soil in a 500 mL sample = 80% soil / 20% rock fragments.

Step 3: Account for large fragments

- For cobbles and stones, estimate percent of horizon volume visually.
- If large fragments occupy 20% of the horizon:
 - Remaining soil = 80%
 - Calculate gravel % from that remaining portion.

Step 4: Record in LandPKS Soil ID

Within the Soil tab in your site observations there are sections to record rock fragments for each horizon. Select the matching rock fragment % range that matches your finding. You will also see there are visual representations to aid in decision making in rock fragment % selection.

The screenshot shows the '0-5cm' horizon selection at the top. Below it is the 'Soil Texture' section with a dropdown menu currently set to 'Sandy Clay'. A link to a 'step-by-step guide' is provided. The 'Rock Fragment Volume' section displays five visual representations of soil horizons with different percentages of rock fragments: 0-1%, 1-15% (highlighted with a green border), 15-35%, 35-60%, and a final unlabeled image at the bottom. A green 'DONE' button is located at the bottom right of the rock fragment selection area.

Part 2: Soil texture (texture-by-feel)

Soil texture is the relative proportion of different sized particles in the soil. The three sizes are:

- Sand (0.05–2 mm): gritty, large particles
- Silt (0.002–0.05 mm): smooth, flour-like
- Clay (<0.002 mm): sticky, plastic

Texture is considered a “master variable”, it influences:

- Water retention
- Drainage
- Aeration
- Soil fertility
- Erosion

In LandPKS Soil ID, soil texture is estimated using a step-by-step guided version of the Thein flow diagram. Rather than requiring users to memorize the diagram, the LandPKS Soil ID app walks you through a series of yes/no questions based on the tactile properties of the soil, helping you key out the correct texture class.

The process follows four core decision steps:

1. Can you make a soil ball?
2. Can you form a ribbon?
3. How long is the ribbon before it breaks?
4. How does the soil feel (gritty, smooth, or sticky)?

These guided questions mirror the logic of the Thein flow diagram and simplify texture determination in the field. Follow the prompts in order and answer each question based on what you feel in your soil sample.

← Texture Guide

Prepare the soil:

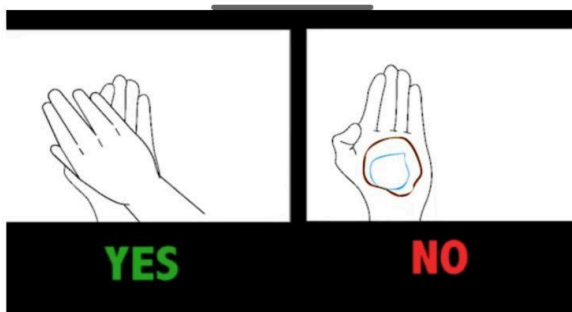
- Get a soil sample of at least a few handfuls.
- Remove all rock fragments larger than 2mm. Use a sieve if you have one.
- Crush clumps of soil (if possible).

Wet the soil:

- Pick up a handful of soil the size of a golf ball (≈25 g).
- Use a spray bottle to slowly apply water to the sample.
- Work the water uniformly into the soil with your hands.
- The soil should be thoroughly damp, but not glistening, with a texture like putty. If the soil is too wet, add more dry soil from your sample.
- Avoid working the soil with your hands for longer than 2 minutes. If you go beyond 2 minutes, discard the soil and start with a new sample.

Form a ball:

- Roll the soil in your hands to see if it forms a ball.
- If it crumbles when you apply slight pressure to roll it, the soil does not form a ball.



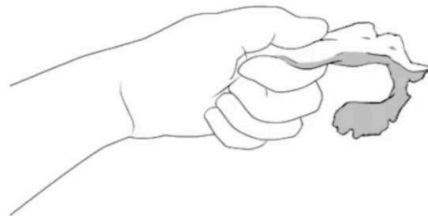
Does the soil form a ball?

- ☐ Yes
- ☐ No

← Texture Guide

Form a ribbon

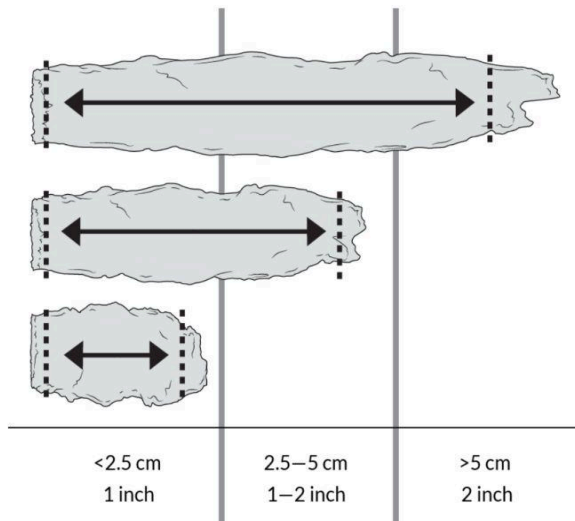
- Grip the soil with your fingers (not your thumb).
- Use the inside of your thumb knuckle (the flat part) to push the soil upwards over the edge of your index finger. Do not use the tip of your thumb to press the soil.
- The ribbon should be parallel to the floor, not pointing upward or downwards.
- If the soil crumbles instead of holding together when you press to form a ribbon, then it does not form a ribbon.
- Let the ribbon fall naturally due to gravity. Measure the length of the segment, ignoring ragged edges.



Does the soil form a ribbon?

- ☐ Yes
- ☐ No

← Texture Guide



How long is the ribbon?

- ☐ <2.5cm
- ☐ 2.5–5cm
- ☐ >5cm

← Texture Guide

Feel the soil:

- **Gritty** means you can feel individual grains in the soil.
- **Smooth** means that the wetted soil is slippery or soapy in feel.
- **Not gritty or smooth** means that neither of those two textures dominates. You may still feel some sand grains or some soapiness, but the feel of the soil is not predominantly one or the other.



How does the soil feel?

- ☐ Gritty
- ☒ Not gritty or smooth
- ☐ Smooth

SOIL TEXTURE: CLAY LOAM

✓ **USE THIS TEXTURE CLASS**

When you have completed the step-by-step guide, tap “USE THIS TEXTURE CLASS” button to add the texture observation.

Soil Color

Soil color is an important property used to help describe in evaluating the soil's physical and chemical properties. Soil color can be a useful tool for correctly identifying soil and can be an important indicator of soil health. Soil color is linked to mineral composition, soil fertility, soil organic matter, and more.

In LandPKS Soil ID, soil color can be recorded in the site under the Soil tab. Soil color can be assessed using two methods.

1:54 5G

← Test ⚙️

SITE SLOPE **SOIL** NOTES

SOIL CRACKS

Soil Pit DEPTHS ▾

0–5cm ⋮

✓ TEXTURE CLASS Sandy Clay

✓ ROCK FRAGMENT 1–15%

✓ SOIL COLOR 10RP 3/3

5–15cm ⋮

✓ TEXTURE CLASS Sandy Clay Loam

✓ ROCK FRAGMENT 15–35%

SOIL COLOR

15–30cm ⋮

TEXTURE CLASS

ROCK FRAGMENT

SOIL COLOR

← Test 1

0–5cm

Soil Color ⓘ USE PHOTO

Hue 7.5 Hue R

Value 2.5 Chroma 4

7.5R 2.5/4

✓ DONE

1. **Use Photo:** This method allows you to take a photo of your soil sample next to a standardized color of Post-it note so the application has a reference.
2. **Enter Values:** This method uses the Munsell Soil Color Book, a standardized system that allows soil colors to be described consistently across users, and locations.

1. Assess soil color using a photo and reference

If you don't have a Munsell Soil Color Book, LandPKS Soil ID enables you to assess soil color by taking a photo of the soil sample next to a standardized color reference (3M Canary Yellow Post-it note).

When you tap Soil Color on the Soil tab you will see a large Add Photo icon which will allow you to open your camera and take a photo or add a photo from your photo gallery. For step-by-step instructions, tap the Soil Color Guide button located beneath the Add Photo button.

Step-by-step instruction provided by the application:

1. Gather Post-it notes

To ensure accurate color analysis you must use 3M Canary Yellow Post-it notes for your reference card, with the guidelines:



- Only use new Post-it notes.
- Stack at least 3 Post-it notes on top of each other.
- Make sure each Post-it note isn't degraded by sunlight, as considerable variation can exist depending on sun exposure.
- **Store Post-it notes in dark envelopes to avoid sun exposure.**

2. Prepare soil sample

- Use dry soil whenever possible. The app does have a way to indicate if your soil is wet or dry, but dry soil color is more accurate.
- If your soil layer has multiple colors (i.e. mottles, redoximorphic features, or carbonates), isolate the dominant matrix color.
- Run soil through a 2mm sieve to create a pile of homogeneous soil, or use your hands to pick out anything larger than 2mm.
- Flatten the pile of soil to minimize shadows within the soil sample.

3. Prepare lighting

- The soil color photo needs to be taken in even lighting conditions and shaded from direct sun. Try having overhead light source rather than side lighting

4. Place reference card next to soil

- Place the Post-it note next to the prepared soil sample, in the proper lighting conditions.



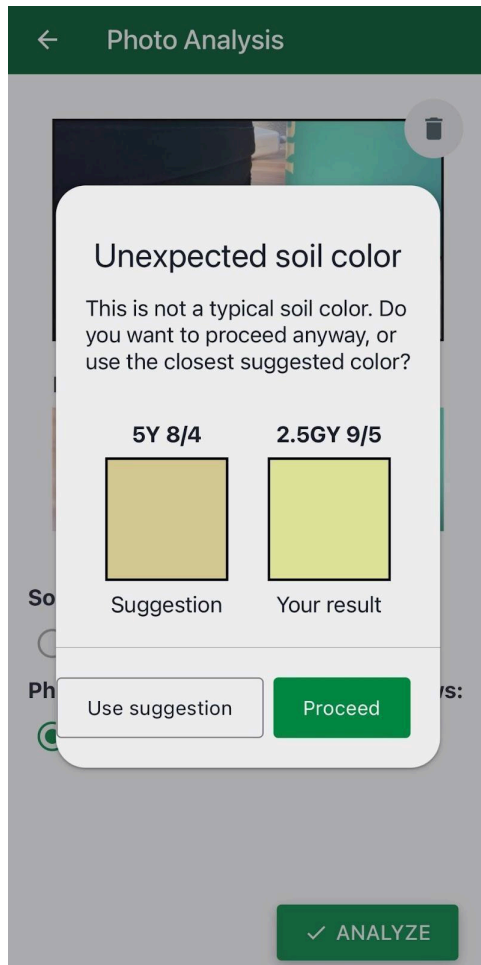
5. Compose photo

- Place the camera as close to the soil and Post-it note as you can without creating shadows or blurriness.

6. Ready to take photo

- Take the photo with your device's camera or hit the go back button to upload a previously taken photo.

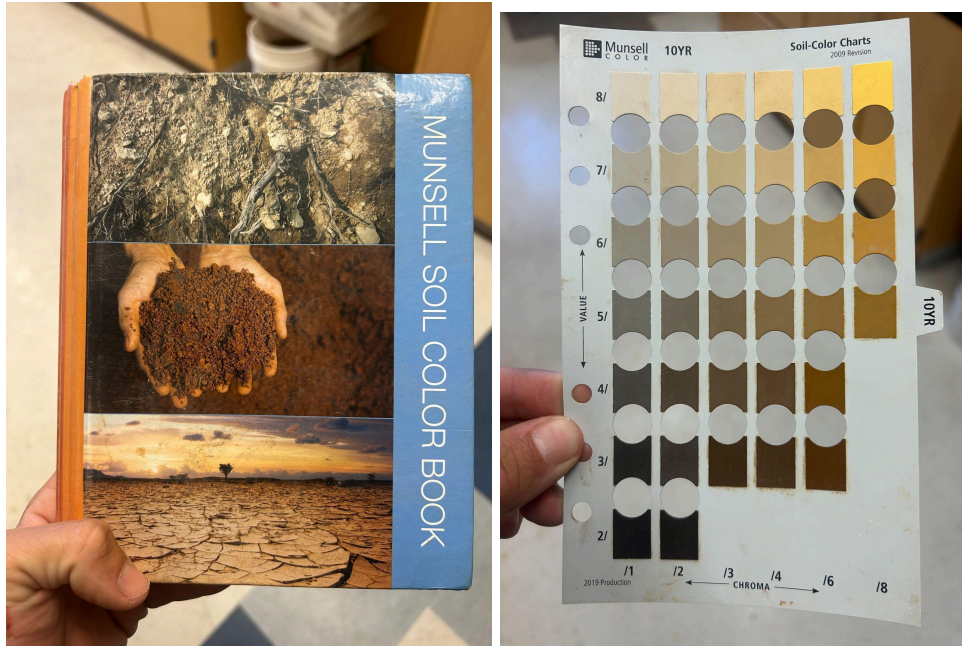
If an unusual color is calculated, LandPKS Soil ID will ask you if you want to **proceed** with the color that was calculated, or adjust the color to the closest standard soil color.



If you want to discard the color result and start over, tap the **Trash** icon in the top right corner of the color result.

2. The Munsell soil color system

When using the Munsell color book to access soil color, you will need to enter color value manually by selecting the "ENTER VALUES" button.



The Munsell system describes color using three components:

- **Hue** – the type of color (for example, red or yellow).
Hues are written as a number and letters, such as 10YR or 5R.
- **Value** – the lightness or darkness of the color.
Lower values are darker; higher values are lighter.
- **Chroma** – the strength or intensity of the color.
Low chroma colors appear dull or grayish, while high chroma colors appear brighter.

Each soil color is written in the format:

Hue Value/Chroma

Example: 10YR 5/3

Preparing to determine soil color

- For LandPKS Soil ID observations, record either the moist or dry soil color.
- Soil peds taken directly from the profile are often moist when first removed.
- Use soil collected from the appropriate horizon.

Determining soil color

1. Open the Munsell Soil Color Book to the page that best matches the general hue of your soil.
2. Hold the soil ped behind the page so that the ped is exposed through the hole beneath the color chip.
3. Compare the soil to the chips and select the chip that shows the least contrast with the soil (the closest match).

4. If needed, flip between hue pages to confirm you have selected the best match.

Lighting and positioning

- Stand so the sun is behind you, shining over your shoulder.
- Avoid casting shadows on the soil or color book.
- Remove sunglasses or tinted eyewear.
- Use natural light whenever possible.

Recording the color

- Record the full Munsell notation (Hue Value/Chroma) in LandPKS Soil ID.
- Example: 10YR 5/3

Rate a Soil Match

A list of Soil Matches is found within each site. Each soil series in the list has a percentage next to it. That percentage represents how well the soil you are describing matches a given series. The list updates automatically as you add more observations; the more observations you enter, the more refined the percentages become.

How the match percentage is calculated

Each percentage is an overall match score that combines two components:

- **Location score:** How close the soil series is to your site based on soil map data; whether it falls within your site's map unit or a nearby one, and how prevalent it is in that area.
- **Properties score:** How closely the properties of the soil series match the observations you have entered in the Soil Properties tab; texture, color, rock fragments, slope, and other inputs.

2:51

← Soil 2110 site

Soil ID

LandPKS Soil ID uses data from soil maps and observations entered by users about this site to calculate the top matches for the site's soil. Choose the best soil match for this site to learn about its ecological site and other properties.

Soil Matches ⓘ

38% match Nickel >

37% match Bluepoint >

30% match Canutio >

27% match Berino >

23% match Cruces >

23% match Dona ana >

22% match Cacique >

2:51

← Soil 2110 site

Nickel

Typic Calciorthids

The Nickel series consists of very deep, well drained soils that formed in alluvium from mixed rock sources. Nickel soils are on fan remnants. Slope ranges from 0 to 35 percent. The mean annual precipitation is about 5 inches and the mean annual temperature is about 65 degrees F.

SOIL SERIES FULL DESCRIPTION ↗

Ecological Site Name: Sandy, Desert Shrub
Ecological Site ID: R042BB012NM

ECOLOGICAL SITE FULL DESCRIPTION ↗

Land Capability Class: 7c
Data Source: SSURGO

Location Score ⓘ

In adjacent map unit, 45 meters distant

9%

VIEW LOCATION ON SOIL WEB ↗

Soil Properties Score ⓘ

68%

RATE MATCH

Depth (cm) Texture Color Ro Fr

A site with no observations will show percentages based on location alone. As you add properties observations, the scores adjust to reflect both where the soil is mapped and what it actually looks like in the field. This is why entering more observations generally produces a more accurate result—the properties score pulls the match toward or away from each series based on what you recorded.

Reading the Soil Matches list

The series at the top of the list has the highest combined score and is the current best match for your site. Tap any series to open its description page which includes a summary of the soil's properties, and links to additional resources.

Use the table to evaluate how well each candidate matches your field data. If the top-ranked series clearly does not align with what you observed, for example, it shows a sandy loam profile but your site had heavy clay throughout, review the next candidates down the list. The algorithm ranks by score, but you have the final call based on what you saw in the field.

Rate match

LandPKS Soil ID simplifies the soil identification process by providing you with the option to discard potential soils, or select the best match. While reviewing a potential soil match, review its description and consider the properties table. Tap “Rate Match” to mark a potential improvement. Tap “No, it’s different” to exclude a soil. Excluded soils will have a lighter color in the list of soils. Tap “Yes, select soil for this site” to mark a soil as the best match. Congratulations! You’ve identified a soil!

If no candidates seem like a good fit: Check that your observations were entered correctly, particularly texture and color, which have the strongest influence on the properties score. Adding any missing observations will also help refine the results. In instances where soil maps contain no accurate data, a matching soil may not appear. In that instance, export your soil observations and share them with an expert to help you identify the soil.

Ecological Site Name: Low Mountain
Mesic Residuum
Ecological Site ID: F130BY007WV

[ECOLOGICAL SITE FULL DESCRIPTION](#)

Land Capability Class: 2e
Data Source: SSURGO

Location Score ⓘ

In adjacent map unit, 20
meters distance

51%

[VIEW LOCATION ON SOIL WEB](#)

Soil Properties Score ⓘ

51%

Depth (cm)	Texture	Color	Rock Frag
0–20	Clay Loam	5YR 5/5	1–1!
20–140	Clay	2.5YR 6/6	1–1!
140–203	Loam	5YR 6/6	1–1!

RATE MATCH

Ecological Site Name: Low Mountain
Mesic Residuum
Ecological Site ID: F130BY007WV

[ECOLOGICAL SITE FULL DESCRIPTION](#)

Land Capability Class: 2e
Data Source: SSURGO

Location Score ⓘ

In adjacent map unit, 20
meters distance

51%

[VIEW LOCATION ON SOIL WEB](#)

DONE

Rate this soil match

Is this the right soil? Use your best
judgement based on the soil description
and property comparisons.

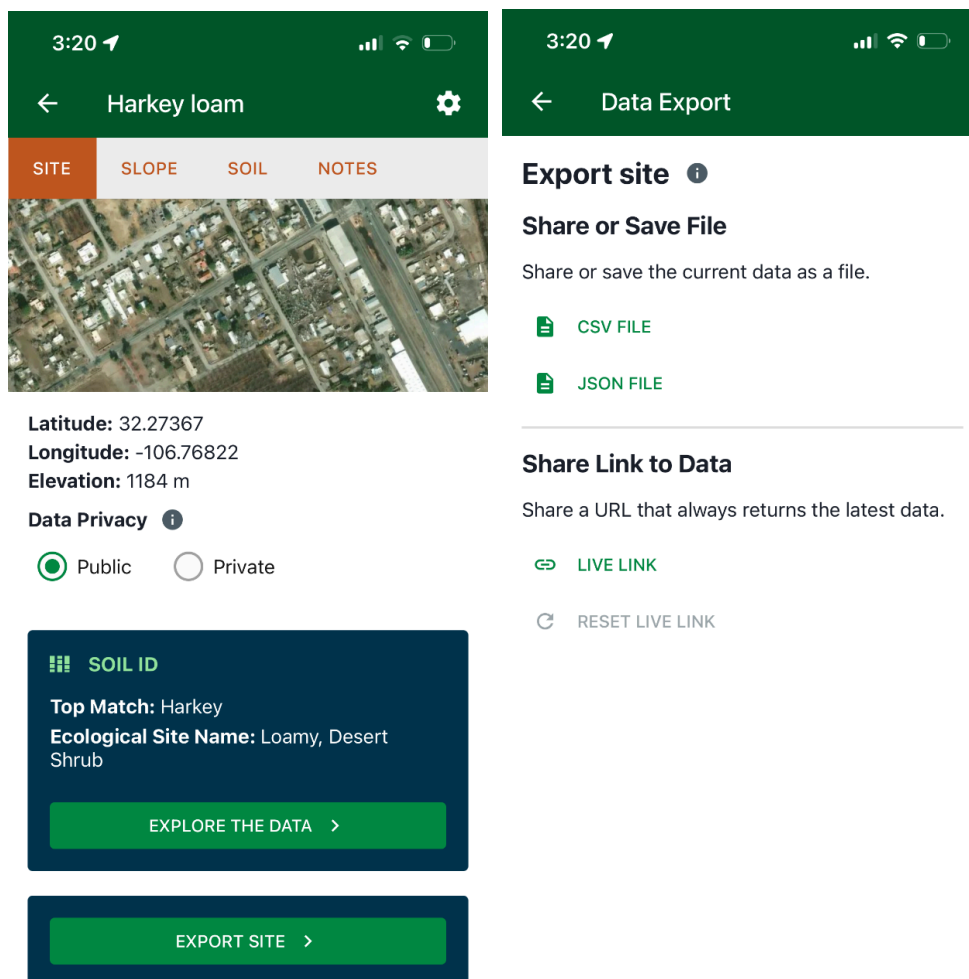
- ☒ Yes, select soil for this site
☐ No, it's different
☐ Not sure yet

Export Data

LandPKS Soil ID allows you to export recorded data for use outside the app for analysis, reporting, sharing with collaborators, or importing into other software.

Data can be exported at three different levels:

- **Single site:** Use the Export Site button on the Site tab to export data for one site.
- **All sites in a project:** Open the project and go to the Export tab to download data for all sites in that project at once.
- **All your sites:** Go to the app settings menu at the bottom of the main Sites and Projects screens to export all sites visible to you in the app by selecting the data export option.



Export options

CSV file

CSV (Comma-Separated Values) exports your data as a spreadsheet-compatible file that opens directly in Excel, Google Sheets, or similar applications. This is the best option for most users who want to view, sort, filter, or share their data in a familiar table format. Tap CSV File to save or share the file from your device.

JSON file

JSON (JavaScript Object Notation) exports your data in a structured, computer-readable format. This option is intended for software developers or users who need to import LandPKS Soil ID data into another software system or database. Tap JSON File to save or share the file.

Live link

A live link is a URL that always points to the most current data. Anyone with the link can open it in a browser and download the latest CSV or JSON export without needing access to the app. This is useful for sharing data with collaborators on an ongoing basis, or for integrating LandPKS Soil ID data into automated workflows.

To manage your live link:

- Tap Live Link to generate a shareable URL.
- Tap Reset Live Link to revoke the existing link and create a new one. Anyone using the old link will lose access.

Note: Anyone who has the live link can access and download the data. Only share it with people you intend to give access to. If you need to revoke access, use Reset Live Link.

Making Decisions Based on the Ground-Truthed Data

Once you have recorded your site observations and identified the soil, that information becomes a foundation for practical land management decisions. LandPKS Soil ID is a data collection and identification tool; it does not make management recommendations directly, but the data it generates can inform a wide range of decisions depending on your use case.

Using Soil ID results

A confirmed soil series is the starting point for understanding the land's potential and limitations. Each soil series has a documented history of research, management experience, and performance data associated with it. For U.S. sites, soil matches link directly to the NRCS soil series description, which includes information on typical land use, vegetation, drainage, and management considerations. Review the Use and Vegetation section of that description for guidance relevant to your situation. Soils at sites outside the U.S. provide a “Management” recommendation from the FAO.

Common use cases

- **Ranching and grazing management:** Soil type influences forage production, carrying capacity, and how quickly a site recovers from grazing pressure. Knowing the soil, particularly its texture, drainage, and associated ecological site, can help set realistic stocking rates and plan rotations.
- **Agriculture and cropping:** Soil texture, drainage class, and depth directly affect what crops will perform well and how the soil should be managed. An accurate Soil ID can help match crops to soil capability and identify limitations such as poor drainage, high clay content, or shallow rooting depth.
- **Conservation and restoration:** Understanding the soil at a site helps prioritize conservation investments and set realistic restoration goals. Ecological site descriptions (available for U.S. sites) provide reference conditions and state-and-transition information that can guide restoration planning.
- **Research and monitoring:** Standardized soil observations recorded in LandPKS Soil ID can serve as baseline data for monitoring soil condition over time or comparing sites across a landscape. Exporting the data allows it to be integrated into broader datasets and analysis workflows.

Getting expert input

LandPKS Soil ID gives you the data, but interpreting it for specific management decisions often benefits from expert input. Soil scientists, agronomists, range conservationists, and local extension agents can review Soil ID results and observations and translate them into

site-specific recommendations. You can share the data with an expert by exporting it as a CSV or JSON file, or by sharing a live link directly from the app.

Know the limits of the data

LandPKS Soil ID observations are field-based estimates, not laboratory measurements. Texture by feel, visual color matching, and estimated rock fragment volume all carry some degree of uncertainty. A Soil ID match is a best estimate based on available map data and entered observations; it should be treated as a strong hypothesis, not a definitive classification. For high-stakes decisions such as large infrastructure investments, land purchase, or remediation projects, laboratory soil analysis and consultation with a soil scientist are recommended.

Conclusion

We hope this manual guides you in using LandPKS Soil ID in the field, and helps you to realize your land's potential.

Find our library of tutorials, guides, videos, case studies and more at landpotential.org/knowledge.

We are constantly improving LandPKS Soil ID and adding new features. Keep up to date at <https://landpotential.org/news> and sign up for newsletters at the bottom of the website.

Join the LandPKS Beta Program to receive early access to the newest features at <https://landpotential.org/about/join-the-landpks-beta-program>.

If you need more support use the form at <https://landpotential.org/support>.

For general inquiries you can contact us at <https://landpotential.org/about/contact>.

And, learn more about partnerships with LandPKS at <https://landpotential.org/about/partners>.

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