YOUR SOIL, READ CLOSELY

Living Soil Report

AREAS *Lawn & Native Plants*

Prepared for **Altadena Alton** · *sampled June 2026*

	SOIL HEALTH	SOIL MICROBIOME	SOIL SAFETY
Lawn	82/100 *Building*	70/100 *Building*	55/100 *High concern*
Native Plants	92/100 *Thriving*	67/100 *Building*	76/100 *Moderate concern*

Lawn. Rich lawn soil with a strong mineral base. The main thing to watch is a slightly alkaline, magnesium-heavy profile that nudges zinc down.

Native Plants. A mature, well-balanced soil — read the low nitrogen as normal-and-fine for natives, not a problem.

AREAS TESTED
Lawn / turf, and a native-plant garden

PROPERTY
Long-established property, two areas sampled

WHAT YOU GROW
Turfgrass, California natives, and fruit trees

Personalized to this context — reply to your report email if anything's wrong or has changed.

Both areas came back as **rich, mineral-strong soil** — organic matter well above typical, a full mineral base, and pH just on the alkaline side of neutral. Three things run through both samples: **nitrogen reads low, lead is present, and a few soil-borne organisms came back elevated.** What differs is what those things mean for each area. Low nitrogen is worth feeding on the lawn and is exactly right for the native garden. Lead sits above its screening level on the lawn side and below it among the natives. The measurements below show both areas side by side; where the response differs, the sections say which area they apply to. If anything here doesn't match how you use these areas, reply to your report email and we'll adjust.

THIS SOIL WOULD BE GOOD FOR

Beyond the lawn it carries now, ground with this chemistry — pH 7.31, 9% organic matter, and a full mineral base — suits:

Lawn — its current job — the organic matter and mineral base under this turf are a real strength.

Mediterranean herbs and shrubs — lavender, rosemary, and culinary sage are comfortable in slightly alkaline ground and thrifty with water.

Mediterranean fruit — fig, pomegranate, and olive — long grown in ground like this.

Vegetables, with preparation — most vegetables tolerate this pH; they'd want added nitrogen and steady water — see "If you grow vegetables," Section 5.

Soil Health

SECTION 1

MEASUREMENT	AREA	RESULT	TARGET
Phosphorus	*Lawn*	69.59 ppm IN RANGE	25+ ppm
	Native Plants	40.07 ppm IN RANGE	30 – 50 ppm
Potassium	*Lawn*	216.92 ppm IN RANGE	40+ ppm
	Native Plants	213.07 ppm IN RANGE	120+ ppm
Calcium	*Lawn*	2748.61 ppm IN RANGE	1,000+ ppm
	Native Plants	3571.93 ppm IN RANGE	
Magnesium	*Lawn*	585.99 ppm IN RANGE	150+ ppm
	Native Plants	735.11 ppm IN RANGE	
Sulfur	*Lawn*	12.41 ppm IN RANGE	10+ ppm
	Native Plants	12.12 ppm IN RANGE	
Iron	*Lawn*	374 ppm IN RANGE	50+ ppm
	Native Plants	245.21 ppm IN RANGE	
Copper	*Lawn*	2.68 ppm IN RANGE	1 – 10 ppm
	Native Plants	3.84 ppm IN RANGE	
CEC	*Lawn*	14.96 meq/100g IN RANGE	Higher is better
	Native Plants	19.11 meq/100g IN RANGE	
K:Mg saturation ratio	*Lawn*	0.12 IN RANGE	< 0.33
	Native Plants	0.1 IN RANGE	
Organic Matter	*Lawn*	9.21 % IN RANGE	4%+
	Native Plants	9.08 % IN RANGE	
pH	*Lawn*	7.31 SOMEWHAT HIGH	5.5 – 7.0
	Native Plants	6.96 SOMEWHAT HIGH	6.2 – 6.8
Zinc	*Lawn*	2.01 ppm SOMEWHAT LOW	3 – 15 ppm
	Native Plants	3.82 ppm IN RANGE	

MEASUREMENT	AREA	RESULT	TARGET
Ca:Mg ratio	*Lawn*	2.71 SOMEWHAT LOW	4 – 8
	Native Plants	2.8 LOW	
Nitrate	*Lawn*	0.49 ppm LOW	20 – 40 ppm
	Native Plants	0.45 ppm LOW	
Boron	*Lawn*	0.36 ppm INFORMATIONAL	—
	Native Plants	0.7 ppm INFORMATIONAL	—

A note on nitrogen: soil nitrogen is highly mobile — it leaches, converts, and cycles quickly — so any single test captures one moment, not a lasting measure.

Each area carries its own target, because what counts as a good reading depends on what grows there. Every bar in a group shares one axis, so the bars are comparable even where the targets are not.

The two areas are close relatives. The lawn runs **slightly alkaline (pH 7.31) and magnesium-heavy**, which tilts the calcium-to-magnesium balance and makes zinc a little less available to the grass — that can leave blades pale. The native beds sit a touch lower (pH 6.96), above our vegetable-garden band and right where natives, citrus, and stone fruit are comfortable, with every mineral in a healthy range.

Nitrogen came back low in both. A single nitrate reading is a point-in-time snapshot — it moves with weather and season — so we don't lean on it.

Soil Microbiome

SECTION 2

MEASUREMENT	AREA	RESULT	WHAT'S BETTER
Diversity index (Shannon)	*Lawn*	8.12 IN RANGE	Higher is better
	Native Plants	8.09 SOMEWHAT LOW	
Community weighted growth rate	*Lawn*	1.64 IN RANGE	Higher is better
	Native Plants	1.59 IN RANGE	
Bacterial:Fungal ratio (DNA)	*Lawn*	11.39 IN RANGE	Lower is better
	Native Plants	7.78 IN RANGE	
Mycorrhizal Fungi (AMF)	*Lawn*	5.01 ppm IN RANGE	Higher is better
	Native Plants	1.84 ppm IN RANGE	
P solubilization activity	*Lawn*	221.3 ppm IN RANGE	Higher is better
	Native Plants	295.01 ppm IN RANGE	
Ammonification (Anaerobic Respiration)	*Lawn*	153.01 ppm IN RANGE	Higher is better
	Native Plants	149.18 ppm IN RANGE	
Cellulose Breakdown	*Lawn*	366.8 ppm IN RANGE	Higher is better
	Native Plants	457.19 ppm IN RANGE	
Lignin Breakdown	*Lawn*	59.58 ppm IN RANGE	Higher is better
	Native Plants	79.36 ppm IN RANGE	

MEASUREMENT	AREA	RESULT	WHAT'S BETTER
Siderophore production	*Lawn*	153.13 ppm **IN RANGE**	Higher is better
	Native Plants	194.33 ppm **IN RANGE**	
Sulfur solubilization	*Lawn*	279.09 ppm **IN RANGE**	Higher is better
	Native Plants	228.21 ppm **IN RANGE**	
Urease	*Lawn*	86.4 ppm **IN RANGE**	Higher is better
	Native Plants	100.25 ppm **LOW**	
Plant Growth Promoters	*Lawn*	0.95 ppm **LOW**	Higher is better
	Native Plants	6.39 ppm **IN RANGE**	
N fixation potential	*Lawn*	0.72 ppm **LOW**	Higher is better
	Native Plants	0.54 ppm **LOW**	
Nitrification	*Lawn*	15.85 ppm **LOW**	Higher is better
	Native Plants	7.69 ppm **LOW**	
Root colonization potential	*Lawn*	603.12 ppm **LOW**	Higher is better
	Native Plants	785.76 ppm **IN RANGE**	

There is no single number to hit here. The lab classifies each of these as low, moderate or high for the sample it came from, and that classification — not the raw figure — is what the bar and the status show. So a higher number is not automatically the better result, and the figures are not comparable between areas.

Both areas show healthy mycorrhizae — twenty years of mulching on the native side, and a surprisingly rich profile under the turf. In both, the nitrogen-cycling functions (nitrogen fixation, nitrification, urease) read low. On the lawn those are worth building up. In a lean, low-input native system they simply reflect how that ground works.

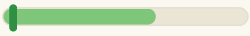
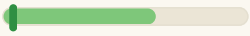
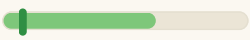
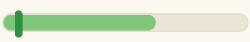
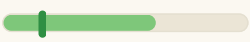
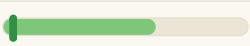
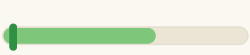
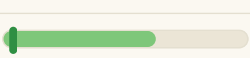
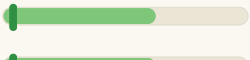
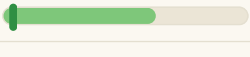
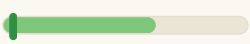
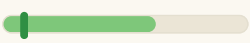
Soil Safety — heavy metals

SECTION 3

The values in this section are illustrative examples showing how Soil Safety results are reported — these samples were not tested for metals.

This panel screens for the seventeen metals on California's standard CAM 17 list — the same panel professional post-fire soil assessments run. Most results are compared against residential screening levels; where a metal occurs naturally at levels that reach its published number, the comparison is to that natural range instead, and the table says which is which.

METAL	AREA	RESULT	SCREENING LEVEL
Lead	*Lawn*	92 ppm **ABOVE SCREENING LEVEL**	80 ppm (California)
	Native Plants	58 ppm **BELOW SCREENING LEVEL**	
Chromium	*Lawn*	24 ppm **REPORTED ONLY**	no screening level for total chromium
	Native Plants	21 ppm **REPORTED ONLY**	
Antimony	*Lawn*	1.4 ppm **BELOW SCREENING LEVEL**	31 ppm
	Native Plants	0.9 ppm **BELOW SCREENING LEVEL**	
Arsenic	*Lawn*	8.2 ppm **WITHIN NATURAL RANGE**	12 ppm (natural range)
	Native Plants	7.5 ppm **WITHIN NATURAL RANGE**	

METAL	AREA	RESULT	SCREENING LEVEL
Barium	*Lawn*	340 ppm **BELOW SCREENING LEVEL** 	15,000 ppm
	Native Plants	300 ppm **BELOW SCREENING LEVEL** 	
Beryllium	*Lawn*	0.5 ppm **BELOW SCREENING LEVEL** 	160 ppm
	Native Plants	0.4 ppm **BELOW SCREENING LEVEL** 	
Cadmium	*Lawn*	0.9 ppm **BELOW SCREENING LEVEL** 	7.1 ppm
	Native Plants	0.7 ppm **BELOW SCREENING LEVEL** 	
Cobalt	*Lawn*	12 ppm **BELOW SCREENING LEVEL** 	23 ppm risk level · 47 ppm natural range
	Native Plants	11 ppm **BELOW SCREENING LEVEL** 	
Copper	*Lawn*	110 ppm **BELOW SCREENING LEVEL** 	3,100 ppm
	Native Plants	130 ppm **BELOW SCREENING LEVEL** 	
Mercury	*Lawn*	0.12 ppm **BELOW SCREENING LEVEL**	7.1 ppm
	Native Plants	0.09 ppm **BELOW SCREENING LEVEL** 	
Molybdenum	*Lawn*	1.3 ppm **BELOW SCREENING LEVEL** 	390 ppm
	Native Plants	1 ppm **BELOW SCREENING LEVEL** 	
Nickel	*Lawn*	28 ppm **BELOW SCREENING LEVEL**	1,400 ppm
	Native Plants	25 ppm **BELOW SCREENING LEVEL** 	
Selenium	*Lawn*	0.21 ppm **BELOW SCREENING LEVEL** 	390 ppm
	Native Plants	0.18 ppm **BELOW SCREENING LEVEL**	
Silver	*Lawn*	0.34 ppm **BELOW SCREENING LEVEL**	390 ppm
	Native Plants	0.27 ppm **BELOW SCREENING LEVEL** 	
Thallium	*Lawn*	0.19 ppm **BELOW SCREENING LEVEL**	0.78 ppm risk level · 1.1 ppm natural range
	Native Plants	0.15 ppm **BELOW SCREENING LEVEL**	
Vanadium	*Lawn*	62 ppm **BELOW SCREENING LEVEL**	390 ppm
	Native Plants	58 ppm **BELOW SCREENING LEVEL** 	
Zinc	*Lawn*	240 ppm **BELOW SCREENING LEVEL**	23,000 ppm
	Native Plants	190 ppm **BELOW SCREENING LEVEL** 	

Soil Safety reports the total amount of each metal in the ground — not the portion a body would absorb, and a different measure from the plant-available nutrient readings elsewhere in this report, so the same element can show a different figure in each place. Lead is compared against California's residential screening level (80 ppm), the strictest of the published figures and the one LA County used after the Eaton Fire. Arsenic, thallium and cobalt occur naturally in Southern California soils at levels that reach or pass their published screening numbers. Results for these three are compared against the upper end of that natural range. CAM 17 measures total chromium. Screening levels exist for the trivalent form that dominates in soils and, far lower, for the hexavalent form; neither can be applied to a total figure without knowing the split, so chromium is reported here rather than compared against a level.

What these levels measure. These levels measure soil contact — getting soil on your hands, breathing its dust, a child putting it in their mouth. They are not a measure of what ends up in the food you grow. Crop advice is below and is separate.

Lead is the only metal in either area reading above its level. Arsenic, thallium and cobalt sit within the range Southern California soils carry naturally. Chromium is reported without a comparison, for the reason under the table. Everything else reads comfortably low.

Lead is the one to understand, and the two areas differ. On the lawn it reads 92 ppm against California's 80 — a modest exceedance. Among the natives it reads 58 ppm: below the screening level, but higher than ground far from roads and old structures typically carries. That pattern is common in older neighborhoods, and post-fire testing found lead above screening levels on many properties downwind of the Eaton fire. The screening level is a conservative threshold, and the practical response is a set of simple habits.

GROWING FOOD IN THIS SOIL

Fruiting crops are the safer choice

Tomatoes, peppers, beans, peas, squash, corn, apples, pears. The edible part sits away from the soil and washes clean.

Leafy greens and root crops carry the most

Lettuce, spinach, chard, carrots, radishes, turnips, and low-growing berries. Grow these in a raised bed with imported soil where a metal reads above its level.

Wash and peel

Strip the outer leaves off leafy crops. Scrub root crops with a brush and peel them. Wash everything under cold running water just before eating, not when you pick it.

Keep bare soil covered

Mulch, ground cover or turf over bare ground, and wash hands after gardening.

WHAT TO DO

- **Keep the ground covered.** Dense turf and mulch keep soil from moving as dust, which is the main way lead travels — this lawn already does most of that work; we recommend mulching any patches that go bare.
- **Make washing routine:** hands after garden work, and any homegrown produce before it comes inside.
- **If you plant food on this side of the yard, we recommend a raised bed filled with purchased garden mix** — and favoring fruiting crops like tomatoes and squash over root crops and leafy greens anywhere the ground itself is in play.
- **Keep doing what the rest of this report shows.** Organic matter near 9% and pH in this range both work to keep lead bound to soil particles rather than available to plants.
- Metals vary across a yard, so a spot you use differently — a play area, a future vegetable bed — is worth its own test; and if you re-grade or bring in soil, we recommend re-testing afterward.

What to work on

SECTION 4

Lawn: the soil runs alkaline and magnesium-heavy

The soil is slightly alkaline (pH 7.31), with magnesium high relative to calcium — the two go together. This is behind one of the flags on the nutrition panel, the **calcium-to-magnesium balance**: both minerals are present in good amounts, but

magnesium's share is high, so the ratio reads low. On its own that's a mild, structural note more than a feeding problem — strongly magnesium-heavy soils can pack a little tighter and drain more slowly. The same alkalinity also makes **zinc less available** to the grass (it reads a touch low), which can leave blades pale.

WHAT TO DO

- **Keep feeding organic matter** — compost topdressing and grasscycling. Your organic matter is already a strength (9%); maintaining it is the most reliable way to keep a magnesium-heavy soil loose and micronutrients available over time.
- If color is the issue, a **chelated iron/zinc feed** greens grass faster than nitrogen alone.
- Don't chase the pH down aggressively or add magnesium — neither is needed here.

Nitrogen is low in both areas — and that means two different things

On the **lawn**, low nitrogen is worth feeding; turf responds to routine feeding regardless of what a single test says.

On the **native beds**, leave it alone. California natives are adapted to lean, low-nitrogen soils, and feeding them actually pushes weak, floppy growth and shortens their lives. Twenty years of mulching has built exactly the kind of soil these plants evolved for.

Lead: same habits, more of them on the lawn side

The practical response is the same in both areas and it is mostly about keeping soil where it is. The difference is emphasis: the lawn is the area reading above the screening level, so the food-growing guidance in the Soil Safety section matters most there. The native beds — dense planting over mulch, and fruit taken from trees rather than from the ground — already do most of this work.

A few soil organisms to keep an eye on

Aspergillus came back elevated, a **root-lesion nematode** reads elevated, and **Anthracnose** was moderate. Aspergillus lives on decaying plant material in almost every soil; the reason we flag it is what happens after harvest — it's the black mold of stored onions and garlic and a spoilage risk in stored nuts and corn — rather than disease in the ground.

WHAT TO DO

- **For Aspergillus, the control points are at harvest and in storage, not in the soil** — adding compost or a microbial product won't move it. We recommend keeping bruised or damaged fruit out of storage and storing anything you keep cool and dry.
- **If a shrub or tree wilts or declines despite enough water** (root-lesion nematode): keep it vigorous with mulch over the root zone, and avoid moving soil from that spot into healthy beds — don't try to force it with fertilizer.
- **If you see leaf spots or dark twig lesions** (anthracnose, worse after wet springs): prune out the affected wood, rake up and discard fallen leaves to break the cycle, and water at the base rather than overhead.
- Either way, remove and discard (don't compost) any visibly diseased prunings.

Getting through summer on less water

Altadena summers are long and dry, and this soil is well set up for them: 9% organic matter acts like a sponge, so each watering goes further than it would in leaner ground. The gains left are in how the water goes down.

WHAT TO DO

- **Water deeply and infrequently, early in the morning.** Deeper, less frequent soakings pull roots down to where the ground stays moist longer.
- **Mow at the top of your mower's range.** Taller blades shade the soil surface and slow evaporation.
- **Core-aerate compacted areas** so water soaks in where it lands instead of running off.

If you add drought-tolerant plantings

Should you ever carve out a border or bed, this soil's slightly alkaline pH is a good match for the classic low-water Mediterranean palette — lavender prefers ground like this, and rosemary, culinary sage, fig, pomegranate, and olive have long been grown in it. California natives will also take this ground, though many of them prefer it leaner than a well-fed lawn edge.

WHAT TO DO

- **Plant in fall.** Roots establish through the cool, wet season, so the first summer takes far less water.
- **Mulch new plantings three to four inches deep** with wood-chip mulch, kept off the stems.
- **Once established, many California natives prefer their summers dry** — group them away from anything on regular irrigation.

If you grow vegetables

The mineral groundwork is already done — phosphorus and potassium both read in range, so vegetables here don't need a balanced fertilizer, just nitrogen and steady water. Two things in this sample are worth planning around: the root-knot nematodes and Fusarium flagged in Section 2, and the slightly alkaline pH — which most vegetables tolerate, and beets, brassicas, and asparagus handle easily.

WHAT TO DO

- **Choose tomato varieties with an N on the tag** (as in VFN) — they resist the common root-knot nematode species, usually hold their yield even under pressure, and bring soil populations down over time. The F in those codes covers common Fusarium races too.
- **Feed nitrogen only:** an inch or two of compost worked in at planting, then a nitrogen-only feed at the product's label rate if plants look pale. Skip products with big middle or last numbers — this soil doesn't need them.
- **Run drip or a soaker hose on a steady schedule.** Even moisture keeps plants out of the heat stress that charcoal rot takes advantage of.
- If you place a food bed where metals are a question, the raised-bed guidance in the Soil Safety section applies.

Proposed action plan

SECTION 6

NEXT 30 DAYS

- Change nothing on the native beds — they're thriving on your current approach.
- Mulch any bare patches on the lawn; bare soil is how lead travels as dust.

THIS SEASON

- Keep mulching. Feed the lawn on your normal routine; feed the fruit trees only if they show need.
- Wash homegrown produce before it comes inside, and hands after garden work.

LONGER TERM

- If you plant food on the lawn side, we recommend a raised bed filled with purchased garden mix.
- Re-test periodically to track how your soil changes over time — and after any re-grading or imported soil.

Appendix

ALL MEASUREMENTS

SOIL HEALTH — EVERY MEASUREMENT

MEASUREMENT	AREA	RESULT	TARGET
Phosphorus	*Lawn*	69.59 ppm IN RANGE	25+ ppm
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Glossary

Soil Health score — a 0–100 roll-up of how close your nutrients and pH sit to home-garden ranges, scored separately for each area.

Soil Microbiome score — a 0–100 roll-up of microbial diversity and the nutrient-cycling functions measured by DNA sequencing, scored separately for each area.

Soil Safety score — a 0–100 reading of the 17-metal panel, set by the *single closest metal to its screening level* rather than an average. One metal near the line is the finding, so averaging it away would hide it. Sitting exactly on a screening level scores 65; twice the level scores 0.

Screening level — a look-closer threshold for residential soil, not a harm threshold. A result above one means the metal is worth understanding, not that the soil is unsafe.