

# RESTORING RANGELAND QUALITY WITH SOIL HEALTH ENHANCEMENT

Western SARE Professional + Producer Project 2016-2018

Paulina, Oregon



## 7 Producers/2 Collaborators

3,015 acres bacteria/ 3 yrs. monitoring

Crooked River Weed Management Area  
—Principal Investigator

### Project Participants

Blue Mt. Ranch— Paulina, Or

Bonnieview Ranch— Post, Or

Hermreck At The Y Ranch— Paulina, Or

Lazy BJ Ranch—Paulina, Or

Sabre Ridge Ranch—Paulina, Or

TNC Juniper Hills Preserve—Post, Or

Tweedt Ranch— Post, Or

Waibel Ranches, LLC—Paulina, Or

Partnering For Better Rangeland Health



- With our “Restoring Rangeland Quality with Soil Health Enhancement” project we defined a geographic region in which landowners have a common interest in controlling the future spread of medusahead rye and cheatgrass.
- Project is an integrated ongoing effort in Paulina, Oregon area to address medusahead rye in sage-grouse habitat. The project’s goal to restore rangeland health and function for the greater sage-grouse coincides with restoring mule deer habitat and most importantly, increasing livestock forage production.
- Dryland forage is essential for this ranching community for cattle operations.
- Collaborative effort will evaluate and demonstrate the effective use of soil enhancing bacterium for inhibiting growth on medusahead rye and cheatgrass.
- To aid in the development of best management guidelines for producers.



## **Objectives/Performance Targets:**

1. To evaluate and demonstrate the use of soil enhancement bacteria in rangeland in Crook County.
2. To restore rangeland health by reducing annual invasive grasses and increasing native grass production.
3. To inform producers in the community and land managers with a cost analysis of management options on rangeland for long-term production.



# Benefits and Impact to Agriculture

- Medusahead rye and cheatgrass, both are prolific seed producers and will out compete native grasses to alter forage quality for livestock grazing.
- When landowners graze on medusahead rye, increased tooth wear shortens the life of the animal.
- These two invasive annual grasses have taken over and depleted valuable dryland forage production for livestock production, costing landowners thousands of dollars to battle.
- Project will demonstrate how soil bacteria can be applied in rangeland to reduce the competitiveness of annual grasses, enhance forage production for livestock, improve range health for wildlife including sage-grouse and mule deer, and reduce wildfire threats to landowners.
- By using a soil bacteria, producers and land managers are essentially reducing the amount of herbicide sprayed on the land. This will help with water quality and soil health as a whole.



Summer 2016 was the beginning steps for our project objectives. There were 16,095 acres of medusahead rye and cheatgrass surveyed between 7 producers and 1 collaborator before aerial spraying occurred in October 2016 with bacteria (MB 906)/ herbicide together and bacteria alone. For the project 2862 net acres was aerial sprayed and 153 net acres were sprayed by landowners behind ATV. The rate of spray for bacteria was 1 gallon per acre and herbicide (Imazapic) was 6 ounces per acre. 1962 net acres was bacteria only and 1053 net acres was both bacteria and herbicide applied. Monitoring photos at 11 sites have been established for yearly surveying.



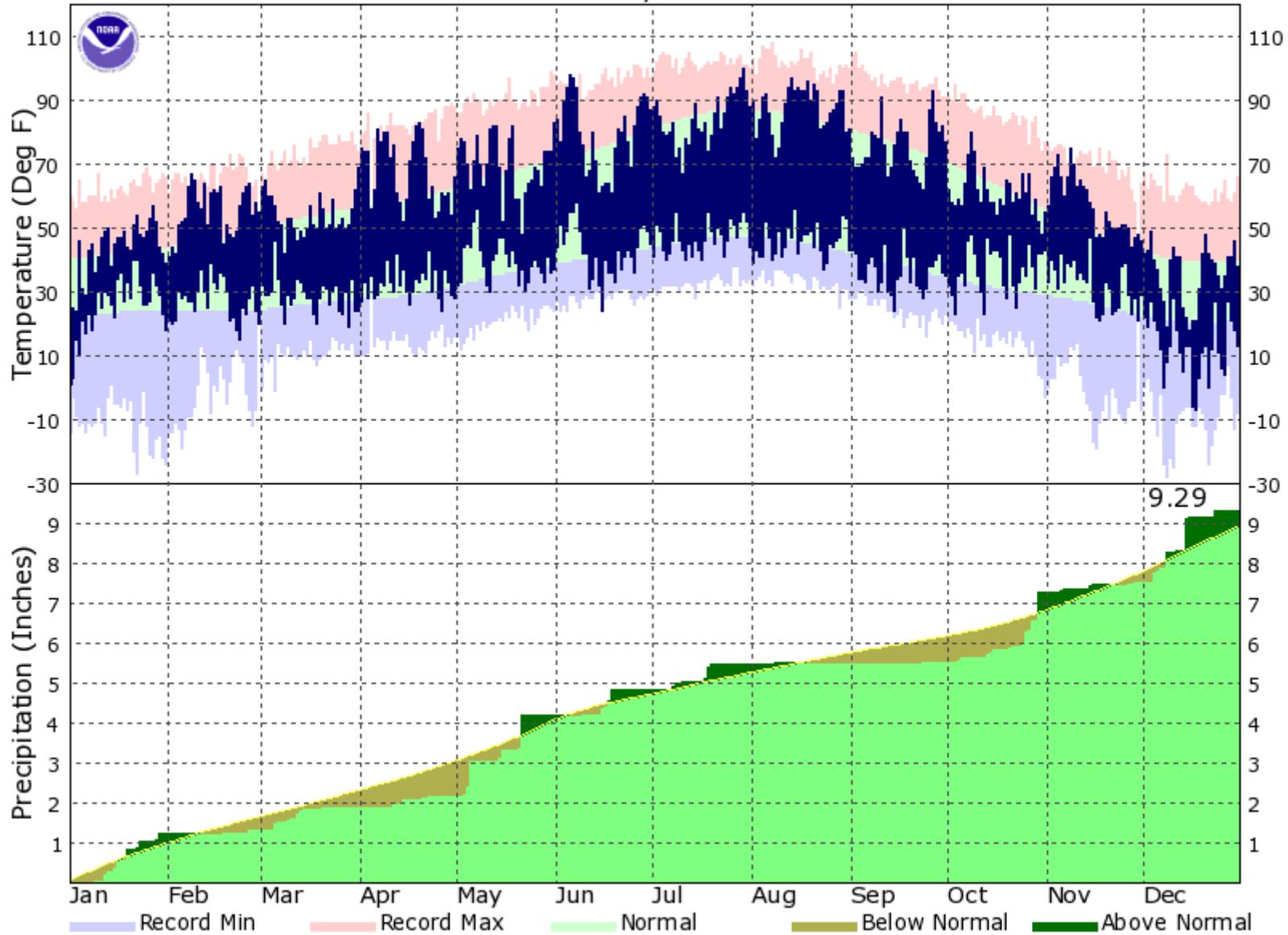
Cost analysis for aerial spraying bacteria verses herbicide was; First year, bacteria being \$ 8.40 per acre and helicopter was \$23.00 per acre. If herbicide was added with bacteria, chemical was \$8.70 and helicopter service was \$23.00 per acre.



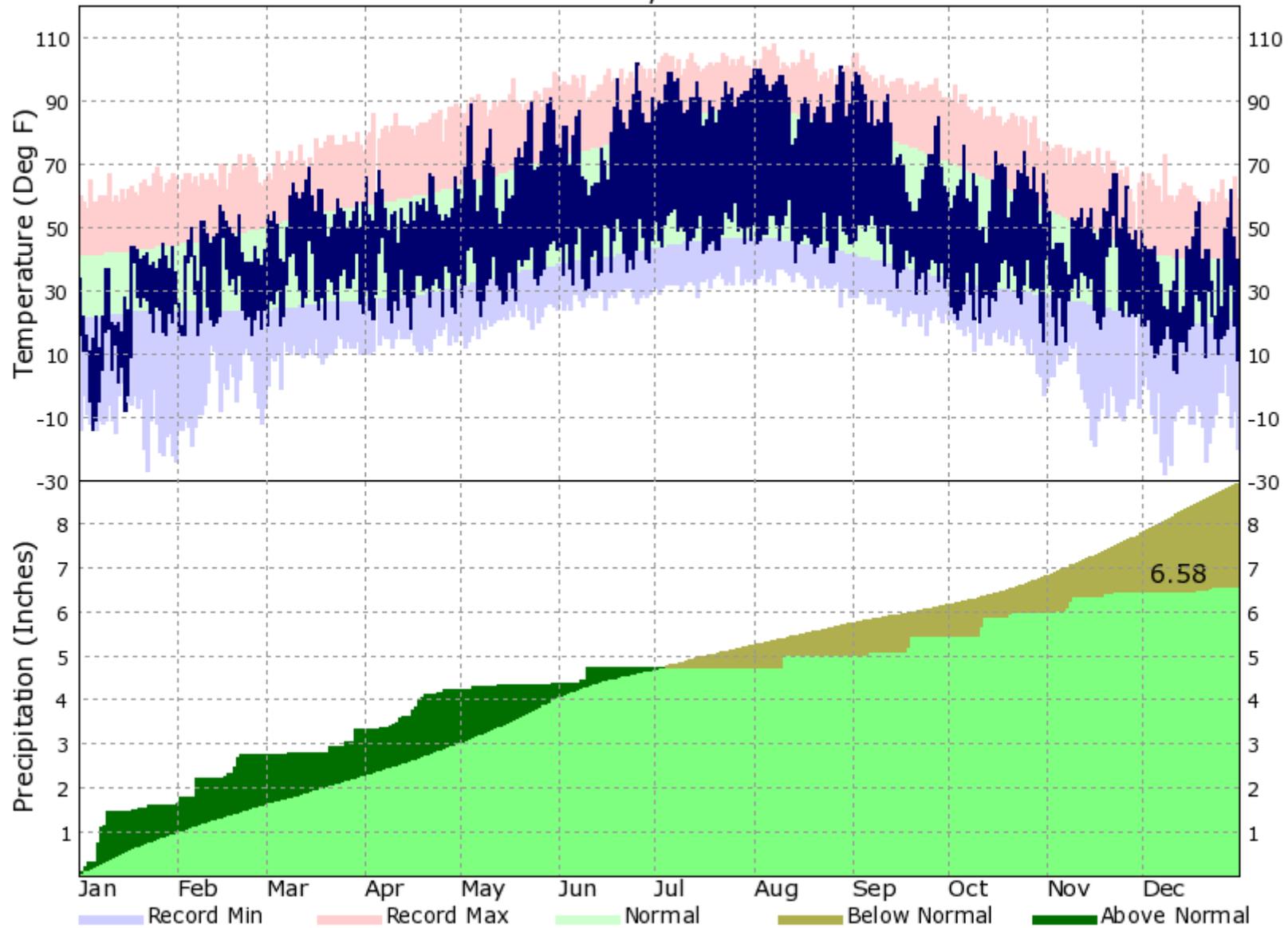
- Monitoring photos at 11 sites were done in Fall 2016, Spring 2017, and again in May/June 2018.
- Data analysis comparisons will reveal the impact of bacterial treatments on annual grasses and desired species plant growth, the relationship among these data and other variables such as location, soil characteristics, and climate.
- Request for assistance continues to grow as producers realize the threat on cattle production and wildlife habitat.
- Cost of herbicide goes up in price, a real need for alternative, affordable tools to fight annual grasses is critical for sustainable agriculture.



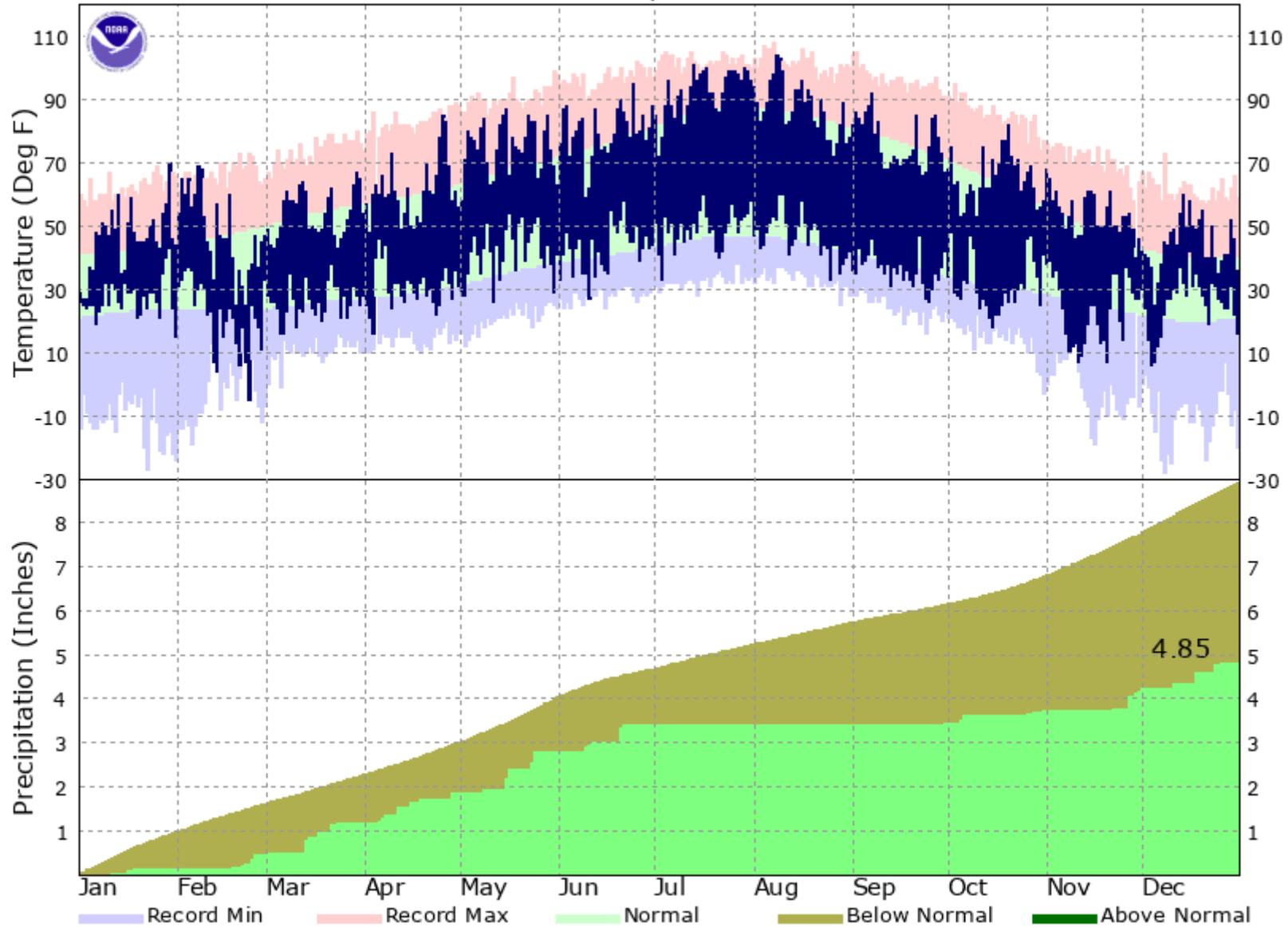
# REDMOND, OR - 2016



# REDMOND, OR - 2017



# REDMOND, OR - 2018





**November 2016**

Lazy BJ Ranch-Greg Bedortha  
Monitor Site #1  
Medusahead rye

Bacteria Only Treated

pH 7.7

ashy loam soil



**May 2017**

Lazy BJ Ranch- Greg Bedortha  
Monitor Site #1  
Medusahead rye

pH 6.8

Elevation 3823 ft.





June 20, 2018 Lazy BJ Ranch- Greg Bedortha

Monitor Site #1

Medusahead rye





**November 2016**

Lazy BJ Ranch- Greg Bedortha  
Monitor Site#2  
Medusahead rye

Bacteria Only Treated

pH 7.0

ashy clay loam



**May 2017**

Lazy BJ Ranch- Greg Bedortha  
Monitor Site #2  
Medusahead rye

pH 6.8

Elevation 3854 ft.





June 20, 2018 Lazy BJ Ranch- Greg Bedortha

Monitor Site #2

Medusahead rye





**November 2016**

Blue Mountain Ranch-  
Monitor Site #4  
Medusahead rye

Control- No Treatment

pH 7.0

ashy clay loam



**June 2017**

Blue Mountain Ranch-  
Monitor Site #4  
Medusahead rye

pH 7.0

Elevation 3785 ft.





June 7, 2018    Blue Mountain Ranch  
Monitor Site #4    Medusahead rye





**November 2016**

At The Y Ranch- Hermreck  
Monitor Site #3  
Medusahead rye

Bacteria Only Treated

pH 7.3

gravelly clay loam



**May 2017**

At The Y Ranch- Hermreck  
Monitor Site #3  
Medusahead rye

pH 7.0

Elevation 3757 ft.





June 20, 2018 At The Y Ranch- Hermreck  
Monitor Site #3 Medusahead rye





**November 2016**

Sabre Ridge Ranch-  
Kelly Hamilton-  
Monitoring Site #5  
Medusahead rye

Bacteria Only Treated

pH 7.0

gravelly clay loam



**June 2017**

Sabre Ridge Ranch-  
Kelly Hamilton  
Monitor Site #5  
Medusahead rye

pH 7.0

Elevation 3852 ft.





September 12, 2018

Sabre Ridge Ranch- Kelly Hamilton

Monitor Site #5

Medusahead rye





**November 2016**

The Nature Conservancy-  
Juniper Hills Preserve  
Monitoring Site #8  
Cheatgrass

Bacteria Only Treated

pH 7.0

loamy mix



**May 2017**

The Nature Conservancy-  
Juniper Hills Preserve  
Monitor Site #8  
Cheatgrass

pH 7.0

Elevation 3460 ft.





May 18, 2018 The Nature Conservancy- Juniper Hills Preserve

Monitor Site #8

Cheatgrass





**November 2016**

The Nature Conservancy-  
Juniper Hills Preserve-  
Monitoring Site #9  
Medusahead rye

Bacteria Only Treated

pH 7.0

gravelly clay loam



**May 2017**

The Nature Conservancy-  
Juniper Hills Preserve  
Monitoring Site #9  
Medusahead rye

pH 7.0

Elevation 3560 ft.





May 18, 2018 The Nature Conservancy- Juniper Hills Preserve

Monitor Site #8

Medusahead rye





**November 2016**

Tweedt Ranch-  
Monitoring Site #11  
Medusahead rye

Bacteria and Herbicide Treated

pH 7.0

gravelly clay- red clay



**June 2017**

Tweedt Ranch-  
Monitoring Site #11  
Medusahead rye

pH 7.0

Elevation 3609 ft.





May 18, 2018 Tweedt Ranch

Monitor Site #11

Medusahead rye





**November 2016**

Waibel Ranches-  
Brad & Julie Waibel  
Monitoring Site #6  
Medusahead rye

Bacteria and Herbicide Treated

pH 7.0



**June 2017**

Waibel Ranches-  
Brad & Julie Waibel  
Monitoring Site #6  
Medusahead rye

pH 7.0

Elevation 3589





July 17, 2018

Waibel Ranches- Brad & Julie Waibel

Monitor Site #6

Medusahead rye





**November 2016**

Waibel Ranches-  
Brad & Julie Waibel  
Monitoring Site #7  
Medusahead rye

Bacteria & Herbicide Treated

pH 7.0



**June 2017**

Waibel Ranches-  
Brad & Julie Waibel  
Monitoring Site #7  
Medusahead rye

pH 7.0

Elevation 4085





July 17, 2018

Waibel Ranches- Brad & Julie Waibel

Monitor Site #7

Medusahead rye





At The Y Ranch November 4, 2016 Site #3 Medusahead rye Bacteria only site



At The Y Ranch-Hermreck May 25, 2017 Site #3 Meduahead rye





At The Y Ranch June 20, 2018

Site #3

Medusahead rye

Bacteria Only Treatment





TNC-Juniper Hills Preserve November 10, 2016 Site #9 Medusahead rye Bacteria only site



TNC-Juniper Hills Preserve May 25, 2017 Site #9 Medusahead rye





TNC- Juniper Hills Preserve

May 18, 2018

Site #9 Medusahead rye

Bacteria Only Treatment





Lazy BJ Ranch- Bedortha November 4, 2016 Site #1 Medusahead rye Bacteria only site



Lazy BJ Ranch-Bedortha May 25, 2017 Site #1 Medusahead rye





Lazy BJ Ranch- Bedortha

June 20, 2018

Site #1 Medusahead rye

Bacteria Only Treatment





Sabre Ridge Ranch- November 9, 2016 Site #5 Medusahead rye Bacteria only site



Sabre Ridge Ranch- June 1, 2017 Site #5 Medusahead rye





Sabre Ridge Ranch

September 12, 2018

Site #5 Medusahead rye

Bacteria Only Treatment





TNC Juniper Hills Preserve - November 10, 2016

Site #8 Cheatgrass

Bacteria only site



TNC Juniper Hills Preserve - May 25, 2017

Site #8 Cheatgrass





TNC Juniper Hills Preserve- May 18, 2018

Site #8 Cheatgrass

Bacteria Only Treatment





Tweedt Ranch November 10, 2016 Site #11 Medusahead rye Bacteria and Herbicide site



Tweedt Ranch October 3, 2017 Site #11 Medusahead rye



Tweedt Ranch June 6, 2017 Site #11 Medusahead rye





Tweedt Ranch May 18, 2018 Site #11 Medusahead rye

Bacteria and Herbicide Treatment



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