

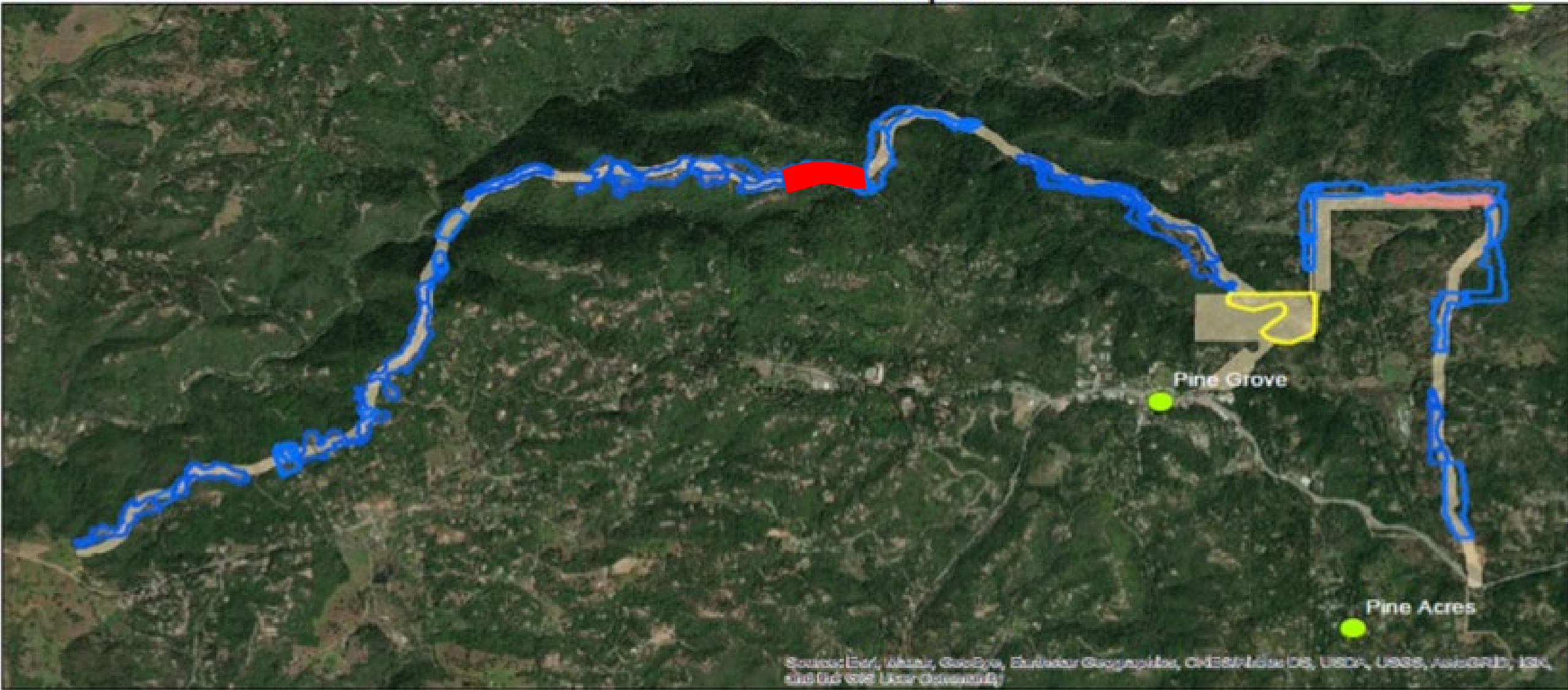


Techniques for Controlling Brush After Mastication

Scott Oneto
University of California Cooperative Extension
sroneto@ucanr.edu

Brian Allen
University of California Cooperative Extension
brallen@ucanr.edu

Mitchell Mine Fuel Break - Completed Fuelbreak





Objectives

1. Which treatments are the most economical, efficient, and effective?
2. Are nonchemical treatments as effective as chemical treatments?
3. Will organic herbicides provide adequate control?
4. Are over-the-counter herbicides as effective as commercial products?

33 Chemical & Mechanical Treatment Types

Small ruminant grazing



Lopping

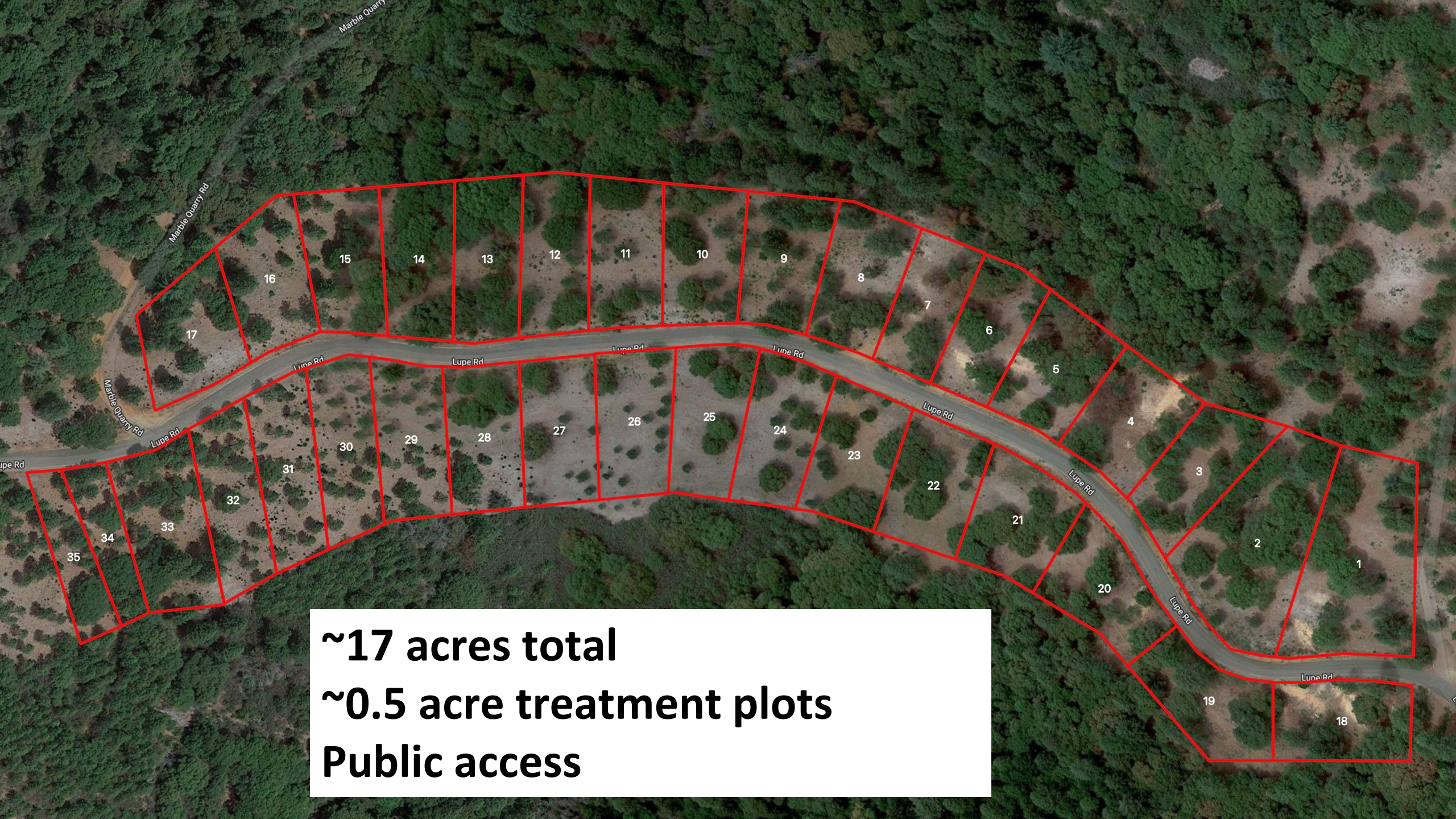


Herbicides



Flaming





~17 acres total
~0.5 acre treatment plots
Public access

Untreated Control



Grazing

- 48 goats & 2 sheep
- 1 livestock guardian dog
- 14 days to graze 1 acre
- Most public support
- Best if livestock are local




Grazing

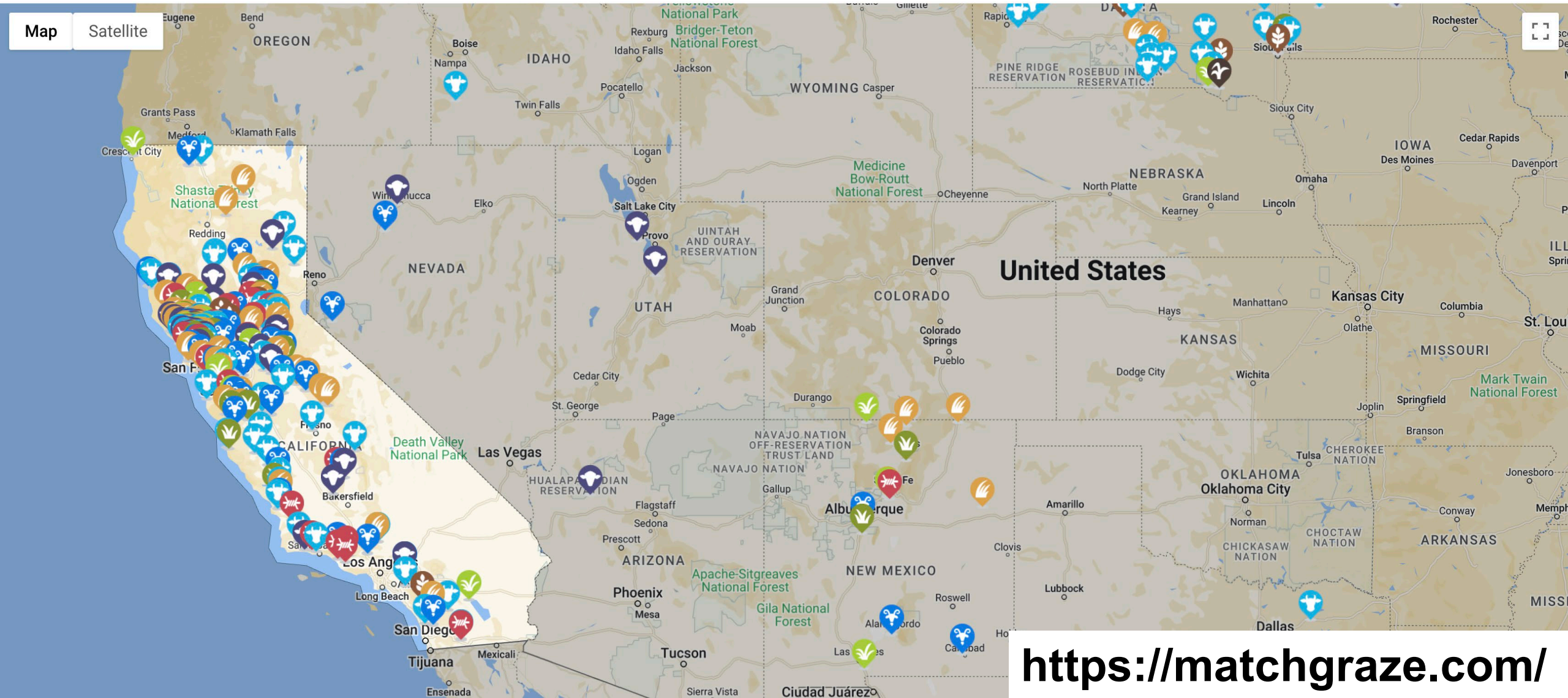
93% Control – 2MAT

- \$650 / acre



The map displays markers representing contract grazers with herds for hire, as well as locations available for grazing. Reference the legend to the right to clarify what type of livestock or land base is represented. [For definitions of the different marker types, click here.](#) Zoom in to see all available herds and land bases. Click on a marker for additional information and to send a message to the account holder. Utilize the search box or drop-down menus to narrow your search by address, forage type, livestock type or grazing season. [Site Policies.](#)

LIVESTOCK				LAND BASE				
								
Cattle	Sheep	Goats	Other / Mixed	Pasture	Native / Rangeland	Crop Residue	Cover Crop	Others



<https://matchgraze.com/>

Flame

- 11 hours / acre
 - \$177 labor/acre
- 14.5 gallons propane / acre
 - \$70 propane



Flame

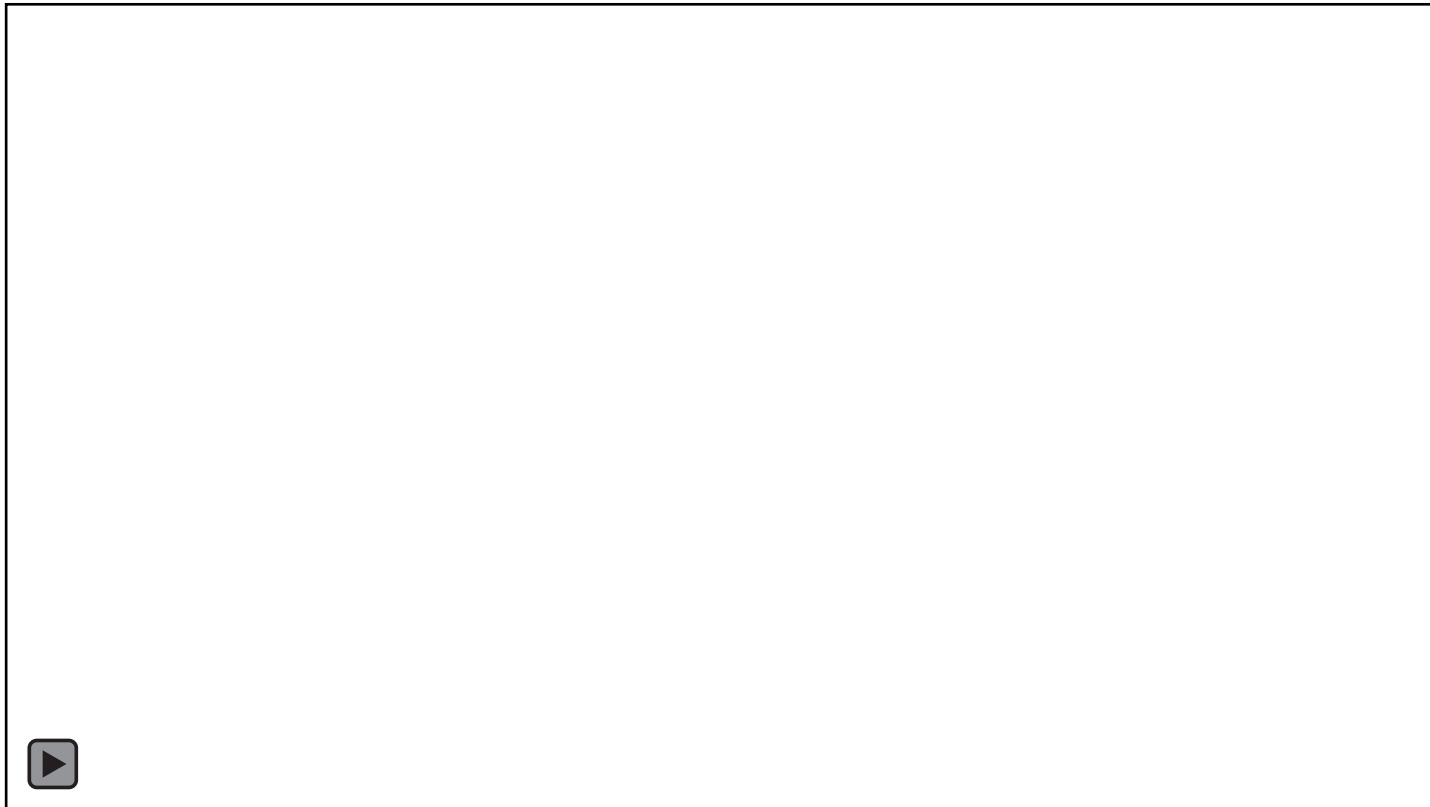
6% Control 9MAT

Control looked good immediately after treatment, but plants continued to recover



Lopping Treatment

- 13 hours
- \$197 Labor / acre



Lopping

73% Control 12MAT

Control looked good immediately after treatment, but plants continued to resprout throughout the season



Lopping & Herbicide

Accord XRT II – 1 qt/ac
Vista XRT - 20oz/ac
Garlon 4 Ultra - 1 qt/ac
MSO – 2 qt/ac

86% Control 12MAT

- 13 hours
 - \$197 Labor / acre
- Herbicide
 - \$99/acre



Chemical Treatments



Herbicide	Targets	Emergence	Hazard Class	Class
Vista XRT	Broadleaf	Post	Warning	Synthetic
Garlon 4 Ultra	Broadleaf	Post	Caution	Synthetic
Accord XRT II	Non-Selective	Post	Caution	Synthetic
Vastlan	Broadleaf	Post	Warning	Synthetic
Brushtox	Broadleaf	Post	Caution	Synthetic
Capstone	Broadleaf	Post & Pre	Caution	Synthetic
TerreVue	Broadleaf	Post	Caution	Synthetic
RM43 Total Vegetation Killer	Non-Selective	Post & Pre	Danger	Synthetic
Imazapyr 4SL	Non-Selective	Post & Pre	Caution	Synthetic
Milestone	Broadleaf	Post & Pre	Caution	Synthetic
Freelexx	Broadleaf	Post	Danger	Synthetic
Oust	Non-Selective	Post & Pre	Caution	Synthetic
Homeplate	Non-Selective	Post	Caution	Organic
Axxe	Non-Selective	Post	Warning	Organic
Green Gobbler (Acetic acid)	Non-Selective	Post	Danger	Organic

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Garlon 4 Ultra	Broadleaf	Post	Caution	Synthetic
Accord XRT II	Non-Selective	Post	Caution	Synthetic
Vastlan	Broadleaf	Post	Warning	Synthetic
Brushtox	Broadleaf	Post	Caution	Synthetic
Capstone	Broadleaf	Post & Pre	Caution	Synthetic
TerreVue	Broadleaf	Post	Caution	Synthetic
RM43 Total Vegetation Killer	Non-Selective	Post & Pre	Danger	Synthetic
Imazapyr 4SL	Non-Selective	Post & Pre	Caution	Synthetic
Milestone	Broadleaf	Post & Pre	Caution	Synthetic
Freelexx	Broadleaf	Post	Danger	Synthetic
Oust	Non-Selective	Post & Pre	Caution	Synthetic
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Freelexx	Broadleaf	Post	Danger	Synthetic
Oust	Non-Selective	Post & Pre	Caution	Synthetic
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Imazapyr 4SL	Non-Selective	Post & Pre	Caution	Synthetic
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Freelexx	Broadleaf	Post	Danger	Synthetic
Oust	Non-Selective	Post & Pre	Caution	Synthetic
Homeplate	Non-Selective	Post	Caution	Organic
Axxe	Non-Selective	Post	Warning	Organic
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Herbicide	Active Ingredient
Vista XRT	Glyphosate
Accord XRT II	Glyphosate
TerreVue	Glyphosate
Garlon 4 Ultra	Triclopyr
Vastlan	Triclopyr + Clopyralid
Brushtox	Triclopyr
Capstone	Triclopyr + Sulfometuron Methyl
RM43 Total Vegetation Killer	Glyphosate + Imazapyr + Diquat
Imazapyr 4SL	Imazapyr
Milestone	Aminopyralid
Freelexx	D-limonene (Citrus oil)
Oust	Sulfometuron Methyl
Homeplate	Caprylic Acid + Capric Acid
Axxe	Ammonium Nonanoate
Green Gobbler	Acetic acid

Foliar vs Low Volume Drizzle

Application Techniques

Foliar (AKA broadcast)

- Low conc./high vol.
- Application rates can range from 20 - 150 gallons spray solution / acre



Directed spray "drizzle"

- High conc./low vol.
- 5 gallons spray solution / acre



30 Herbicide Treatments	Application Method	Treatment Time	Type
Lopping & Accord XRT II 1qt/ac, Vista XRT 20 oz/ac, Garlon 4 Ultra 1 qt/ac, MSO 4pt/ac	Foliar	Spring	Synthetic
Accord XRT II 2%, Rainer EA 0.5%	Foliar	Spring	Synthetic
Accord XRT II 7%, Rainer EA 0.5%	Low Volume Drizzle	Spring	Synthetic
Accord XRT II 2%, Rainer EA 0.5%	Foliar	Fall	Synthetic
Accord XRT II 7%, Rainer EA 0.5%	Low Volume Drizzle	Fall	Synthetic
Garlon 4 Ultra 2%, MSO 1%	Foliar	Spring	Synthetic
Garlon 4 Ultra 8%, MSO 8%	Low Volume Drizzle	Spring	Synthetic
Vastlan 2%, MSO 1%	Foliar	Spring	Synthetic
Vastlan 8%, MSO 8%	Low Volume Drizzle	Spring	Synthetic
RM43 Total Vegetation Killer 4.5%, Rainer EA 0.5%	Foliar	Spring	Synthetic
RM43 Total Vegetation Killer 4.5%, Hasten EA 5%, MSO	Low Volume Drizzle	Spring	Synthetic
Brushtox 2%, MSO 1%	Foliar	Spring	Synthetic
Brushtox 8%, MSO 8%	Low Volume Drizzle	Spring	Synthetic
Garlon 4 Ultra 2%, Imazapyr 4SL 1%, Accord XRT II 3%, MSO 2%	Foliar	Spring	Synthetic
Garlon 4 Ultra 8%, Imazapyr 4SL 5%, Accord XRT II 7%, MSO 5%	Low Volume Drizzle	Spring	Synthetic
Accord XRT II 1.5%, Garlon 4 Ultra 1%, Rainer EA 0.5%	Foliar	Spring	Synthetic
Capstone 8 pints/acre, Rainer EA 0.5%	Foliar	Spring	Synthetic
TerreVue 2.8 oz/ac, Rainer EA 0.5%	Foliar	Spring	Synthetic
Imazapyr 4SL 5%, MSO 5%	Low Volume Drizzle	Spring	Synthetic
Milestone 0.5%, Vastlan 2% (10 oz/tank), MSO 2%	Foliar	Spring	Synthetic
Milestone 0.5%, Garlon 4 Ultra 2%, MSO 2%	Foliar	Spring	Synthetic
Milestone 0.5%, Vastlan 2%, Freelexx 1%, MSO 2%	Foliar	Spring	Synthetic
TerreVue 2.5 oz/acre, Vastlan 2%, Freelex 1%, MSO 2%	Foliar	Spring	Synthetic
Vista XRT II 20oz/ac, Accord XRT II 1qt/ac, Rainer EA 0.5%	Foliar	Spring	Synthetic
Capstone 8 pts/acre, Accord XRT II 2 qt/ac, Rainer EA 0.5%	Foliar	Fall	Synthetic
Garlon 4 Ultra 8%, MSO 8%	Foliar	Fall	Synthetic
Oust XP 3 oz/ac, Accord XRT II 6qt/ac, Rainer EA 0.5%	Foliar	Fall	Synthetic
Homeplate (organic) - 9%, Natural wet 0.8%, Mixwell 0.04%	Foliar	Summer	Organic
Axxe (organic) 20%, Natural wet 0.8%	Foliar	Summer	Organic
Acetic acid (organic) Full strength 20% acetic acid	Foliar	Summer	Organic



Foliar application - 93% control 9MAT

Garlon 4 Ultra 2%
Imazapyr 4SL 1%
Accord XRT II 3%
MSO 2%

Herbicide - \$122/acre
Labor – 2hrs/acre

Drizzle application - 73% control 9MAT

Garlon 4 Ultra 8%
Imazapyr 4SL 1%
Accord XRT II 3%
MSO 2%

Herbicide - \$106/acre
Labor – 25 min/acre



Foliar application - 93% control 9MAT

Garlon 4 Ultra 2%
MSO 1%

Herbicide - \$48/acre

Labor – 2hrs/acre

Drizzle application - 83% control 9MAT

Garlon 4 Ultra 8%
MSO 8%

Herbicide - \$59/acre

Labor – 25 min/acre



Foliar application - 84% control 9MAT

Brushtox 2%

MSO 1%

Herbicide - \$51/acre

Labor – 2hrs/acre



Drizzle application - 63% control 9MAT

Brushtox 8%

MSO 8%

Herbicide - \$62/acre

Labor – 25 min/acre

Herbicide	Targets	Emergence	Hazard Class	Control 6 to 9 MAT	Class
Homeplate (Caprylic/Capric acid)	Non-Selective	Post	Caution	46	Organic
Axxe (Ammonium nonanoate)	Non-Selective	Post	Warning	23	Organic
Green Gobbler (Acetic acid)	Non-Selective	Post	Danger	6	Organic



Preliminary Results

Treatment	Treatment Time / Acre	Cost / Acre	% Control (2-6 MAT)
Grazing (50 goats & sheep)	14 days	\$650	93%
Flame	11 hours	\$247	6%
Lopping	13 hours	\$197	73%
Lopping + Herbicide (Foliar)	13 hours	\$296	86%
Herbicide (Foliar) <ul style="list-style-type: none">• Garlon 4 Ultra 2%, MSO 1%• 93% Control 9 MAT	2 hours	\$29 - \$400 + Labor (\$31)	6 - 93%
Herbicide (Low Volume Drizzle) <ul style="list-style-type: none">• Garlon 4 Ultra 8%, MSO 8%• 83% Control 9 MAT	25 minutes	\$22-\$106 + Labor (\$6)	23 - 83%

Acknowledgements

