

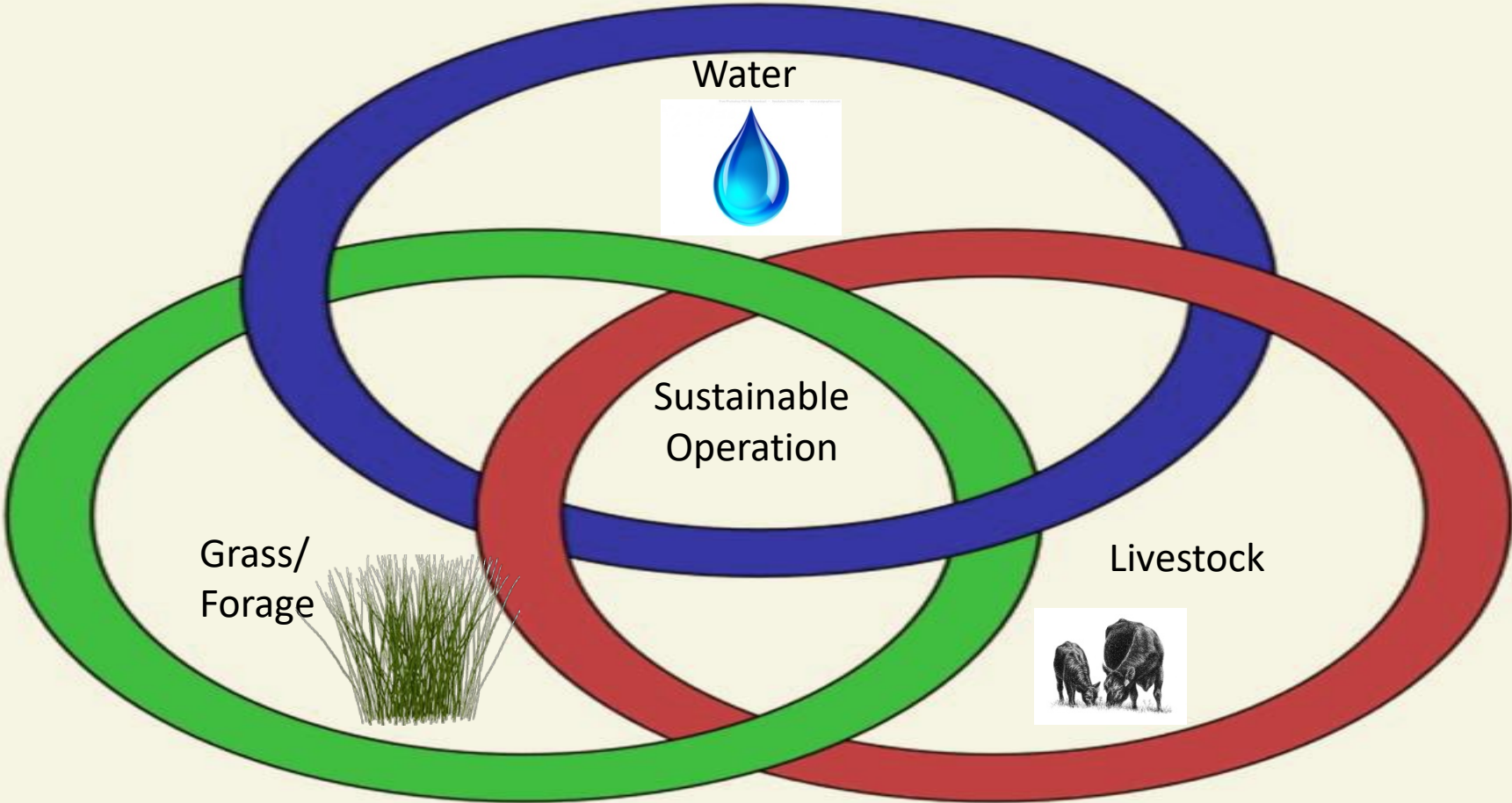


Remote Well Solutions



*Revolutionizing Off-Grid Water Production
& Distribution*

The Three Keys to Livestock Production



Water Production & Distribution Often are Limiting Factors to Livestock Operations & Producer Profits

Lack of water dramatically impacts livestock & wildlife numbers

Cows need 20 gallons of water daily in the summer months



How Much Water Do Cattle Need ?

Table 1. Estimated Daily Water Intake by Cattle (Gallons/Day): Source- Paul Q. Guyer, University of Nebraska

Daily High Temp (F°)	Cows Nursing Calves*	Dry and Bred Cows	Bulls	Growing and Finishing Cattle			
				400lb	600lb	800lb	1000lb
35	11	6	7	4	5	6	8
50	13	7	9	5	6	7	9
65	16	8	11	6	7	9	11
80	18	11	13	7	9	10	14
95	20	15	20	11	15	17	18

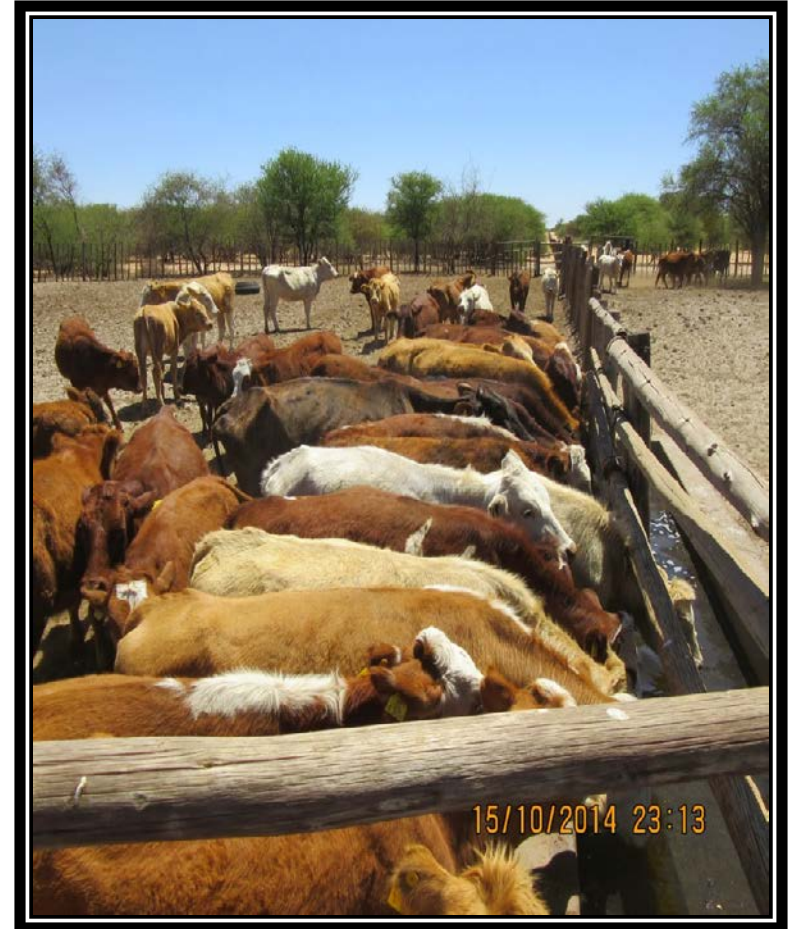
* First four months of lactation.

NM cattle consume 30% more water due to lack of availability and distribution

With Poor Distribution, Cattle Travel to Water in Large Groups & do not Distribute Uniformly Across the Range When Grazing



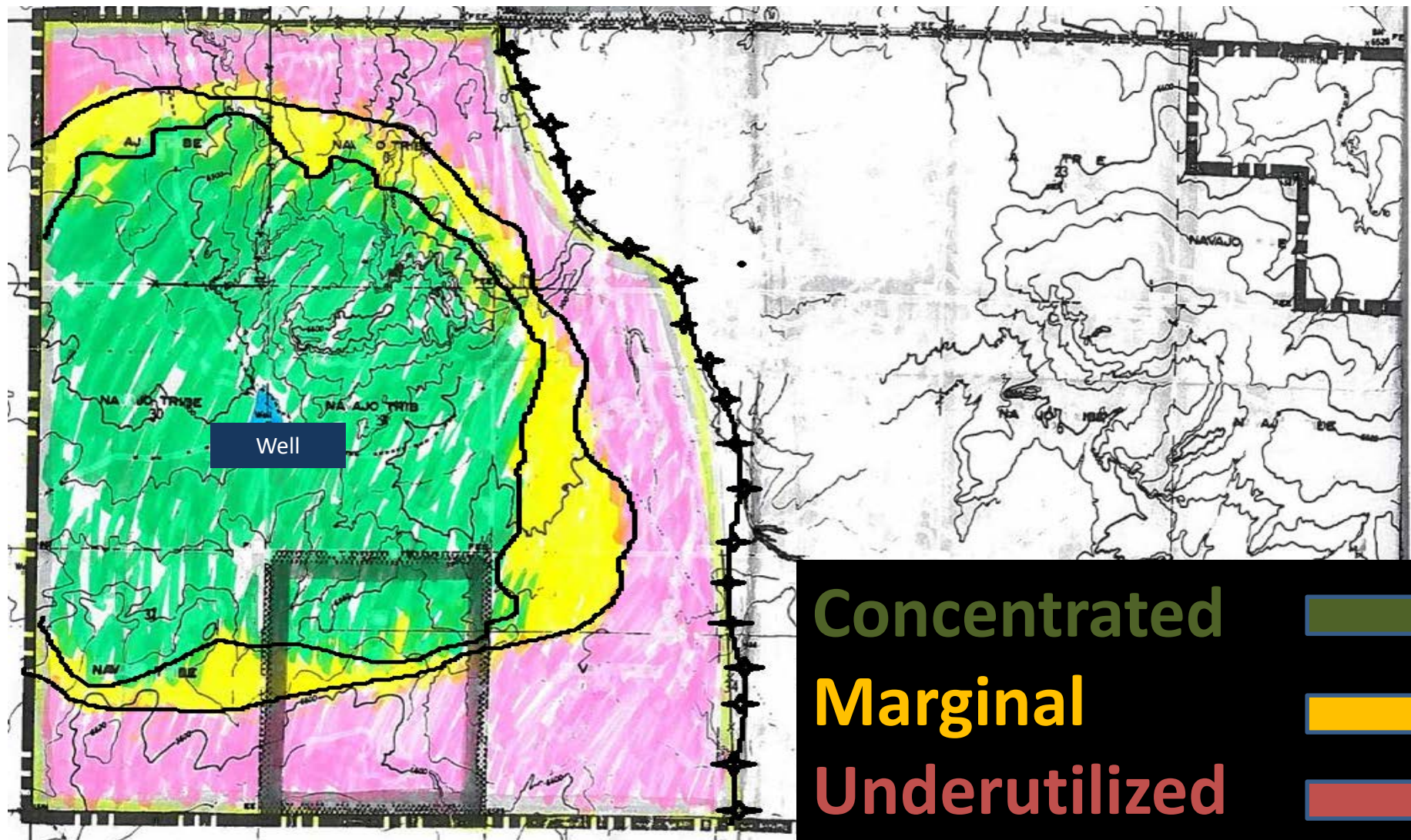
Livestock Water Station/Drinker Locations are Critical to Pasture Efficiency



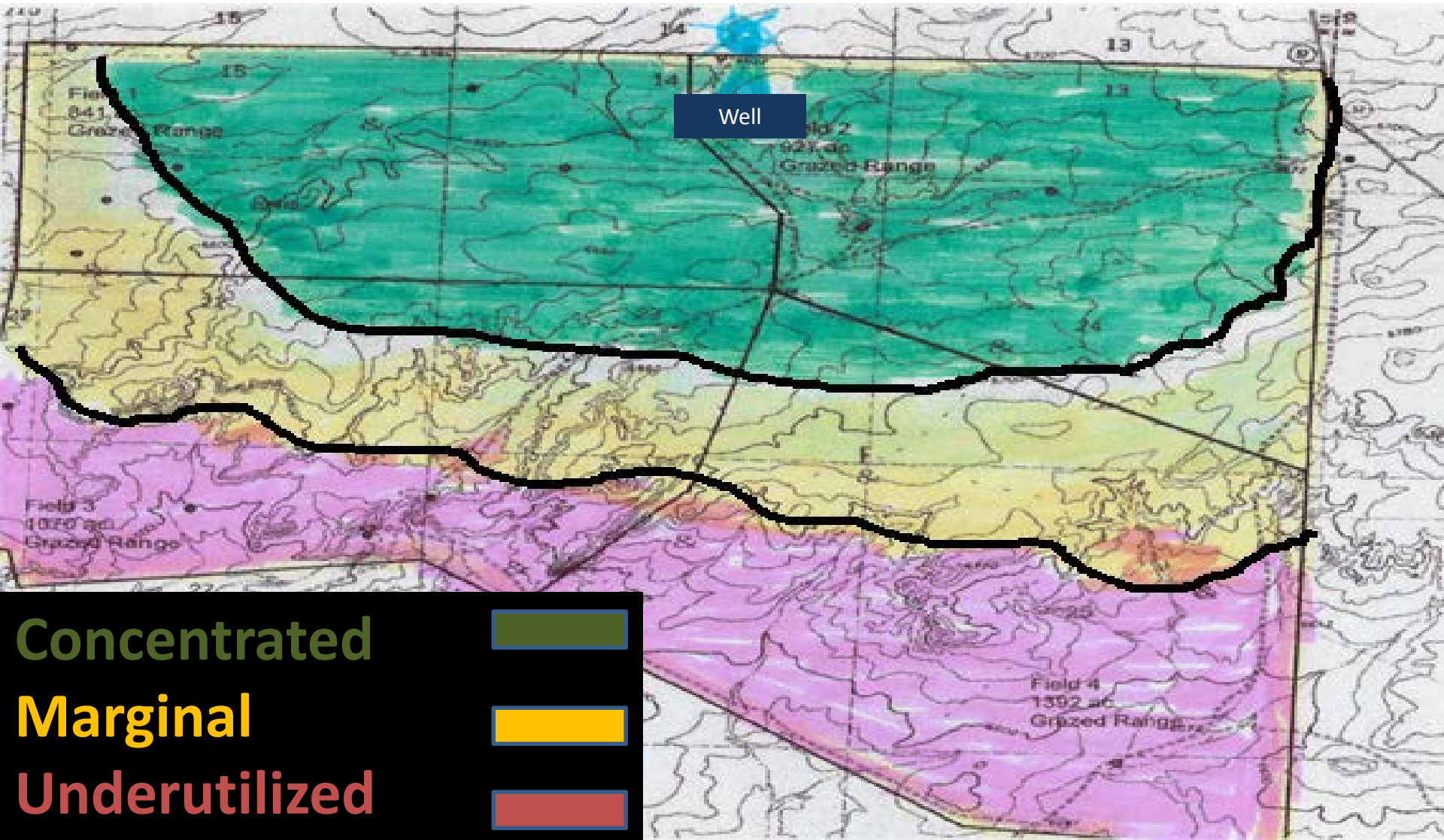
With Poor Distribution Drinker Crowding Occurs. Timid Animals are Pushed Off the water & Drink Enough



Range Utilization on Tribal Ranch #1



Range Utilization on Tribal Ranch #2



Concentrated Grazing Around Water Sources Due to Lack of Uniform Water Distribution



Under-utilized Grazing Areas Resulting From Non-uniform Water Distribution



Solutions Available to Ranchers



Windmills



Solar



Dirt Tanks ?



Point-of-Use Generators



Common Windmill Challenges

- Expensive to Purchase & Repair
- Unsafe
- Wind Dependent
- Long Downtime & Response Time
- Ponding and Run-Off
- Wasteful

Dirt Tank Concerns



Dangers & Hazards of Dirt Tanks



Solar Pumping & Distribution Systems



Critical Solar System Design Factors

- 1) Livestock Water Needs (#cows x 25 gal. = Max Daily Water Needed to Size System (more panels and/or trackers may be needed))
- 2) Storage Quantity (Daily Water Needs for 10 days)
- 3) Well Production Capabilities (Multiple Pumps on Strong Wells Allow for Increased Water Production)
- 4) Simple Generator Connection Allow for an Optional Power Source
- 5) Location (Good Aspect with Southern Sun Exposure)

Perform Design and Specifications Prior to Bidding Out so You Will be Satisfied with Your System

A photograph showing a white PVC pipe extending from a concrete wall into a body of water. The pipe is angled downwards and has a small amount of water dripping from its end. A stream of water is falling from the pipe into the water below, creating ripples and bubbles. A cylindrical float valve is submerged in the water, connected to the pipe by a white and black cable. The water is dark and slightly murky. The concrete wall is on the left side of the frame.

Use Level Control &
High Pumping Rates
in Your Design

Water is Being Wasted With Solar & No Level Control ?

TP PUMP estimates ~ 250 solar pumps each year
for past 4 years = 1000 pumps

8% are sold with overflow protection (float). 92%
have no overflow protection, 920 pumps



920 * 60 gallons (1/gpm) * 3 hours per day * 365 days a year =

~60,444,000 gallons of water

185 Acre Feet

may be wasted each year by over pumped .
ground water that overflows from only the wells with
pumps supplied by TP Pump

These over pumped gallons water will
Support 11,000 cows @ 5,500 each annually !



06/05/2010

Water is Being Wasted From Overflowing Windmills ?

NN estimates > 2,000 Windmills

88 * (1/gpm) * 90 days a year =
~11,404,800 gallons
of water or
35 Acre Feet

Potential of wasted water each year by
overflows from only
The Windmills on the NN

These over pumped gallons water
will Support 15,709 cows @ 2,073 each
annually

> 2k windmills on NN

We estimate about 20k windmills in NM



Water Hauling is Reality for Many Native Americans



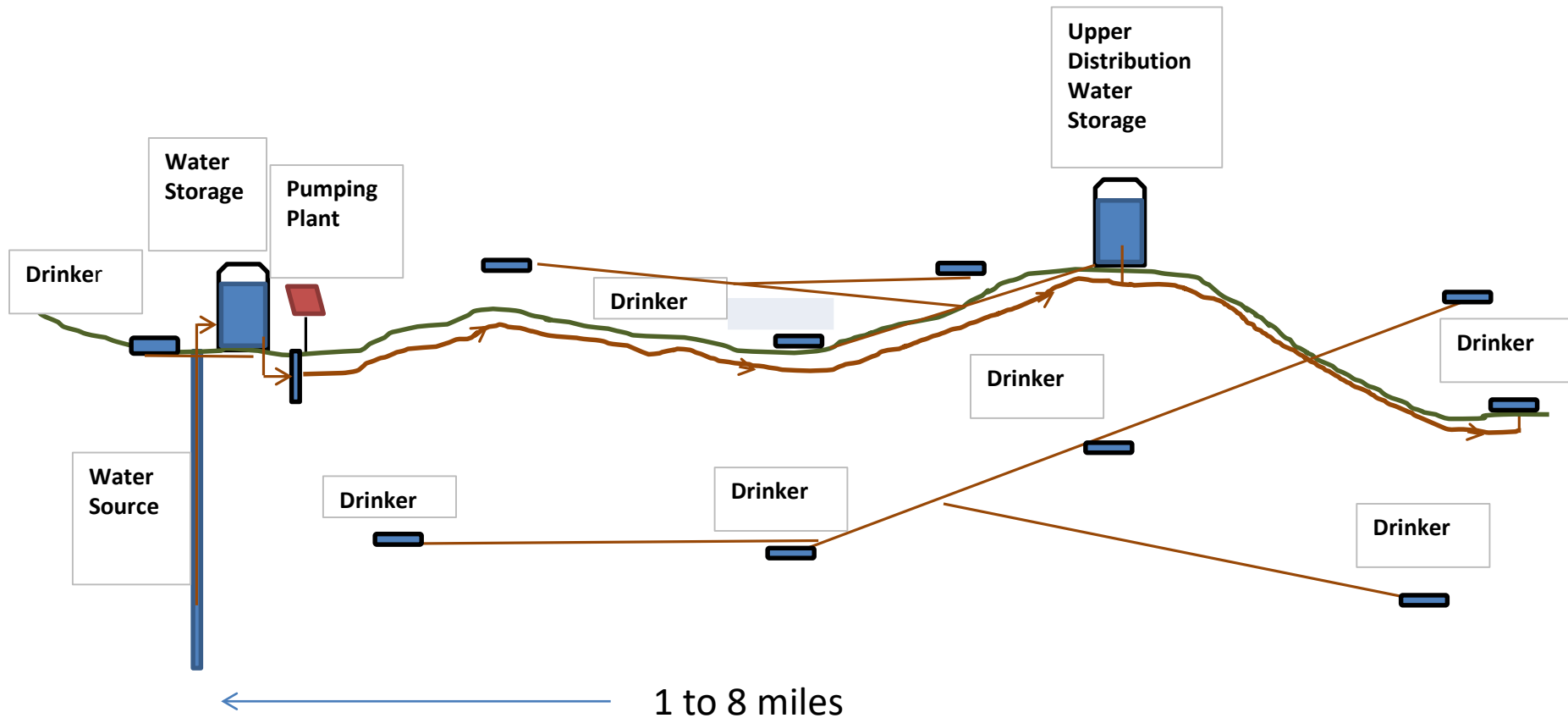
RWS Off-Grid Water Technologies to Produce & Distribute Water



RWS Distribution Systems Deliver Water When and Where Needed



Basic RWS Automated Solar Water Pumping & Distribution System



Benefits of Patented RWS Distribution Technologies

- Conserve ground water
eliminate waste from overflow
- Increase Cattle Water Efficiency
- Reduce Water Consumption
- Reduced Travel
- Improved Grazing Uniformity
- Increased Ranch Stocking Rates
- Easy Set-Up & Maintenance
- Reduce Downtime
- Clean Renewable Energy. Solar and Hybrid Systems
- Eliminate soil & Water Contamination Fossil Fuels
- Reduce O& M (Expense/Travel/Time)



Where to Locate Drinkers

At Lower Elevations than Water Storage Tank

Close to Roads for Easier Maintenance

NRCS Requires no Less than 1 Mile Between Drinkers

Target Areas with Abundant Forage

Provide Water for Wildlife



Expectations System Installation

Improved Pasture Efficiency (Cattle Utilized Unused Forage)

Cattle Disperse into Smaller Groups

Reduced Livestock Crowding Around Drinkers

Uniformed Grazing on the Ranch

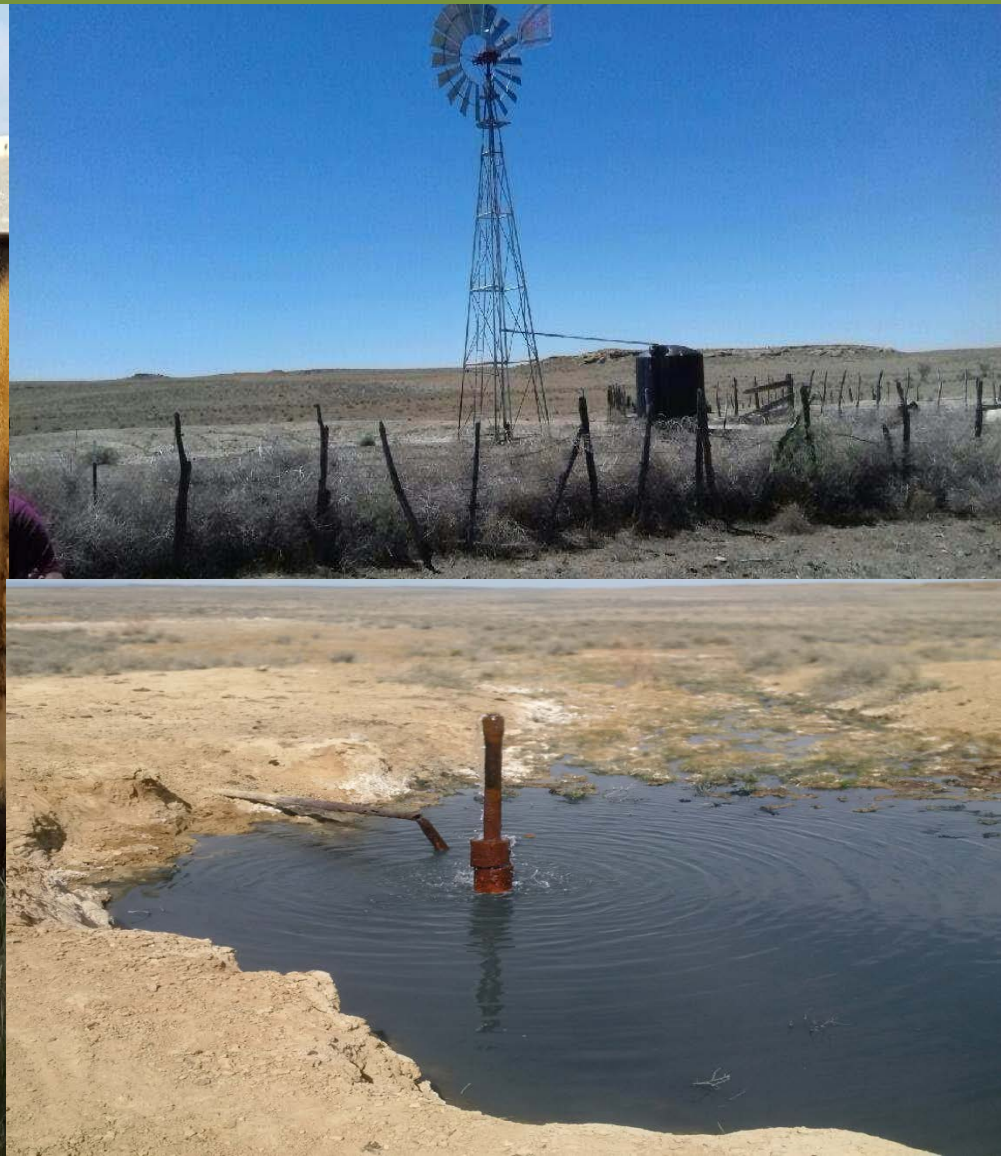
Reduced Water Consumption

Improved Weight Gains and Herd Health

More Relaxed Cattle Less Stress



RWS Technologies Will Work at Most Any Water Source



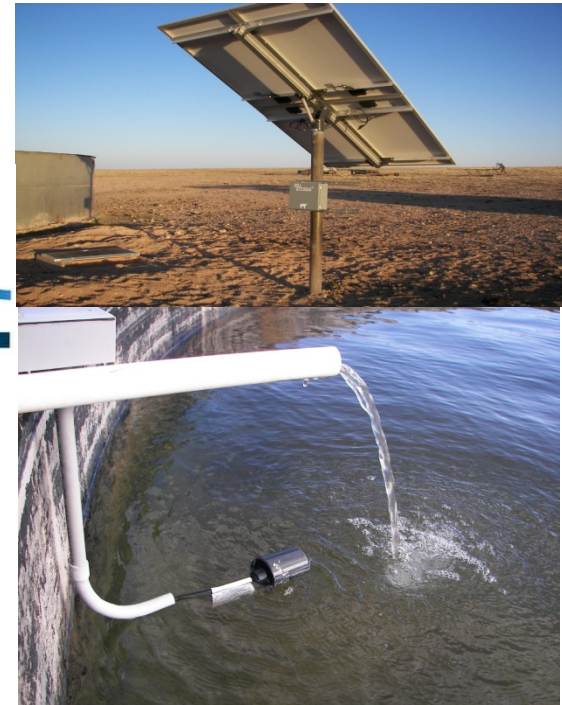
Bridging Solutions to the Needs

The Need



**Established
Cost Share
Programs
Funded through
the Farm Bill**

The Solution



Customer Testimonials

- “This system has completely changed our operation” (Mike Pearce, Rancher Chavez Co. NM)
- “RWS have taken the problems out of running generators” (Eddie Davis, Lincoln Co. NM.)
- “I made more water with lower fuel costs. It paid for itself in two months, you are not charging enough” (Bill Angel, Rancher Eddy Co. NM)
- “We were spending 30 hours a week working on the old system. Now, we don’t spend 30 hours a year on the RWS system” (Doug Winn USFS Tonto Natl. Forest, Roosevelt Ariz.)

Developing Ice Melter Technology



RWS -- Solar Ice Melter Water Warmer

- Melts Ice on Drinkers
- Heats Water temp to ~ 65° F by afternoon
- Lowers Supplement Feeding Costs
- Lowers Labor & Travel Costs
- Improves Herd Health



Thank You

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