Short-Term Rentals and Onsite Wastewater Systems

A Service Provider's Perspective from a Tourism Community



People
Places
Visitors
Onsite Systems

A Shared Responsibility

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PRESENTATION DISCLAIMER

The information and opinions presented are those of the presenter and do not necessarily reflect the opinions or policies of NOWRA.

Field observations and the case study are presented for technical education and discussion.

PERSPECTIVE

Who am I?

KEY POINTS

- Owner/operator of an onsite wastewater service company
- Master plumber
- NAWT inspection and O&M instructor
- Residential and commercial OWTS experience

What shapes this talk

- Colorado mountain resort communities
- Repeated service visits over years
- Inspections, maintenance and failures
- A field-service perspective

CONTEXT

Our service area is a tourism economy



- Destination resorts
- Large second-home population
- Significant STR activity
- Seasonal occupancy
- Large residential properties
- Municipal sewer + OWTS

CHANGE IN USE

The same house — a different use



“What happens when the use of the property changes but the wastewater system doesn’t?”

CORE IDEA

The system doesn’t know it’s an STR

“It only experiences how the house is used.”



Conventional residential use

KEY POINTS

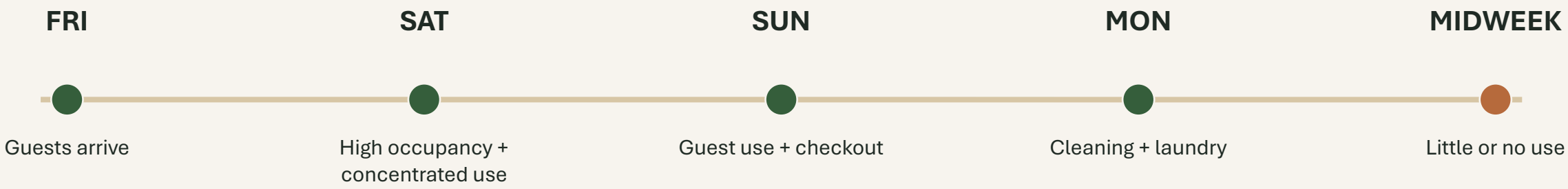
- Relatively consistent occupants
- Familiar routines
- Morning and evening peaks
- Regular laundry and cooking

STR use can look different

- High occupancy → vacancy
- Rapid turnover between groups
- Concentrated water use
- Changing users and behaviors

USE PATTERNS

A typical tourism weekend



The system experiences the wastewater when it arrives — not as a monthly average.

Occupancy isn’t always obvious

KEY POINTS

- Bedrooms
- Bunk rooms
- Sleeper sofas
- Additional beds

Actual use may include

- Children
- Visiting friends
- Groups traveling together
- Occupancy that changes every stay

Owners need to understand their risk

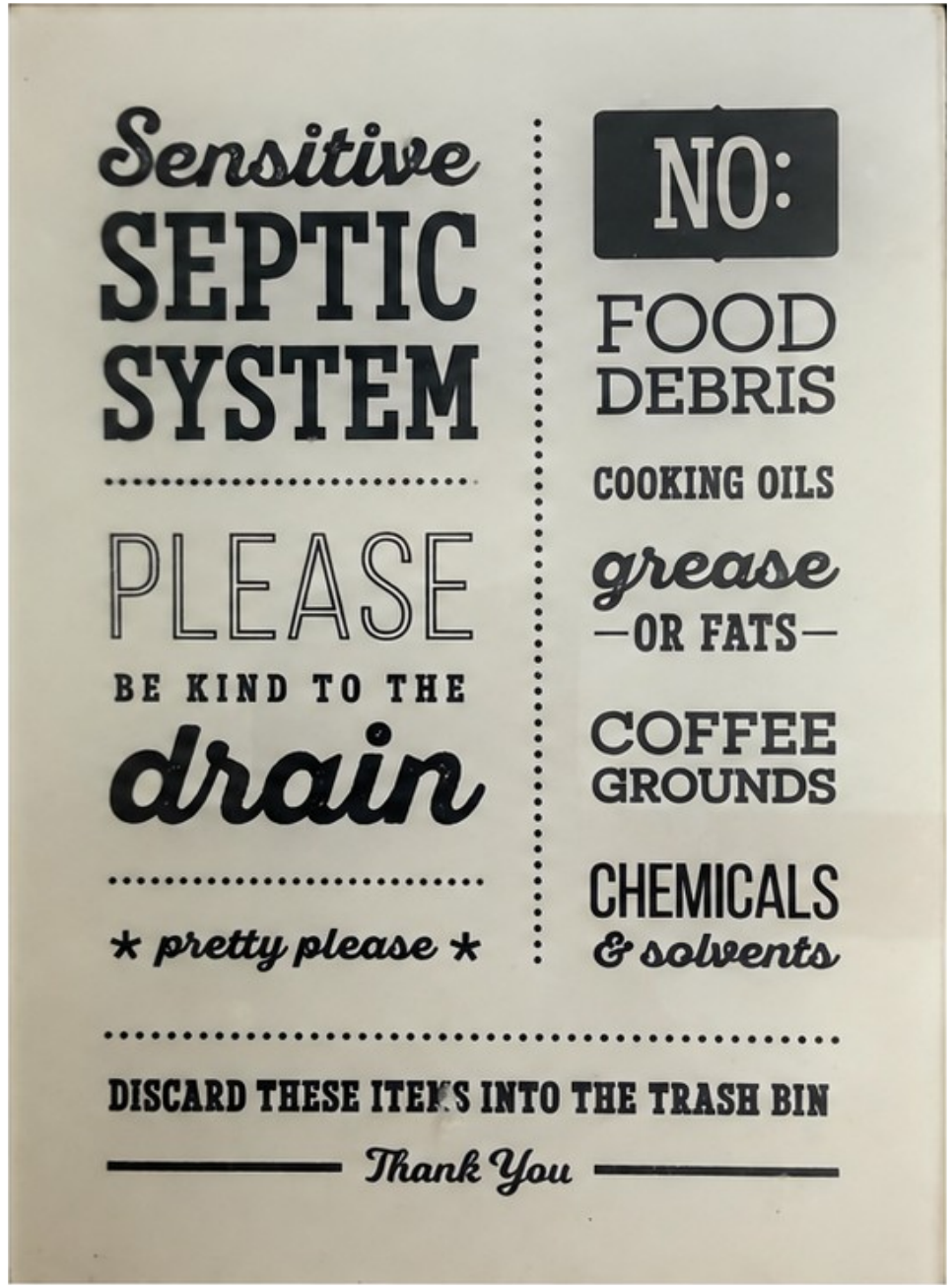
- Know the system’s age, condition, and permitted capacity.
- Evaluate whether it can support the proposed STR use.
- Monitor actual use and adjust maintenance accordingly.

Owner education supports informed decisions.

Guest behavior is difficult to control

- Guests may have little knowledge of onsite systems.
- Occupancy, showers, and laundry can concentrate water use.
- Instructions may help, but compliance is uncertain.
- High rental cost can imply unrestricted use.

Manage for actual use, not assumed compliance.


Sensitive
SEPTIC
SYSTEM
PLEASE
BE KIND TO THE
drain
* pretty please *
NO:
FOOD
DEBRIS
COOKING OILS
grease
—OR FATS—
COFFEE
GROUNDS
CHEMICALS
& solvents
DISCARD THESE ITEMS INTO THE TRASH BIN
Thank You

Loading Rate vs. Infiltrative Rate

The hydraulic relationship behind intermittent STR loading

The STA has to accept wastewater when it arrives

Loading rate ≤ sustainable infiltrative rate

STABLE HYDRAULIC OPERATION

Loading rate > infiltrative rate

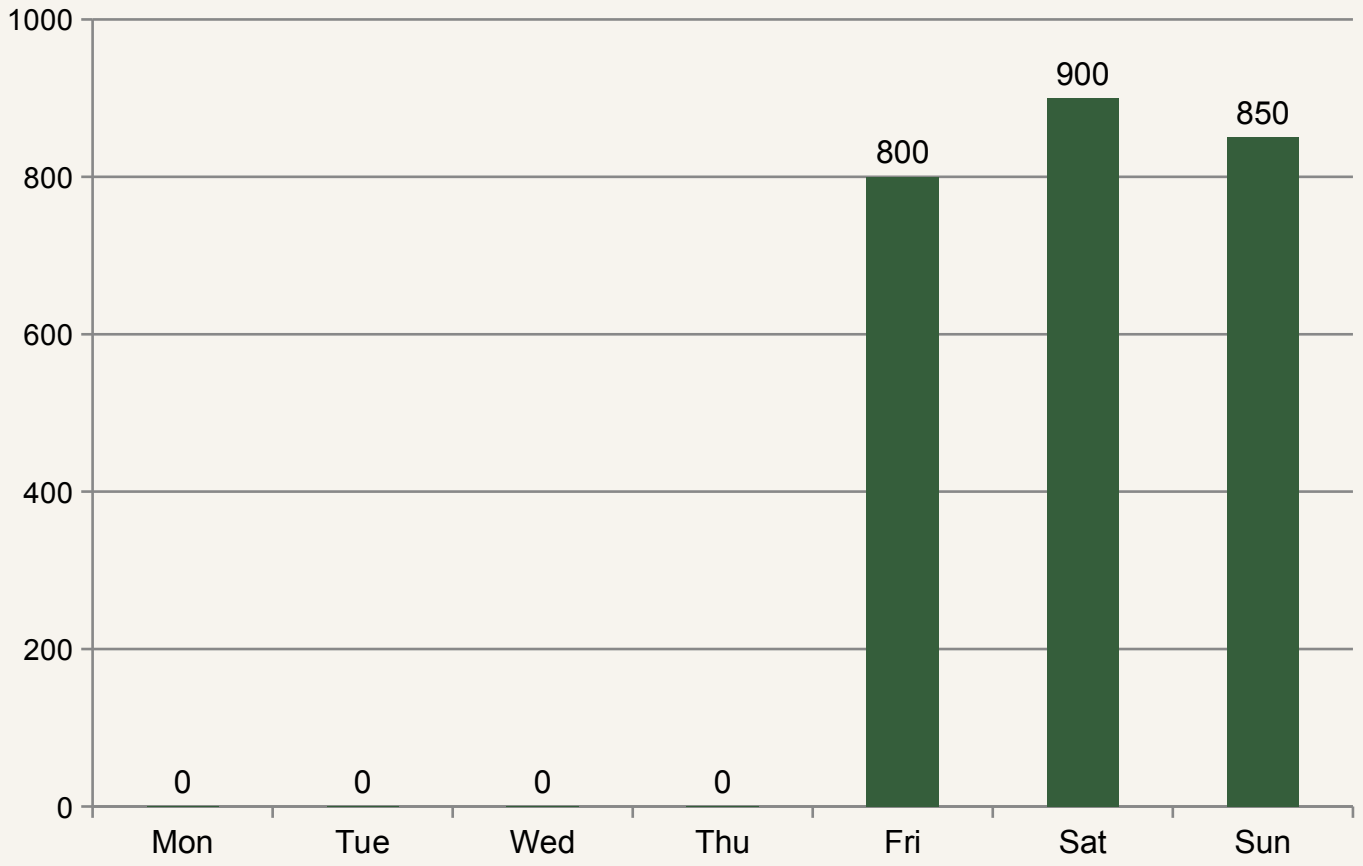
EFFLUENT ACCUMULATES → PONDING DEVELOPS

Vacancy can allow ponding to decrease



Loading → Ponding → Rest / Recovery → Loading

Average flow can hide the problem



Hypothetical example

Design flow: 600 gpd

7-day average:
364 gpd

≈ 61% of design

The STA doesn’t receive an average

> *“The STA doesn’t get to average Sunday’s 900 gallons with Wednesday’s zero gallons before it receives them.”*

It has to accept Sunday’s wastewater on Sunday.

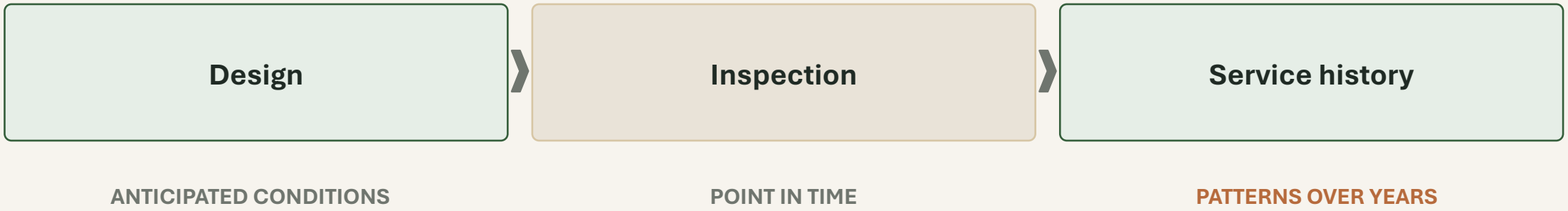


What the Service Provider Sees

Patterns that appear across inspections, maintenance and service calls

FIELD PERSPECTIVE

Service providers see systems over time



FIELD PERSPECTIVE

The service call may be the first warning

KEY POINTS

- High-water alarms
- Slow drainage
- Backups
- Odors
- Pump problems

Other indicators

- Filter restriction
- Excessive solids
- Ponding
- Surfacing effluent
- Repeated maintenance

DIAGNOSIS

Ask what changed

“Has anything changed about how this property is being used?”

A change in occupancy or use can change the context of the entire investigation.

FIELD EVIDENCE

The septic tank provides information

KEY POINTS

- Sludge + scum
- Pumping frequency
- Effluent filter condition
- Solids carryover



The controls provide information

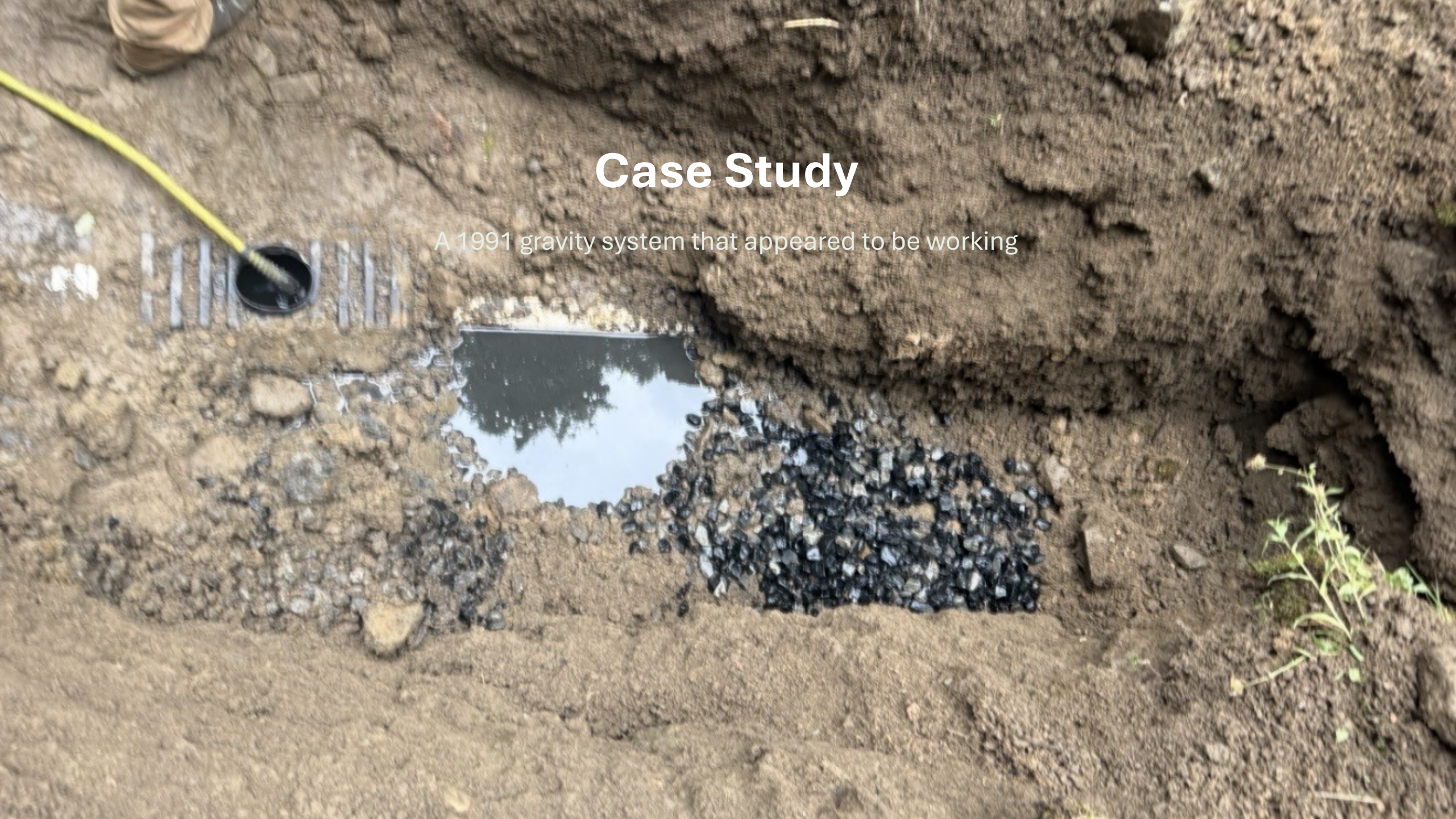
- Pump cycle counts
- Run time / dose frequency
- Alarm history
- Siphon operation

FIELD EVIDENCE

Ultimately, protect the STA

- Ponding
- Uneven distribution
- Saturated conditions
- Surfacing
- Vegetation changes
- Traffic or compaction

But an STA can have a significant problem without anything being visible at the surface.



Case Study

A 1991 gravity system that appeared to be working

CASE STUDY

The system

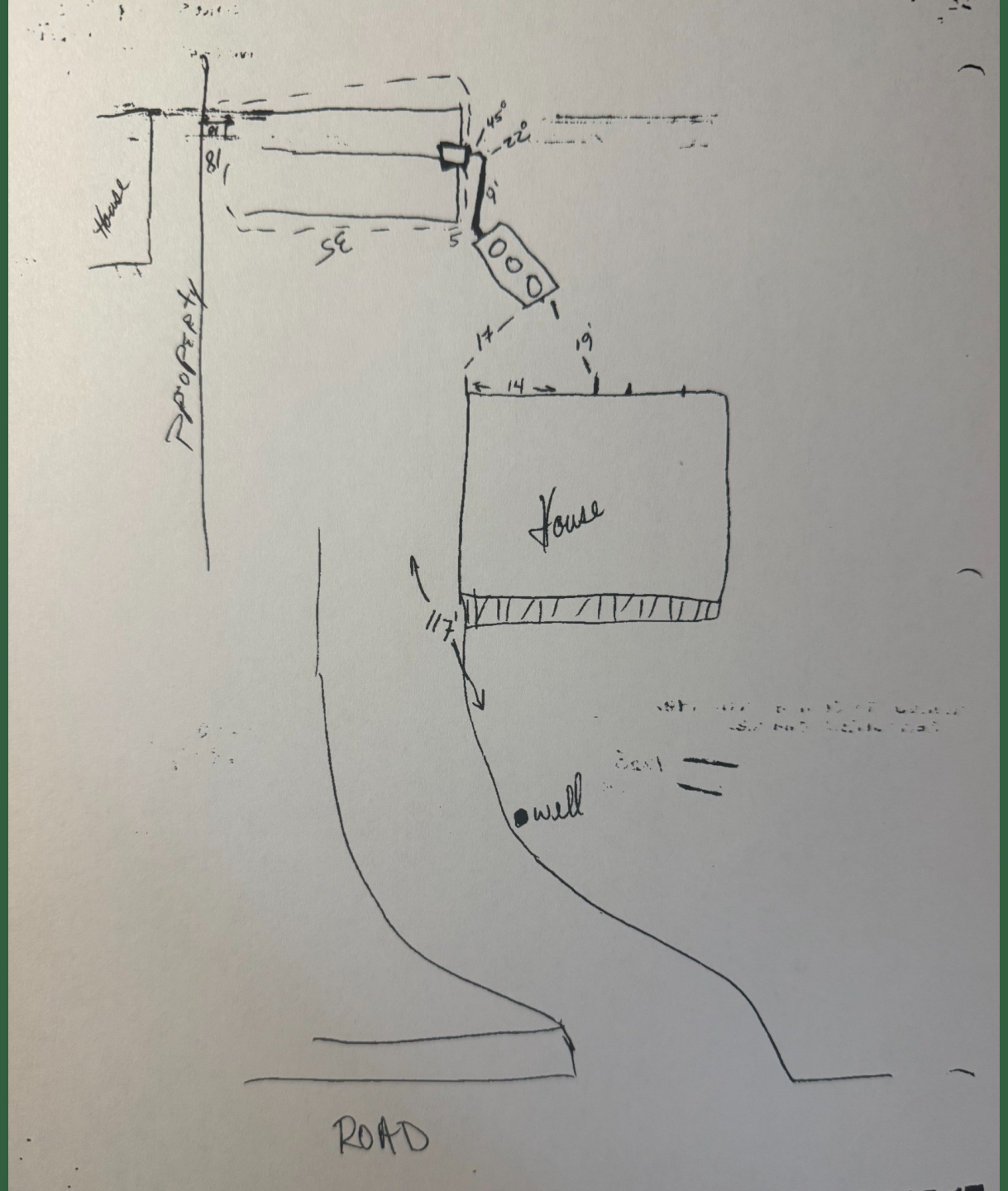
INSTALLED 1991

- Three-compartment septic tank
- Dosing siphon in third compartment
- Gravity soil treatment area
- ≈ 4 ft soil cover over STA
- No observation ports to infiltrative surface

IMPORTANT DISTINCTION

The siphon did NOT serve pressure distribution.

It provided intermittent dosing to a gravity STA.


House
Property
81'
45°
22°
9'
35'
5'
000
17'
19'
14'
House
117'
well
ROAD

CASE STUDY

Why a siphon on a gravity system?

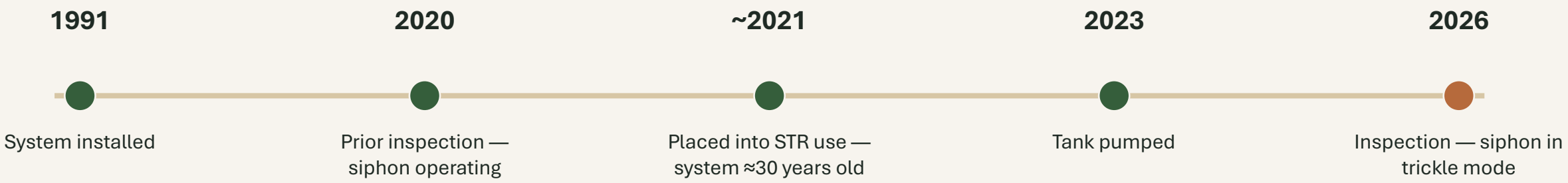


Intermittent dosing provides periods of hydraulic rest rather than continuous trickle flow.



CASE STUDY

We knew this system



CASE STUDY

Nothing appeared wrong in the house

KEY POINTS

- No reported backup
- No reported odors
- No apparent drainage problem
- No visible surfacing

Why that mattered

- STA ≈ 4 ft below grade
- No observation ports to infiltrative surface
- Surface inspection could not show ponding
- Occupants perceived a functioning system

CASE STUDY

The tank told a different story

79%

measured septic tank solids

2023

Tank pumped

→

2026

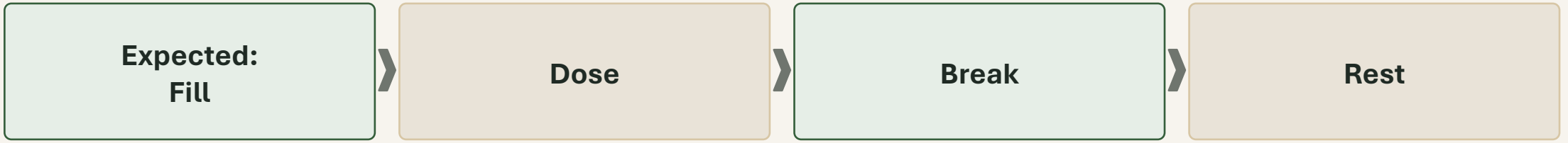
79% solids

Well beyond the NAWT pumping threshold used for this inspection.

CASE STUDY

The siphon told us something else

TRICKLE MODE



This was discovered during an inspection — not because someone called with a problem.

CASE STUDY

Follow the symptom downstream

2020:
Siphon operates

❯

2026:
Trickle mode

❯

Investigate
downstream

❯

STA ponding
identified

The trickling siphon was not simply a siphon problem. It was an observable symptom of a downstream hydraulic condition.

CASE STUDY

Failure doesn’t always mean sewage on the ground

NO

- Backup
- Odor
- Visible surfacing

YET

- 79% solids
- Abnormal siphon operation
- Ponding in STA

A system can be experiencing significant performance problems while continuing to accept wastewater from the house.

CASE STUDY

Observation is not the same as causation

PONDING tells us that wastewater accumulated at the infiltrative surface.

- System age
- Mature biomat
- Historical loading
- Current loading
- Maintenance history
- Solids accumulation
- Distribution conditions
- Changing occupancy / STR use



CASE STUDY

What changed?



“Was a 30-year-old STA capable of sustainably accepting the new loading pattern being placed upon it?”

CASE STUDY

Permitted capacity vs. present condition

KEY POINTS

- Original permit / design basis
- Bedroom count
- Original sizing assumptions
- What the system was intended to serve

Present condition

- ≈ 30 years of prior operation before STR use
- Mature infiltrative surface / biomat possible
- Current hydraulic performance may differ
- Condition must be evaluated

CASE STUDY

Should this property have become an STR?

- Desirable vacation property
- Bedrooms and beds
- Rental demand
- Potential occupancy
- Potential revenue

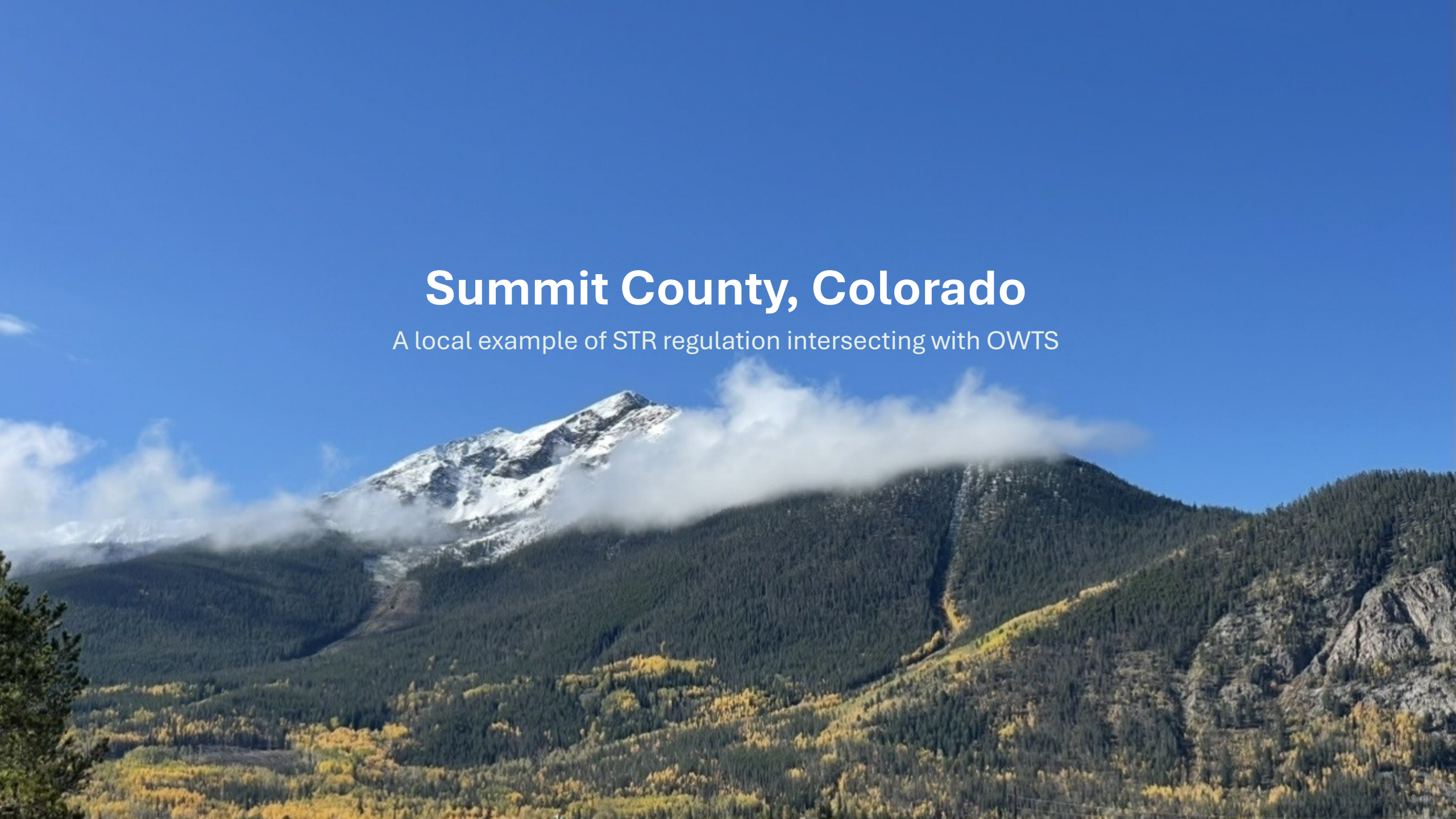
BUT THERE IS ANOTHER ASSET
BENEATH THE PROPERTY

A 30-YEAR-OLD WASTEWATER SYSTEM

Is the existing OWTS capable of supporting the proposed use over time?

Summit County, Colorado

A local example of STR regulation intersecting with OWTS



LOCAL REGULATION

Summit County explicitly connects STR occupancy to OWTS capacity

Ordinance 20-C applies occupancy standards to STRs served by onsite wastewater treatment systems (OWTS).

For OWTS-served units, the controlling number is not simply beds, advertised occupancy, or floor area.

Maximum overnight occupancy is tied to the capacity established on the OWTS permit.

WHY THIS MATTERS

The STR licensing process recognizes the wastewater system as a limit on occupancy.

That creates an important connection between land use and onsite wastewater capacity.

Source: Summit County Ordinance No. 20-C, §3.3(a), p. 8 (adopted Feb. 15, 2023).

Occupancy standard for STRs served by OWTS

OWTS-served STR › Maximum overnight occupancy › Limited to capacity › Established on OWTS permit › Typically 2 persons per bedroom*

*Ordinance 20-C states that Summit County OWTS systems are typically designed to accommodate a maximum occupancy of 2 persons per bedroom.

Source: Summit County Ordinance No. 20-C, §3.3(a), p. 8.

LOCAL REGULATION

The ordinance also establishes an OWTS maintenance backstop

STR REQUIREMENT

Septic tank pumping every 3 years

COUNTY REVIEW

More frequently if determined by Environmental Health

If the OWTS is in a state of malfunction, the STR license will not be issued until repairs are made and approved.

Source: Summit County Ordinance No. 20-C, §7.1(l), p. 12. Initial application may use a pumping report dated within 3 years.

Managing Existing STR Systems

Practical steps for service providers, owners and property managers



Before converting to STR use: evaluate the OWTS

Age + permit/design basis
Maintenance + solids history
STA condition + distribution
Current performance + prior failures

Not every existing OWTS is necessarily a good candidate for intensive STR use.

Establish a baseline

KEY POINTS

- Solids measurements
- Tank + filter condition
- Pump / siphon operation
- STA observations

Then track change

- Cycle counts / run time
- Alarm history
- Water use where available
- Documented service history

Maintenance based on actual use

“What is happening at this property?”

CASE STUDY

2023
PUMPED

→

2026
79% SOLIDS

Maintenance intervals should respond to measured conditions and actual loading.

A 3-year regulatory interval is a backstop—not proof that every system can safely wait 3 years.

Monitoring changes the conversation

KEY POINTS

- Water meters
- Pump cycle counters
- Run-time meters
- Remote alarms

Better evidence

- Control-panel data
- Solids measurements
- Service records
- Observed occupancy/use changes



Property managers are part of the wastewater team

KEY POINTS

- They may know…
- Occupancy + rental frequency
- Turnover schedule
- Complaints + cleaning practices

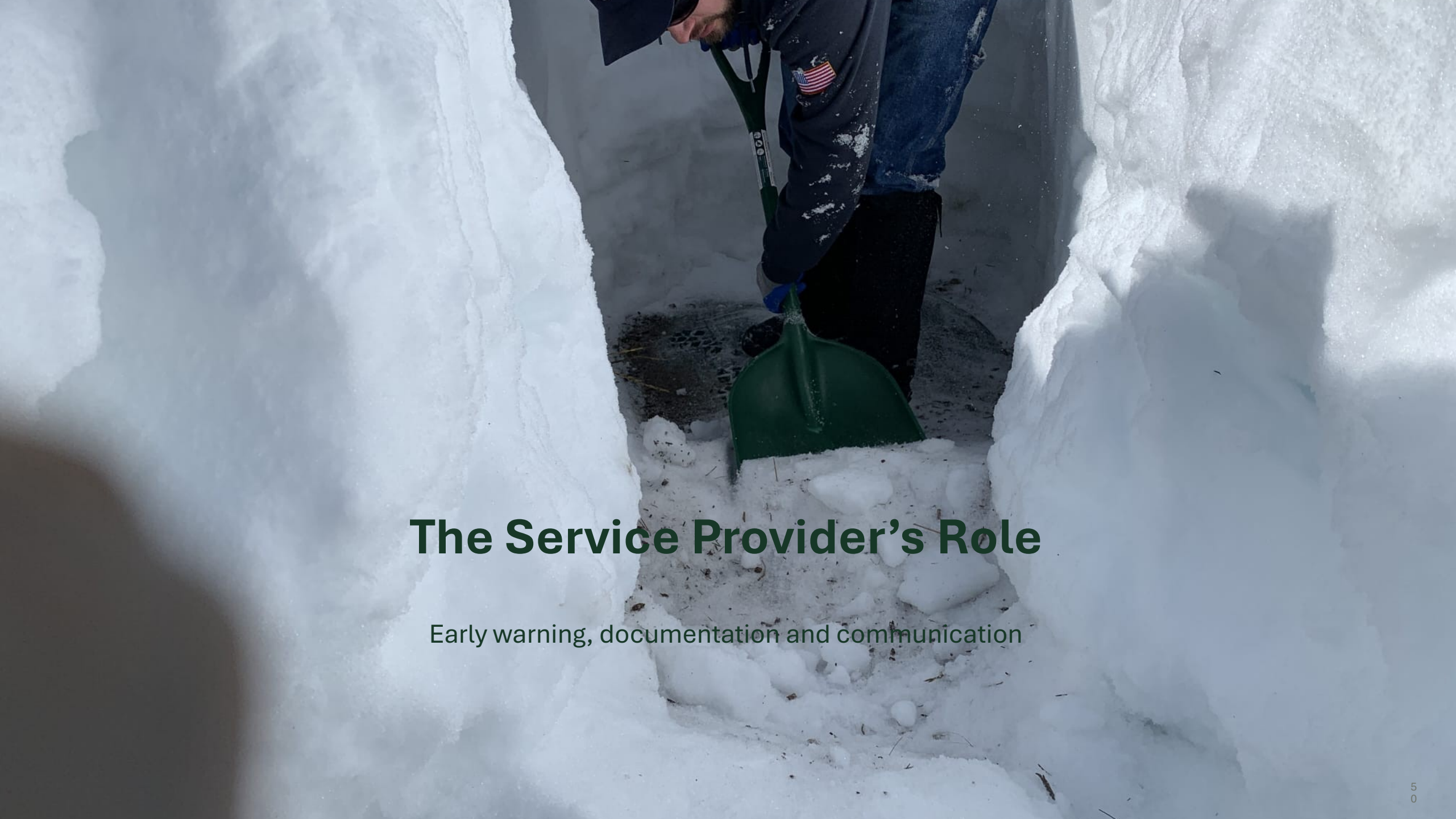
Service providers know…

- System condition
- Maintenance history
- Warning signs
- Previous performance

When maintenance isn’t enough



Increasing maintenance can become treatment of symptoms rather than correction of the underlying problem.

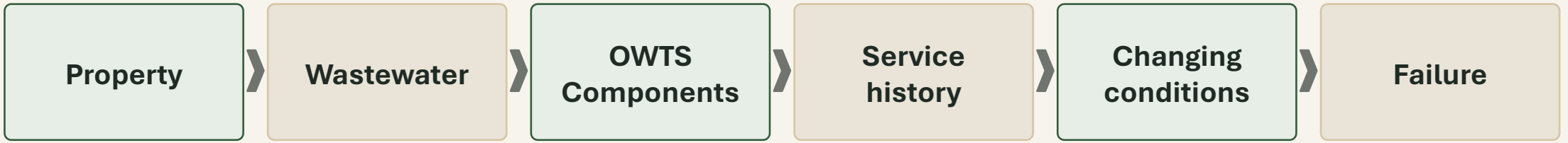


The Service Provider’s Role

Early warning, documentation and communication

SERVICE PROVIDER ROLE

We are an early warning system



Repeated field observations create an opportunity to recognize trends before they become emergencies.

Document what you see

KEY POINTS

Measurements + operating data
Photos + STA observations
Alarm / service / pumping history
Changes in use over time

Build a history

- Alarm events
- Service frequency
- Changes in use
- Repairs / pumping
- Comparisons over time



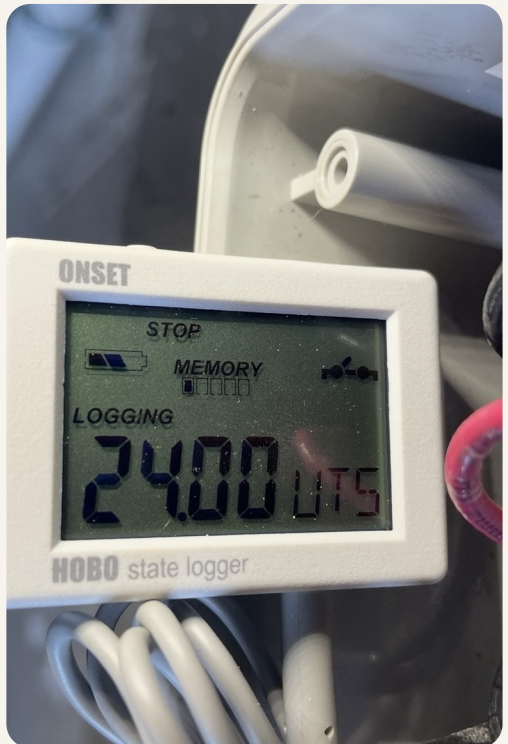
Average flow can hide the risk

AVERAGES MISS THE PEAKS

Low-use days can make the average look acceptable.
A busy day may still exceed the OWTS design flow.
Repeated spikes can stress treatment and the STA.

Monitor daily flow

- Data loggers on control panels
- Smart water meters for gravity systems
- Compare daily peaks with design flow
- Give owners data to understand their risk



Don’t automatically blame the STR

STR use may...

CAUSE
a problem

CONTRIBUTE
to a problem

EXPOSE
a problem already developing

Age, biomat, installation, distribution, infiltration, deferred maintenance and existing hydraulic limitations may also matter.

TAKEAWAYS

Five lessons from the field

Use matters.
Timing matters.
Loading rate vs. infiltrative rate matters.
Age + present condition matter.
Not every OWTS is a good STR candidate.



TAKEAWAYS

Ask better questions

WHEN A SYSTEM HAS A PROBLEM

What failed?

What changed?

BEFORE STR CONVERSION

What wastewater system comes with this property?

What condition is it actually in?

TAKEAWAYS

Closing thought

> ***“The onsite wastewater system doesn’t know the house is an STR.”***

It only experiences how the house is used.

Understand what the system is telling us — and whether the use being asked of it is sustainable.

Questions & discussion

Bill Tatro

Snowbridge Inc.

Short-Term Rentals + Onsite Wastewater Systems

