314 – Brush Management
Inventory Worksheet by Target Species

Brush Management in Wyoming may be applied to the following species, all other species not on the below list must go through the variance process and approved by the State Resource Conservationist prior to implementation (select only one target species per inventory form):

Native Species:

1. _____ Fringed or Prairie sagewort
2. _____ Wyoming big sagebrush
3. _____ Mountain big sagebrush
4. _____ Silver sagebrush
5. _____ Broom snakeweed
6. _____ Plains prickly pear
7. _____ Rocky Mountain juniper
8. _____ Utah juniper
9. _____ Common juniper
10. _____ Littleleaf mountain mahogany
11. _____ Curl-leaf mountain mahogany
12. _____ Alderleaf (True) mountain mahogany
13. _____ Ponderosa pine
14. _____ Limber pine
15. _____ Yellow rabbitbrush
16. _____ Rubber rabbitbrush
17. _____ Common snowberry
18. _____ Western snowberry

Introduced (non-native) Species:

1. _____ Russian olive
2. _____ Saltcedar

Key factors to planning brush management are percent canopy of target species, overall ecological site Range Health or Trend, and the recovery potential of the site. The percent canopy of the target species, overall site Range Health/Trend, and the recovery potential of the site dictate treatment method (chemical, mechanical, and biological) to be used and overall chances of treatment success. Recovery potential of the area is the most important to evaluate prior to determining treatment method. Recovery potential with a higher percentage of desirable species (IIRH – Functional/Structural Groups) and proper grazing management has a higher chance for treatment success than a site with a low recovery potential with little to no remaining desirable species. A site with a low recovery potential needs to be evaluated for potential restoration or reclamation efforts prior to, during or after any brush management efforts.

Planner Name	
Field Office	
Date of Inventory	

Client Name	Tract Number:	Number(s) or name:	Acres

Client Goal/Objective:

314 – Brush Management
Inventory Worksheet by Target Species

Describe the Identified Resource Concern(s):

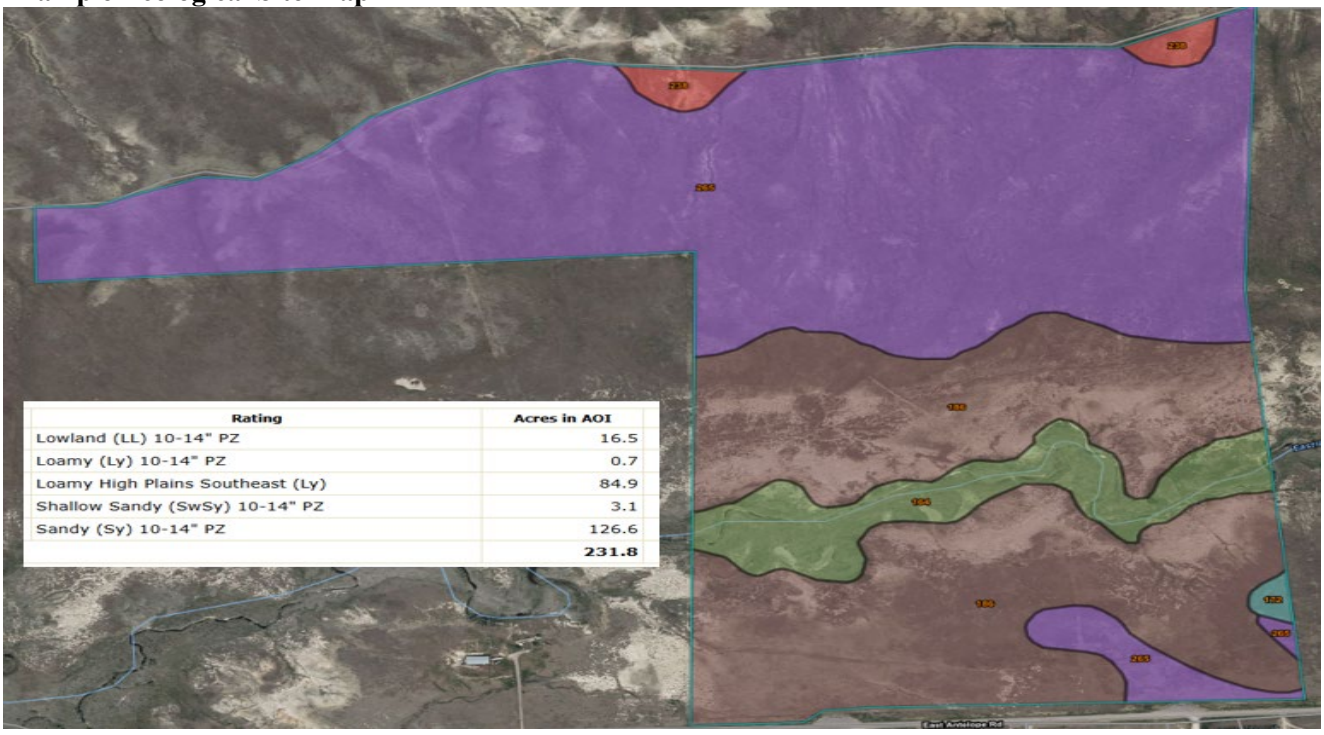
Describe Current Level of Management (season of use, forage & utilization patterns, livestock type, etc.)

7 Step Inventory Process

The 7 steps will lead you through the process to identify the appropriate treatment area, acres to be treated, percent canopy or pounds of production per acre of the target species and the percent composition of the desirable species, recovery potential of infested area(s), and other necessary information to adequately plan, design, and implement the practice. Information gathered in this inventory worksheet will be used to provide the client with information to make necessary decisions and then used to complete the Implementation Requirements.

Step 1 – Brush Management is not allowed on active cropland. On rangeland or other land use where Ecological Site characteristics are still appropriate, identify and list ecological sites by pasture or infestation area using Table 1. Where Ecological Site characteristics are not appropriate, assume 100% removal and delineate infestation using aerial imagery or in-field GPS delineation.

Example Ecological Site Map



314 – Brush Management
Inventory Worksheet by Target Species

Pasture or Field name or number		Pasture or field total acres	Ecological Site(s) (ES) or Other Land with Permanent Vegetation (Vegetation Type) Space provided for 4 ES's per row – use back if more space needed Does target species occur on ecological site or in Other Permanent Vegetation Type? Highlight or Circle Yes (Y) or NO (N) (Step 1)												
Ex. 1		231.8	Lowland	Y	N	Loamy	Y	N	Shallow Sandy	Y	N	Sandy	Y	N
				Y	N		Y	N		Y	N		Y	N
				Y	N		Y	N		Y	N		Y	N
				Y	N		Y	N		Y	N		Y	N
				Y	N		Y	N		Y	N		Y	N
				Y	N		Y	N		Y	N		Y	N

Step 2 – Transect Data (Use tools required in National Resource Concern List and Planning Criteria – Section 3 FOTG)

- **Must determine (estimation) pre-treatment carrying capacity of the ecological site and total pasture.**
- **Must complete before and after photos in the same location for each Ecological Site or Pastureland type.**
- **Must Complete Line Point Intercept (ECS-36 or Line Point Intercept tab in 528 IR) transect(s) to determine percent species composition of ecological site.**
- **Must complete Line Intercept (ECS – 28) transect(s) for shrubs, 1/10th acre plot transects for Pine species and Juniper or complete production estimates (pounds per acre) for shrubs, Pine species and Juniper (see Range Technical Note No. 1 – FOTG – Section 1 – Technical Notes by Discipline – Range Technical Notes).**

Plant Community Functional/Structural Groups and Resource Concern Tool Score Summary					
Pasture or Field Name or Number	Ecological Site Name	List Functional/ Structural Groups Present	List Functional/ Structural/ Groups Absent	Target Brush Species % Canopy or pounds/ac production (Pretreatment)	1/10th Acre Plot – Trees per Acre (If Applicable)

314 – Brush Management
Inventory Worksheet by Target Species

- **If Rangeland or where Ecological Site characteristics are still appropriate - Must complete either Interpreting Indicators of Rangeland Health or Range Apparent Trend**

  - **Rangeland Health – Interpreting Indicators of Rangeland Health (IIRH) v.5**

IIRH Attribute Ratings				
Pasture or Field Name or Number	**Ecological Site Name**	**Soil & Site Stability Attribute Rating**	**Hydrologic Function Attribute Rating**	**Biotic Integrity Attribute Rating**

IIRH Indicator Ratings						
Pasture or Field Name or Number	**Ecological Site Name**	**Indicator 12**	**Indicator 13**	**Indicator 15**	**Indicator 16**	**Indicator 17**

- **Range Apparent Trend**
  - Composition Changes – Evaluate the composition of the plant community and compare it to the ESD communities.

Range Apparent Trend Points and Overall Rating			
Pasture or Field Name or Number	**Ecological Site Name**	**Composition Changes Points** **2 1 0 -1 -2**	**Overall Trend Rating** **Toward >3** **Not apparent 3 to 0** **Away from < 0**

- **Pastureland – Pasture Condition Score (WY-ECS – 055)**
  Note: Pasture Condition Score Guide – FOTG – Section 4 – Grazing Management – WY-ECS-055 Pasture Condition Score Guide

Pasture Condition Score Overall and Individual Elements				
Pasture or Field Name or Number	**Overall Pasture Condition Score 1 - 5**	**Percent Desirable Plants 1 - 5**	**Live or Dormant Plant Cover 1 - 5**	**Plant Vigor 1 - 5**

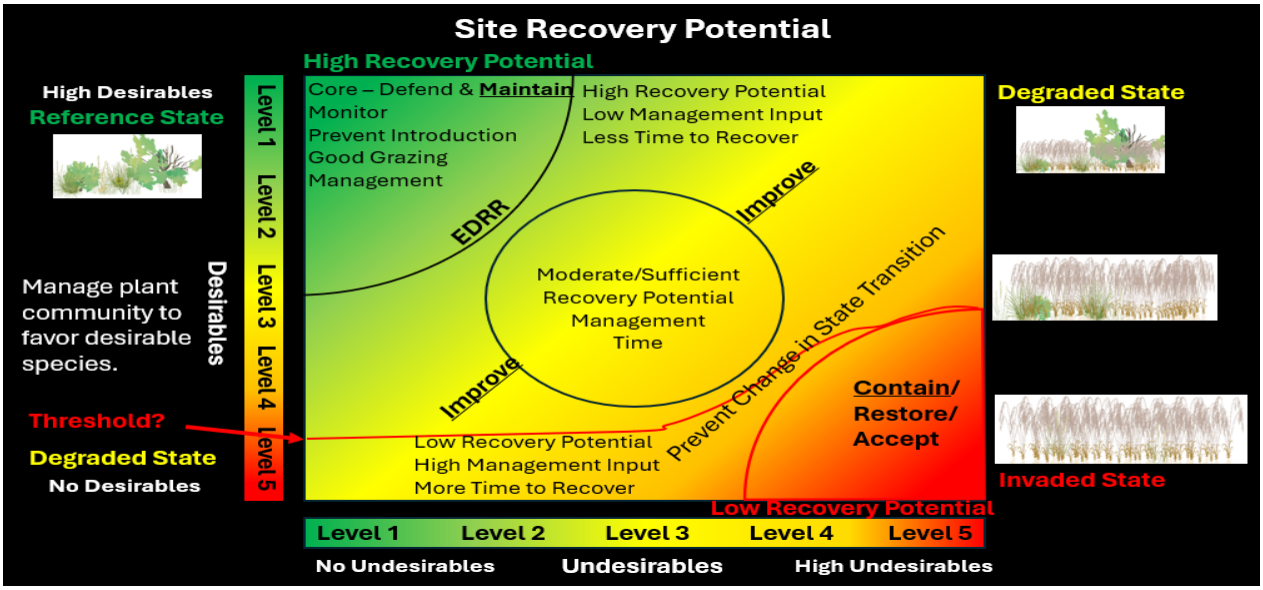
Step 3 – Site Recovery Potential (SRP)
Site Recovery Potential is critical to treatment success, if desirable species no longer exist or are limited then treatment won't be successful until reclamation or restoration efforts are completed. As undesirable species composition increases, Site Recovery Potential declines.

- Level 1 = High SRP - percent composition of both undesirables for Level 1 = 0% Undesirables & 100% Desirables
- Level 2 = Moderate to High SRP - Level 2 percentage = 1%-25% Undesirables, 99%-75% Desirables
- Level 3 = Moderate SRP - Level 3 percentage = 26%-50% Undesirables, 74%-50% Desirables
- Level 4 = Moderate to Low SRP- Level 4 percentage = 51%-75% Undesirables, 49%-25% Desirables
- Level 5 = Low SRP. Level 5 percentage = >76% Undesirables, <25% Desirables

314 – Brush Management
Inventory Worksheet by Target Species

If the SRP is Level 1 – Must document rationale for needing treatment with low percentage of undesirable species. Rationale could include EDRR – Early Detection Rapid Response, invasion vulnerability of site due to soil type, historical management, etc.

If the SRP is Level 5 - 'Dominant' invasion state with a low recovery potential – Do not continue moving forward with Brush Management (314). Contact the Multi-County Range Specialist or Area Resource Conservationist for site recommendations. Treatment test strips to determine desirable species response and/or restoration/reclamation efforts may be needed on the site. These efforts may be determined to be needed before, during or after the brush management treatment.



Pasture or Field Name or Number	Ecological Site or Pastureland Type	Site Recovery Potential High (Level 1) Moderate to High Moderate (Level 3) Moderate to Low Low (Level 5)

Step 4 Determine treatment method options – Mechanical, Chemical, Biological

- Level 2 - 4 - Consult with the Multi-Country Range Specialists, ARC, University of Wyoming Extension Specialist or Weed and Pest Districts to determine what treatment methods are effective for the target species.
- Treatment Methods – Provides decision maker with options to treat the target species. Not all species have more than one option and some options might take a high amount of time, equipment, and labor that might lead to eliminating the option. If there is more than one option available, options must be described.

    - **Mechanical -** Is there a mechanical method that can be implemented with an initial treatment and then follow-up maintenance that will effectively manage the target species for 5 years? (Circle) **YES or NO, If Yes, describe:**

    - **Biological –** Is there a biological (insect/agent) that will effectively manage the target species for 5 years? (Circle) **Yes or NO, If Yes, describe:**

    - **Biological** – Is there a biological (grazing animal(s)) that will effectively manage the target species for 5 years? (Circle) **Yes or NO, If Yes, describe:**

    - **Chemical -** Is there a chemical herbicide that will treat the target species with an initial treatment and follow-up maintenance that will effectively manage the target species for 5 years? (Circle) **Yes or NO, If Yes, describe:**

    - **Combination of methods that will effectively manage the target species (example: mechanical and chemical)? (Circle) Yes or NO, If Yes, describe:**

314 – Brush Management
Inventory Worksheet by Target Species

Step 5 – Inventory columns (as needed), considering treatment method selected in Step 4.

Targeted Treatment Pasture or Field Name or number	Adjacent land-use to targeted treatment area. Land-use type, crops, plant communities, etc. List and show on treatment map	Are there perennial or intermittent water bodies or wetlands in treatment area? Are there natural or artificial water conveyances in treatment areas such as irrigation ditches, canals, ephemeral draws, livestock watering facilities, wells, etc.? List and show on treatment map.	Are there specific fish or wildlife habitats/concerns that need evaluation by biologist?	Are there identified buffer areas needed within or adjacent to the planned treatment area? Indicate size and show it on the treatment map.	Are the NON-TREATMENT areas within the planned treatment area such as trees, farmsteads, roads, corrals, etc. clearly identified/delineated on treatment map?	Note any application safety infrastructure on or near treatment area such as power lines, cell towers, buildings, etc. and clearly identify/delineate on treatment map?

Step 6 - Post Treatment Management for Perennial Vegetation Recovery to be evaluated during the planning process and post treatment. The Client will be advised to the following prior to entering into any agreement or contract.

- **Determining post treatment management by level of Recovery Potential**
    1. **Level 2 – Does not require management change but must incorporate monitoring to determine effectiveness of treatment and overall Range Health improvement.**
    2. **Level 3 and 4 – Planner must assist client with re-evaluating post treatment ecological site and total pasture carrying capacity and establish monitoring locations of key areas and key species. A grazing plan must be developed with current site conditions (post-treatment) that could include deferment, rest, season of use, reduced stocking rate, etc. to allow for site recovery. See post treatment management by method below.**
    3. **Level 5 – Restoration or Reclamation efforts could happen prior to, during or after treatment. The management plan will be developed by the Multi-County Rangeland Management Specialist or the Area Resource Conservationist.**
- **Determining post treatment management by method of Brush Management (Mechanical).**
    1. **Intensity of ground disturbance from any method**

- **Minimal disturbance (only see evidence of disturbance where individual brush species were removed such as root ball extraction). Herbaceous vegetation looks relatively untouched.**
  Grazing plan will include: 1 year grazing season deferment, year following treatment, stocking rate is identified to be 50-75% (50-75% of no more than 50% utilization) of current condition carrying capacity until area fully recovers.
  Monitoring these areas will take place until no evidence of activity remains.
- **Moderate disturbance (evidence of disturbance includes where brush was removed, wheel or track scaring, equipment turning soil mounds, increased bare ground from management activities). Herbaceous vegetation is present but vegetated and non-vegetated (disturbed) appears around equal.**
  Grazing plan will include: 1 full year of rest or more, year following treatment plus 1-year growing season deferment second or third year following treatment to allow desirable herbaceous perennials to recover, stocking rate 25 – 50% of current condition carrying capacity until area fully recovers.
  Monitoring these areas will take place until no evidence of activity remains.
- **Heavy disturbance (evidence of disturbance is widespread, large areas of bare ground appearing like construction or restoration activities took place with soil pushed into piles from turning equipment and brush removal efforts). Soil must be leveled and possibly re-seeded before grazing use. Herbaceous vegetation is sparse to large areas without herbaceous vegetation.**
  Grazing plan will include 2 or more years of yearlong rest and potentially another year or more of growing season deferment (year 3 plus). Once evaluation determines livestock use is acceptable, reduced stocking rate is necessary until area is fully recovered and new carrying capacity is determined.
  Monitoring these areas will take place until no evidence of activity remains.

- **Determining post treatment management with 15% or more reduction in canopy.**
  - **Planner must assist with re-evaluating post treatment ecological site and pasture carrying capacity and establish monitoring locations of key areas and key species. Grazing plan must be developed with current site conditions evaluated that could include, deferment, rest, season of use, reduced stocking rate, etc.**

Step 6 – Final Step and Putting Together the Treatment Area Map and Shape Files

Using the information gathered in steps 1-5, create a treatment map using ESD information (Step 1), all tables and transect data. Include treatment area acres, identify non-treatment areas (excluded acres), and any other information relevant to the treatment. Consider method (mechanical, chemical, biological) used in terms of slope, soil type, soil moisture, rocks, rock outcrops, equipment capability and weight, physical labor, etc. to delineate appropriate treatment size acreage and ability in a given

amount of time. Ensure treatment does not affect humans and non-target plants or animals both in the treatment area as well as off-site areas. Includes label and/or equipment requirements. Use this inventory and information from the tables and transect data to complete the Brush Management Implementation Requirements.

Development of a treatment map will provide a shape file that can be provided to the client and/or contractor and/or applicator.
Shape files will have at minimum .dbf, .prj, .shp, and .shx files.

Additional Inventory/Pre-Treatment Site Notes: