

FUELS SURVEY DATA DICTIONARY USER MANUAL (STUDENT VERSION)

Revised 2/6/03 – (“FuelsData2003.ddf” version)

PURPOSE

The fuels survey project has several purposes. Its overall purpose is the inventory of fuel loading, vegetation characteristics, and fire hazard with the intent of determining management needs. The primary goal of the project is fuels reduction with the aim of reducing hazardous fire conditions. A secondary purpose of the project, and an effect of prescribed fire, is to achieve ecological benefits for the land. Some desired achievements include forest and woodland health management, quaking aspen regeneration, cheatgrass and noxious weed control, and a return to manageable fire regimes and vegetation conditions. An additional benefit of the project is Aground-truthing@, or verification of multispectral imagery.

All data collected with the fuels data dictionary is intended to fulfill these goals. The actual data is a variety of information dealing with fuels, vegetation types, important resources, and overall site characteristics. The data dictionary is intended to aid in project analysis, management decisions, and project monitoring.

EQUIPMENT

Equipment used for fuel surveys includes, but is not limited to, the following: Global Positioning System field units, dbh meter, compass, altimeter, day packs, camera (digital), clipboard, and a belt weather kit, field reference guides for fuel models, treatment types, Photo Series manuals, and habitat types.

TECHNIQUE

The basic method of data collection involves navigating to randomly selected plots to conduct a field survey. The amount of plots varies depending on the number and size of different vegetation types within the polygon. Vegetation types are determined using satellite imagery, aerial photos, or on-site observations. The data dictionary is completed at each survey point and GPS location obtained. This data is downloaded into a GIS for data management and analysis.

All data collected at the survey point is confined to the perimeter of the survey plot. The survey plot is a circle with a radius of 1 chain (66 feet). The origin of the radius is the center of the survey plot. All data collected is based only on the vegetation and fuels within the circle, everything outside of the circle is disregarded for data collection.

DATA DICTIONARY ADJUSTMENTS

This document and the corresponding data dictionary are state-level master copies. These documents contain all data entry fields recognized by each field office. Each office may delete fields

from the data dictionary in order to make data entry more project specific. Fields labeled as “required” may not be deleted as these are used for statewide analysis. In addition, field titles and attribute values may not be altered, but may be deleted as necessary.

DATA COLLECTION

Each field title is identified by **bold type**.

Truncated field titles (as seen in ArcView or dbase files) are identified in parentheses ().

Required fields are denoted with an asterisk *.

Fields automatically filled are denoted with a \$.

Fields which require characters to be inputted are denoted with a #.

1. date*\$ (date)

Automatically generated by the GPS unit. Month-Day-Year format.

2. survey_time\$ (survey_tim)

Automatically generated by GPS unit. 24 hour format.

3. plot_id*# (plot_id)

Text entry which uniquely identifies the survey point. The plot identification number derived from the project number, unit number and point number. Example: FD2402031. This includes the project number (FD24), unit number (02) and point (plot) number (031).

4. veg_surveyors# (veg_survey)

Text entry of the last names of the field surveyors, or survey team leader.

5. plot_type (plot_type)

Assessment of the current dominant community. This data will be used to verify point types for spatial analysis. For non-forested shrub communities select AShrub@. Select AConifer@ for any forest community dominated by a coniferous tree species. Choose AAspen@ for any forest community in which aspen is the dominant tree species. Select AJuniper/Pinyon@, for any community dominated by either juniper, pinyon, or both. Select AGrass@ for any community that is composed of annual or perennial grasses and in which shrubs and trees are not a dominant species in the community. Choose ARiparian@ for communities in which the dominant species are dependent on a constant water source. Select AOther@ for any community which does not fit the previous community choices.

<u>Attribute List</u>	<u>Code</u>
shrub	A
conifer	B
aspen	C
juniper/pinyon	D
grass	E
riparian	F

other G

6. cover_type* (cover_type)

<u>Attribute List</u>	<u>Code</u>
wet/cold conifer	A
dry conifer	B
juniper, pinyon/junip	C
aspen, aspen/conifer	D
mountain shrub	E
mid elev shrub stepp	F
low elev shrub stepp	G
salt desert shrub	H
perennial grass	I
annual grass	J
riparian	K
other	L
lava, rock, barren	M

7. historic_fire_regime* (historic_f)

Choose the attribute value which best fits the historic fire pattern of the plot. Attributes are from the “Cohesive Strategy”. References are: (*Course Scale Spatial Data for Wildland Fire and Fuels Management: Version 2000, Schmidt et. al.*)

<u>Attribute List</u>	<u>Code</u>
<35yr, low severity	A
<35yr, stand replac	B
35-100yr, mixed seve	C
35-100yr, stand repl	D
>200yr, stand replac	E

Definitions:

- <35yr, low severity (Fire Regime I) – Fire return interval 0-35 years, fire severity is low.
- <35yr, stand replac (Fire Regime II) – Fire return interval 0-35 years, fire severity is high (stand replacement).
- 35-100yr, mixed seve (Fire Regime III) – Fire return interval 35-100+ years, fire severity is mixed.
- 35-100yr, stand repl (Fire Regime IV) – Fire return interval is 35-100+ years, fire severity is high (stand replacement).
- >200yr, stand replac (Fire Regime V) – Fire return interval is greater than 200 years, fire severity is high (stand replacement).

8. condition_class* (condition_)

Choose the attribute value which best fits the historic fire pattern of the plot. Attributes are from the “Cohesive Strategy”. Condition class describe vegetation composition and structure which are at

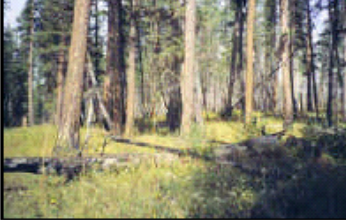





risk of losing key ecosystem components from wildfire. Descriptions from “Cohesive Strategy” are on the following page.

Attribute List

- cc1
- cc2
- cc3

Code

- A
- B
- C

 <p><i>Open ponderosa pine stand maintained by frequent low-severity fire, is dominated by large trees. Stand is resilient to disturbances such as insects and disease outbreaks. (CC1) Figure 11</i></p>	<p style="text-align: center;">← Fire Condition Class 1 →</p> <p>For the most part, fire regimes in this Fire Condition Class (CC1) are within historical ranges. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low. Maintenance management such as prescribed fire, mechanical treatments, or preventing the invasion of non-native weeds, is required to prevent these lands from becoming degraded.</p> <p style="text-align: center;">← →</p>	 <p><i>Wyoming big sagebrush type with considerable diversity is generally more resilient to disturbance and provides habitat for a great number of species. (CC1) Figure 12</i></p>
 <p><i>Selective logging in ponderosa pine stands progressively removed the larger trees. Without periodic fire, forest openings filled with thickets of smaller understory trees. (CC2) Figure 13</i></p>	<p style="text-align: center;">← Fire Condition Class 2 →</p> <p>Fire regimes on these lands (CC2) have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified in these lands. To restore their historical fire regimes, these lands may require some level of restoration through prescribed fire, mechanical or chemical treatments, and the subsequent reintroduction of native plants.</p> <p style="text-align: center;">← →</p>	 <p><i>Wyoming big sagebrush type where fire has been excluded for an extended period has reduced diversity and provides habitat for fewer species. The site is also vulnerable to future cheatgrass invasion and to wildland fire. (CC2) Figure 14</i></p>
 <p><i>The dense thickets of understory trees eventually become sufficiently large enough to allow fire spread into the ponderosa pine crowns. These thickets are also highly drought-prone. (CC3) Figure 15</i></p>	<p style="text-align: center;">← Fire Condition Class 3 →</p> <p>These lands (CC3) have been significantly altered from their historical range. Because fire regimes have been extensively altered, risk of losing key ecosystem components from fire is high. Consequently, these lands verge on the greatest risk of ecological collapse. To restore their historical fire regimes—before prescribed fire can be utilized to manage fuel or obtain other desired benefits—these lands may require multiple mechanical or chemical restoration treatments, or reseeded.</p> <p style="text-align: center;">← →</p>	 <p><i>Rangeland sites entirely dominated by cheatgrass—unlike the native vegetation that formerly occupied this site—are highly vulnerable to fast-moving, higher-intensity wildfires. (CC3) Figure 16</i></p>

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9. perct_slope* (perct_slop)

Visual estimate of the percent slope. This data is used for determining fire behavior using the BEHAVE program. Choose the range of percent which best fits the average slope for the plot area.

Estimate

- none
- 1_to_20
- 21_to_40
- 41_to_60

Code

- A
- B
- C
- D

61_to_80	E
81_to_100	F

10. aspect* (aspect)

Measurement taken with a declinated compass and converted to lettered direction. Values in parentheses represent the range of degrees. This data is used to determine fire behavior based on microclimate conditions.

<u>Attribute Value</u>	<u>Code</u>
n_(338_to_23)	A
ne_(23_to_68)	B
e_(68_to_113)	C
se_(113_to_158)	D
s_(158_to_203)	E
sw_(203_to_248)	F
w_(248_to_293)	G
nw_293_to_338)	H
none	I

11. elevation #(elevation)

Numeric entry. This may be determined using an altimeter on site, or by entering DEM values after data collection. This data is used to determine vegetation differences due to elevation gradients.

12. prime_model* (prime_mode)

Visual assessment of the fuel structure of the plot. The fuel model system used for this assessment is the NFFL Fuel Models. This data is used to determine fuel hazard and is also used in the ABEHAVE@ fire behavior program. Choose the fuel model which most appropriately fits the primary fire carrier. Use fuel model guide “Aids to Determining Fuel Models for Estimating Fire Behavior” (Hal E. Anderson 1982, NWCG general technical report INT-122).

<u>Attribute Value</u>	<u>Code</u>
None	A
0_barren_rock	B
1_short_grass	C
2_grass_timber	D
3_tall_grass	E
4_chaparral	F
5_2_ft_brush	G
6_dormant_brush	H
7_southern_rough	I
8_closed_timber	J
9_hardwood_1_needle	K
10_timber_understry	L
11_light_slash	M
12_medium_slash	N

13_heavy_slash O

13. secondary_model (second_mod)

Visual assessment of the fuel structure of the plot. The fuel model system used for this assessment is the NFFL Fuel Models. This data is used to determine fuel hazard and is also used in the ABEHAVE@ fire behavior program. Choose the fuel model which most appropriately fits the secondary fire carrier. Use fuel model guide “Aids to Determining Fuel Models for Estimating Fire Behavior” (Hal E. Anderson 1982, NWCG general technical report INT-122).

<u>Attribute Value</u>	<u>Code</u>
None	A
0_barren_rock	B
1_short_grass	C
2_grass_timber	D
3_tall_grass	E
4_chaparral	F
5_2_ft_brush	G
6_dormant_brush	H
7_southern_rough	I
8_closed_timber	J
9_hardwood_l_needle	K
10_timber_understry	L
11_light_slash	M
12_medium_slash	N
13_heavy_slash	O

14. photo_ser_bk (photo_ser_)

Comparison between vegetation types and a photo series manual. The proper photo series is selected depending on the vegetation type of the survey plot. Enter the number of the book used for the comparison.

<u>Book Number</u>	<u>Code</u>
pnw_105	A
int_98	B
pnw_51	C
pnw_52	D
pnw_95	E
int_96	F
int_97	G
int_112	H
pms_830	I
pms_832	J

15. photo_ser_pg# (photo_ser_)

The page number from the above selected manual which best compares to the vegetation of the

survey plot. This is a text entry.

16. less_than_3in_fuel* (less_than_)

Estimate of the fuel loading for fuels less than 3 inches in diameter. This is used for determining fire behavior and fire hazard. Select the range of approximate tons per acre which best fits the plot.

<u>Attribute Value</u>	<u>Code</u>
less_than_1	A
1.1_to_3	B
3.1_to_5	C
5.1_to_10	D
more_than_10	E

17. more_than_3in_fuel* (more_than_)

Estimate of the fuel loading for fuels greater than 3 inches in diameter. This is used for determining fire behavior and fire hazard. Select the range of approximate tons per acre which best fits the plot.

<u>Attribute Value</u>	<u>Code</u>
less_than_3	A
3.1_to_10	B
10.1_to_20	C
more_than_20	D

18. live_fuels (live_fuels)

Assessment of the presence of live fuels within the plot. This information is used to determine fire behavior. If any live fuels are present select Ayes@, if all fuels are dead or if the primary fuel model is 1, 3, 6, 8, 9, 11, 12, or 13 select Ano@.

<u>Attribute Value</u>	<u>Code</u>
no	A
yes	B

19. avg_fuel_bed_dp* (avg_fuel_b)

Visual estimate of the average height of all live and dead fuels. This data is used to assess the fuel loading in the plot. The estimate is based on all fuels within the plot area. Choose the most appropriate category and enter the corresponding code number.

<u>Attribute Value</u>	<u>Code</u>
less_than_1_ft	A
1_to_3_ft.	B
more_than_3_ft	C

20. avg_duff_dp* (avg_duff_d)

Visual estimate of the average depth of the duff component of the stand. This data is used to assess fuel loading and fire behavior. The estimate is based on three separate observations of duff

depth, each taken at different, random locations within the plot. Duff for this purpose is defined as the decaying organic layer above the mineral soil. Enter the code of the proper range which matches the estimate.

<u>Attribute Value</u>	<u>Code</u>
none	A
less_than_1_in	B
1_to_1.5_in	C
1.6_to_2_in	D
2.1_to_3_in	E
more_than_3_in	F

21. avg_litter_dp* (avg_litter)

Visual estimate of the average depth of the litter component of the stand. This data is used to assess fuel loading and fire behavior. The estimate is based on three separate observations of litter depth, each taken at different, random locations within the plot. Litter for this purpose is defined as needle cast, shed leaves, and other identifiable vegetation matter above the duff layer. Enter the code of the proper range which matches the estimate.

<u>Attribute Value</u>	<u>Code</u>
none	A
less_than_1_in	B
1_to_3_in	C
more_than_3_in	D

22. bare_ground_cvr* (bare_ground)

Visual estimate of the percent of exposed ground. This information is used to assess fuel continuity and fire behavior. The estimate is the percent of total area not covered by any fuel. Bare ground is defined as exposed soil or rock and can't be covered with any vegetation, dead fuels, duff or litter.

<u>Attribute Value</u>	<u>Code</u>
none	A
1_to_5_perct	B
6_to_25_perct	C
26_to_50_perct	D
more_than_50_perct	E

23. conifer_canopy_cover (conifer_ca)

Visual assessment of percent conifer to aspen ratios for canopy cover in a given plot type. The presence of aspen is required to some extent for codes 0-3. Code 4 is for plot types with no aspen presence. Other canopy types or shrub types would qualify as No Cover for this field.

<u>Attribute Value</u>	<u>Code</u>
pure aspen	A
1-15 pct conifer	B

16-30 pct conifer	C
more than 30 conifer	D
no cover	E

24. overstry_shade* (Ovrstry_Sh)

Visual observation of overstory shade. This estimation quantifies the percent of the ground shaded by trees **greater** than 6" dbh. The information is used to determine fire behavior and fuel hazard. Assume direct overhead lighting. Once an estimation is made, the corresponding code is entered in the Aoverstory shade@ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
none	A
1_to_5_perct	B
6_to_30_perct	C
31_to60_perct	D
more_than_60_perct	E

25. major_overstry_sp* (major_ovrs)

Visual observation of the dominant tree species in the overstory. The determination of the dominant species is made by estimating which single species contributes most to overstory shading. Only trees greater than 6" dbh are taken into consideration. Once the dominant overstory species is determined enter the appropriate corresponding code into the AOverstory species@ data dictionary field.

<u>Species</u>	<u>Code</u>	<u>Species</u>	<u>Code</u>
none	A		
other_unknown	B		
standing_burnt_dead	C		
alder	D		
aspen	E		
aspen_conifer	F		
broadleaf	G		
broadleaf	H		
mountain_mahogany	I		
pinon_juniper	J		
western_juniper	K		

26. habitat_type (habitat_ty)

Assessment of the habitat type. This assessment is made using keys from Cooper, Bunting, and Brown.

<u>Habitat Type</u>	<u>Code</u>	<u>Habitat Type</u>	<u>Code</u>
mountain_big_sage	A	other_forested	I
basin_big_sage	B	aspen_shrub	J
wyoming_big_sage	C	aspen_tall_forb	K
threetip_sage	D	aspen_low_forb	L
other_montane_shrub	E	aspen_conifer_shrub	M
other_riparian_shrub	F	aspen_conifer_forb	N
other_grass	G		
other_juniper	H		

28. low_sage_sere (low_sage_s) developed by Dr. Steve Bunting from U of I for his studies with Western Juniper on the Owyhee uplands.

Attribute Value Definition

A	None
B	Open herbland: shrub cover < 5%, herbaceous cover < 67%
C	Open low-med shrubland: canopy of low (<50 cm) shrubs with a canopy coverage <67%, tree coverage < 2%. Sometimes very open stands of large mature juniper trees are present. (Two categories are described but these cannot be readily distinguished on either aerial photographs or Landsat images.)
D	Open low-med shrubland: canopy of low (<50 cm) shrubs with a canopy coverage 10-67%, tree coverage < 2%. Sometimes very open stands of large mature juniper trees are present.
E	Woodland initiation: juniper canopy (<3%) of usually young, sometimes mid aged junipers present. Juniper is having minor effects on competition and environment of the site and the sagebrush community is intact except directly under juniper trees.
F	Young woodland: canopy (3-8%) of young and mid aged junipers present. Juniper beginning to have an effect on the interspace environment of the site. Sagebrush steppe species declining and sagebrush skeletons present. However, low sagebrush still common in interspaces.
G	Mixed-age woodland: canopy (>8%) of young and mid aged junipers present. Usually a few mature junipers present. Sagebrush skeletons often present in understory. However, low sagebrush still common in interspaces.
H	Mature juniper woodland: overstory canopy >8% composed of primarily mature individuals (flat topped trees and Letharia vulpina usually present). Trees may not necessarily be large sized. Sagebrush usually present in openings except in the most dense stands of juniper.

29. mnt_big_sage_sere (mnt_big_sa) developed by Dr. Steve Bunting from U of I for his studies with Western Juniper on the Owyhee uplands.

<u>Attribute Value</u>	<u>Definition</u>
A	None
B	Open herbland: shrub cover <5%, herbaceous cover <67%
C	Open low-med shrubland: canopy of low (<50 cm) and/or medium 50-200 cm shrubs with a canopy coverage <67%, tree coverage < 2%. (Two categories are described but these cannot be readily distinguished on either aerial photographs or Landsat images.)
D	Open low-med shrubland: canopy of low (<50 cm) and/or medium 50-200 cm shrubs with a canopy coverage <10%, tree coverage < 2%
E	Open low-med shrubland: canopy of low (<50 cm) and/or medium 50-200 cm shrubs with a canopy coverage 10-67%, tree coverage < 2%
F	Woodland initiation: canopy (<5%) of usually young, sometimes mid aged, junipers present. Juniper is having only minor effects on competition and environment of the site and the sagebrush community is intact except directly under juniper trees.
G	Young woodland: canopy (5-10%) of young and mid aged junipers present. Juniper beginning to have an effect on the environment of the site. Sagebrush steppe species declining and sagebrush skeletons often present.
H	Mixed-age woodland: canopy (>10%) of young and mid aged junipers present. Few or no mature junipers present. Sagebrush skeletons often numerous in understory.
I	Mature juniper woodland: overstory canopy >15% composed of primarily mature individuals (flat topped trees and Letharia vulpina usually present). Few sagebrush remain except in larger openings. Some stands are completely dominated by old mature trees. [Note: These single aged stands were referred to as W6 in the old system.] Other stands may have open canopy of mature trees and a co-dominant layer of various aged mid-aged junipers.

30. mnt_mahogany_sere (mnt_mahoga) developed by Dr. Steve Bunting from U of I for his studies with Western Juniper on the Owyhee uplands.

<u>Attribute Value</u>	<u>Definition</u>
A	None
B	Open herbland: shrub cover <5%, herbaceous cover <67%
C	Open low-med shrubland: canopy of low (<50 cm) and/or medium 50-200 cm shrubs with a canopy coverage <67%, tree coverage < 2%. (Two categories are described but these cannot be readily distinguished on either aerial photographs or Landsat images. See <u>Artemisia tridentata vaseyana</u> sere.)
D	Open tall shrubland: canopy of tall (>2m) shrubs with <67% coverage. Trees coverage <5%, usually composed of young to mid aged individuals.
E	Open tall shrubland: canopy of tall (>2m) shrubs with <10% coverage. Trees coverage <5%, usually composed of young to mid aged individuals.

- F Open tall shrubland: canopy of tall (>2m) shrubs with 10-67% coverage. Trees coverage <5%, usually composed of young to mid aged individuals.
- G Multi-strata tall shrubland: canopy of tall (>2m) shrubs with <67% coverage. Trees coverage 5-10%, usually composed of young, mid and mature aged individuals.
- H Mixed-age woodland: canopy (>10%) of young and mid aged junipers present. Few or no mature junipers present. Sagebrush skeletons often numerous in understory.
- I Mature juniper woodland: overstory canopy >15% composed of primarily mature individuals (flat topped trees and Letharia vulpina usually present). Few sagebrush remain except in larger openings.

40. dis_para_asp (dis_para_a)

Assessment of the types of diseases and parasites afflicting the aspen component of the plot. This data is used to make treatment recommendations based on a need to regenerate decadent aspen stands. If there are no disease or parasites readily evident in the aspen component choose Anone@. For the other selections, choose the one that best describes the current afflictions of the stand. If both inkspot and shepherd=s crook are evident choose AInkspot/Shepherd=s Crook@, if both sap weeping and open wounds are evident choose ASap Weeping/Open Wounds@. In cases where several of the selections apply choose Amultiple diseases@.

<u>Attribute Value</u>	<u>Code</u>
none	A
inkspot	B
shepherds_crook	C
sap_weeping	D
open_wounds	E
dead	F
shrubby_growth	G
conk	H
leaf_blight	I
leaf_eating_insects	J
pustules	K
inkspot_shepard's	L
sap_weep_open_wounds	M
multiple_diseases	N
root_rot	O

41. snags (snags)

Estimation of the number of dead standing trees within the plot area. This is used to determine hazards and stand health. All tree species are taken into consideration for the estimate.

<u>Estimate</u>	<u>Code</u>
none	A
less_than_1_ac	B
2_ac	C

more_than_2_ac

D

42. undrstry_shade* (undrstry_s)

Visual observation of understory shade. This estimation quantifies the percent of the ground shaded by trees **less** than 6" dbh. This is used to determine fire behavior and fuel hazard. Assume direct overhead lighting. Once an estimation is made, the corresponding code is entered into the Aunderstory shade@ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
none	A
1_to_5_perct	B
6_to_30_perct	C
31_to60_perct	D
more_than_60_perct	E

43. maj_understry_sp* (maj_undrst)

Visual observation of the dominant tree species in the understory. The determination of the dominant species is made by estimating which single species contributes most to understory shading. Only take into consideration trees **less** than 6" dbh. Once the dominant understory species is determined enter the appropriate corresponding code into the Aunderstory species@ data dictionary field.

<u>Species</u>	<u>Code</u>
none	A
other_unknown	B
standing_burnt_dead	C
alder	D
aspen	E
aspen_conifer	F
broadleaf	G
broadleaf	H
mountain_mahogany	I
pinyon_juniper	J
western_juniper	K

45. avg_dia_less_8_in* (avg_dia_le)

Visual estimate of the average dbh of trees less than 8" dbh in the stand. The estimation is made considering all species. If visual estimation is too difficult a dbh meter may be used to measure a few representative trees and the average taken from these measurements. After the average dbh of small trees is determined enter the corresponding code into the data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
no_trees	A
less_than_1in	B

1_to_4in_dbh	C
4_8in_dbh	D

46. stems_less_8in_dia (stems_less)

Visually estimate, using the attached chart, the number of trees per acre that are less than 8" dbh within the plot. The estimation is made considering all species. After the number of trees is determined using the aid of the attached chart, enter the corresponding code into the A @ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
none	A
1-250	B
251-750	C
751-2000	D
2001-4000	E

47. avg_dia_more_8in* (avg_dia_mo)

Visual estimate of the average dbh of trees greater than 8" dbh in the stand. The estimation is made considering all species. If visual estimation is too difficult a dbh meter may be used to measure a few representative trees and the average taken from these measurements. After the average dbh of large trees is determined enter the corresponding code into the A @ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
no trees	A
8_to_12in_dbh	B
12_to_21in_dbh	C
more_than_21in_dbh	D

48. stems_more_8in_dia (stems_more)

Visually estimate, using the attached chart, the number of trees per acre within the plot. The estimation is made considering all species. After the number of trees is determined using the aid of the attached chart, enter the corresponding code into the A @ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
none	A
less_than_10	B
11-100	C
101-200	D
more_than_200	E

49. ovrstry_decad* (ovrstry_de)

Visual observation of the current overall health of the overstory trees. Only take into consideration trees greater than 6" dbh. If the overall health of the trees is good and most stems are productive choose Aproductive@. If the trees have significant disease/parasite infestations, and appear to be dying or losing productivity, choose Adeclining@. If the majority of trees are already dead or dying choose Adecadent@. Disregard changes in vigor due to seasonal change (i.e. leaf shed in the fall).

<u>Attribute Value</u>	<u>Code</u>
no_ovrstry	A
productive	B
declining	C
decadent	D

50. undrstry_decad* (undrstry_d)

Visual observation of the current overall health of the understory trees. Only take into consideration trees less than 6" dbh. If the overall health of the trees is good and most stems are productive choose Aproductive@. If the trees have significant disease/parasite infestations, and appear to be dying or losing productivity, choose Adeclining@. If the majority of trees are already dead or dying choose Adecadent@. Disregard changes in vigor due to seasonal change (i.e. leaf shed in the fall).

<u>Attribute Value</u>	<u>Code</u>
no_ovrstry	A
productive	B
declining	C
decadent	D

51. stand_structure* (stand_stru)

Assessment of the successional state of the stand. This data is used to determine current stand structure for the purposes of management needs and treatment recommendations. If there is no tree component to the plot choose ANo trees@. Choose AEarly Successional@ if the stand is composed almost entirely of pioneer or seral species. Choose AMid multi-story@ if the stand is composed of trees of different size heights and ages, but is not yet a climax community. Choose AMid single story@ if the stand is composed mostly of same height trees and is not yet a climax community. Choose ALate multi-story@ if the stand is composed of trees of differing heights and age classes and is nearing a climax stage. Choose ALate single story@ if the stand is composed mostly of same height trees and is nearing a climax stage.

<u>Observation</u>	<u>Code</u>
no_trees_na	A
early_successional	B
mid_multi_story	C
mid_single_story	D
late_multi_story	E
late_single_story	F

52. aspen_recruit (Aspen_Recr)

Visual determination of the presence of aspen suckers, and regeneration of the aspen stand. This data is used to determine if an aspen stand is regenerating itself naturally. Choose Ayes@ if any aspen suckers are present in the plot area, choose Ano@ if no suckers are present in the plot area. Enter the appropriate code in the AAspen Recruitment@ data dictionary field.

<u>Observation</u>	<u>Code</u>
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no	A
yes	B

53. aspen_hlth (Aspen_Hlth)

Visual assessment of overall recruit health. This data is used to determine if aspen recruits are healthy enough to regenerate the stand. Choose Ayes@ if aspen suckers are vigorous, have a single terminal leader, have minimal diseases, and no basal wounds. Choose Ano@ if aspen suckers are in poor general health, have shrubby form, have severe diseases, or basal wounds. Enter the appropriate code in the AAspen Recruitment@ data dictionary field.

<u>Observation</u>	<u>Code</u>
no	A
yes	B

54. inspot (inkspot)

Visual assessment the system disease inkspot in aspen.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

55. shepards_crook (shepards_c)

Visual assessment of the systemic disease shepard's crook.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

56. stem_decays (stem_decay)

Visual assessment of aspen stand for Phellinus tremulae - One of the most common heart-rot fungi in aspen. Fruits on infected stems in the form of a conk (looks like a flattened mushroom growing out of a stem or out of the main trunk of the tree).

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

57. butt_root_rot (butt_root_)

Visual assessment of aspen stand for Ganoderma applanatum B Most common on wet sites with deep soils. It fruits readily (conks), but the decay can be recognized even without conks: a mottled

white rot with occasional zone lines. This fungus may travel from tree to tree via roots, creating infection centers.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

58. defoliators (defoliator)

Visual assessment of aspen stand for Western tent caterpillar (*Malacosoma californicum*) - most common defoliator in the southern and central Rockies. Outbreaks depress growth markedly, but trees generally recover fully. However, if defoliation persists for several years, mortality and dieback can be extensive (Jones et al. 1985). Aspen leaves curl up and/or dieback.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

59. borers (borers)

Visual assessment of aspen stand for Poplar borer (*Saperda calcarata*) - feeds as larvae in sapwood and heartwood, in some cases selecting defoliated or otherwise weakened trees. Attacks may be detected by callus growth and rough bark around slits in the bark, from which coarse frass and sap may appear. Other borers and cankers may follow.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

60. sooty_bark_canker (sooty_bark)

Visual assessment of aspen stand for (*Encoelia pruinosa*) - Often lethal, moves quickly in bark. More common in stands disturbed by partial cutting, construction, animal damage. Elliptical spreading canker, zonate pattern of exposed black inner bark. May see black netlike or mottled >zebra= marks on exposed wood. Cup-shaped, gray fruitbodies on dead inner bark. If you peel the dead bark away there often is a black powder left on your hands, hence Asooty-bark@.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

61. snake_canker (snake_cank)

Visual assessment of aspen stand for (*Cryptosphaeria populina*) - Causes extensive discoloration and some decay. Long and narrow (often 2-4" wide, 10'+ long). Bark at margin light brown to orange. Dead bark black, adheres tightly. Inner bark has light-colored specks. Extensive stain and decay in wood.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

62. target_canker (target_can)

Visual assessment of aspen stand for (*Ceratocystis fimbriata*) - Common. Not usually lethal. Causes trunk deformity. Size limited, usually less than 2' long. Blackish especially around margin. Open face after few years (bark does not adhere long in center). Concentric callus ridges often visible on wood face (hence, target) due to alternating callusing/killing during growing/dormant seasons.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

63. cytospora_canker (cytospora_)

Visual assessment of aspen stand for (*Cytospora chrysosperma*) - Usually on weakened trees. May contribute to mortality but not usually a primary agent. Associated with sunscald, partial cutting, elk feeding, various wounds. Spreading canker. Liquid may ooze from center. Bark initially orange. Inner bark turns dark brown. Dead bark remains attached for a few years, falls off in large pieces. Small abundant pimple-like bumps contain fruiting bodies, may extrude orangish spore tendrils in wet weather.

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

64. spring_frost (spring_fro)

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

65. sunscald (sunscald)

<u>Observation</u>	<u>Code</u>
None	A

Low	B
Moderate	C
Severe	D

66. blowdown (blowdown)

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

67. snow_damage (snow_damag)

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

68. wounds (wounds)

<u>Observation</u>	<u>Code</u>
None	A
Low	B
Moderate	C
Severe	D

69. except_veg_hab (except_veg)

Visual assessment of the relative plant species diversity of the plot and three dimensional habitat structure. This data is used to determine if the area has a high diversity of native plants, exceptional habitat, and is of ecological significance. Choose Ayes@ if the plot area has a much higher plant diversity relative to the average plant diversity for similar plots, or if the habitat structure is relatively high. Choose Ano@ if the plot area has only below average to slightly above average diversity or habitat structure. Enter the appropriate code in the AExceptional Vegetative Habitat@ data dictionary field.

<u>Observation</u>	<u>Code</u>
no	A
yes	B

70. shrub_cover* (shrub_cove)

Visual estimate of the percent of the ground covered by shrubs. This data is used to determine shrub fuel loading. Add all ground directly below the perimeter of each individual shrub. The sum of the total shrub coverage area divided by the total area of the plot is equal to the percent coverage. Enter the appropriate corresponding code number into the AShrub Cover@ data dictionary field.

<u>Estimate</u>	<u>Code</u>
none	A
1_to_5_perct	B

6_to_15_perct	C
16_to_30_perct	D
31_to_60_perct	E
more-than_60_perct	F

71. prime_shrub_sp* (prime_shru)

Visual observation of the shrub species with the greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the single dominant shrub species in the plot. If the dominant shrub is not listed in the data dictionary menu select Aother@.

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u>
no_shrubs A	grouse_whortleberry J	sitka_alder R
other_unknownB	huckleberry K	silver_sage S
other_sage C	low_sage L	snowberry T
basin_big_sage D	mountain_mahogany M	stiff_sage U
bitterbrush E	mountain_sage N	syringa V
buckbrush_snowbrushF	ninebark O	threetip_sage W
cactus G	rabbitbrush P	Utah_juniper X
ceanothus H	saltbrush Q	wild_rose Y
common_juniper I		willow Z
		wyoming_big_sage AA

72. second_shrub_sp* (second_shr)

Visual observation of the shrub species with the second greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the secondary dominant shrub species in the plot. If the secondary shrub is not listed in the data dictionary menu select Aother@

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u>
no_shrubs A	grouse_whortleberry J	sitka_alder R
other_unknownB	huckleberry K	silver_sage S
other_sage C	low_sage L	snowberry T
basin_big_sage D	mountain_mahogany M	stiff_sage U
bitterbrush E	mountain_sage N	syringa V
buckbrush_snowbrushF	ninebark O	threetip_sage W
cactus G	rabbitbrush P	Utah_juniper X
ceanothus H	saltbrush Q	wild_rose Y
common_juniper I		willow Z
		wyoming_big_sage AA

73. third_shrub_sp (third_shru)

Visual observation of the shrub species with the third greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the secondary dominant shrub species in the plot. If the secondary shrub is not listed in the data dictionary menu select Aother@

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u>
no_shrubs A	grouse_whortleberry J	sitka_alder R
other_unknown B	huckleberry K	silver_sage S
other_sage C	low_sage L	snowberry T
basin_big_sage D	mountain_mahogany M	stiff_sage U
bitterbrush E	mountain_sage N	syringa V
buckbrush_snowbrush F	ninebark O	threetip_sage W
cactus G	rabbitbrush P	Utah_juniper X
ceanothus H	saltbrush Q	wild_rose Y
common_juniper I		willow Z
		wyoming_big_sage AA

74. fourth_shrub_sp (fourth_shr)

Visual observation of the shrub species with the fourth greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the secondary dominant shrub species in the plot. If the secondary shrub is not listed in the data dictionary menu select Aother@.

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u>
no_shrubs A	grouse_whortleberry J	sitka_alder R
other_unknown B	huckleberry K	silver_sage S
other_sage C	low_sage L	snowberry T
basin_big_sage D	mountain_mahogany M	stiff_sage U
bitterbrush E	mountain_sage N	syringa V
buckbrush_snowbrush F	ninebark O	threetip_sage W
cactus G	rabbitbrush P	Utah_juniper X
ceanothus H	saltbrush Q	wild_rose Y
common_juniper I		willow Z
		wyoming_big_sage AA

75. avg_shrub_ht* (avg_shrub_)

Visual estimation of the average shrub height of all the shrubs in the plot area. This data is used to determine the height of the shrub fuel component. This estimate is the average of the total shrubs based on area, not on individual plant heights. Shrubs that cover more total area have greater bias in determining average height. Enter the appropriate corresponding code number into the AShrub Height@

data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
no_shrubs	A
less_than_1ft	B
1_to_3ft	C
more_than_3ft	D

76. shrub_decadence* (shrub_deca)

Visual observation of the current overall health of the shrub component. This data field is used to determine the necessity for prescribed fire. All shrub species are taken into consideration. If the overall health of all shrubs is good and most plants are productive choose Aproductive@. If the shrubs have significant disease/parasite infestations, and appear to be dying or losing productivity, choose Adeclining@. If the majority of shrubs are already dead or dying choose Adecadent@. Disregard changes in vigor due to seasonal change (i.e. leaf shed in the fall).

<u>Attribute Value</u>	<u>Code</u>
no_shrubs	A
productive	B
declining	C
decadent	D

77. grass_cover* (grass_cove)

Visual estimate of the percent of the ground covered by grass. This data is used to determine grass fuel loading. Add all ground covered by grass. The sum of the total grass coverage area divided by the total area of the plot is equal to the percent coverage. Enter the appropriate corresponding code number into the AGrass Cover@ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
none	A
1_to_5_perct	B
6_to_25_perct	C
26_to_50_perct	D
more_than_50_perct	E

79. prime_grass_sp* (prime_gras)

Visual observation of the grass species with the greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the single dominant grass species in the plot. If the dominant grass is not listed in the data dictionary menu, select Aother@.

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u> reedgrass
none A	idaho_fescue M	Y
other_unknown B	indian_ricegrass N	sandbergs_bluegrass Z
bluebunch_wheatgrass C	intermediate_wheatgr O	squirreltail AA
bluegrass D	japanese_brome P	tall_wheatgrass BB
blue_wildrye E	junegrass Q	thurbers_needlegras CC
bulbous_bluegrass F	medusahead_rye R	timothy_hay DD
cheatgrass G	mountain_brome S	tristetum_grass EE
columbia_needlegrass H	needle_and_thread T	western_needlegrass FF
crested_wheatgrass I	onion_grass U	western_wheatgrass GG
elk_sedge J	orchard_grass V	woodrush HH
foxtail K	pinegrass W	
great_basin_wildrye L	pubescent_wheatgrass X	

80. second_grass_sp* (second_gra)

Visual observation of the grass species with the second greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the single dominant grass species in the plot. If the dominant grass is not listed in the data dictionary menu, select Aother@.

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u> reedgrass
none A	idaho_fescue M	Y
other_unknown B	indian_ricegrass N	sandbergs_bluegrass Z
bluebunch_wheatgrass C	intermediate_wheatgr O	squirreltail AA
bluegrass D	japanese_brome P	tall_wheatgrass BB
blue_wildrye E	junegrass Q	thurbers_needlegras CC
bulbous_bluegrass F	medusahead_rye R	timothy_hay DD
cheatgrass G	mountain_brome S	tristetum_grass EE
columbia_needlegrass H	needle_and_thread T	western_needlegrass FF
crested_wheatgrass I	onion_grass U	western_wheatgrass GG
elk_sedge J	orchard_grass V	woodrush HH
foxtail K	pinegrass W	
great_basin_wildrye L	pubescent_wheatgrass X	

81. third_grass_sp (third_gras)

Visual observation of the grass species with the third greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the single dominant grass species in the plot. If the dominant grass is not listed in the data dictionary menu, select Aother@.

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u> reedgrass
none A	idaho_fescue M	Y
other_unknown B	indian_ricegrass N	sandbergs_bluegrass Z
bluebunch_wheatgrass C	intermediate_wheatgr O	squirreltail AA
bluegrass D	japanese_brome P	tall_wheatgrass BB
blue_wildrye E	junegrass Q	thurbers_needlegras CC
bulbous_bluegrass F	medusahead_rye R	timothy_hay DD
cheatgrass G	mountain_brome S	tristetum_grass EE
columbia_needlegrass H	needle_and_thread T	western_needlegrass FF
crested_wheatgrass I	onion_grass U	western_wheatgrass GG
elk_sedge J	orchard_grass V	woodrush HH
foxtail K	pinegrass W	
great_basin_wildrye L	pubescent_wheatgrass X	

82. fourth_grass_sp (fourth_gra)

Visual observation of the grass species with the fourth greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary list which matches the single dominant grass species in the plot. If the dominant grass is not listed in the data dictionary menu, select Aother@.

<u>Attribute Value Code</u>	<u>Attribute Value Code</u>	<u>Attribute Value Code</u> reedgrass
none A	idaho_fescue M	Y
other_unknown B	indian_ricegrass N	sandbergs_bluegrass Z
bluebunch_wheatgrass C	intermediate_wheatgr O	squirreltail AA
bluegrass D	japanese_brome P	tall_wheatgrass BB
blue_wildrye E	junegrass Q	thurbers_needlegras CC
bulbous_bluegrass F	medusahead_rye R	timothy_hay DD
cheatgrass G	mountain_brome S	tristetum_grass EE
columbia_needlegrass H	needle_and_thread T	western_needlegrass FF
crested_wheatgrass I	onion_grass U	western_wheatgrass GG
elk_sedge J	orchard_grass V	woodrush HH
foxtail K	pinegrass W	
great_basin_wildrye L	pubescent_wheatgrass X	

83. forb_cover* (forb_cover)

Visual estimate of the percent of the ground covered by forbs. This data is used to determine forb fuel loading. Add all ground directly below the perimeter of each individual forb. The sum of the total forb coverage area divided by the total area of the plot is equal to the percent coverage. Enter the appropriate corresponding code number into the AForb Cover@ data dictionary field.

<u>Attribute Value</u>	<u>Code</u>
none	A
1_to_5_perct	B
6_to_25_perct	C

26_to_50_perct D
 more_than_50_perct E

84. prime_forb_sp* (prime_forb)

Visual observation of the forb species with the greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary which matches the single dominant forb species in the plot. If the dominant forb is not listed in the data dictionary menu select Aother/unknown@

<u>Attribute Value Code</u> none	<u>Attribute Value Code</u> fern	<u>Attribute Value Code</u>
A	BB	prickly_lettuce CCC
other_unknownB	fireweed CC	primrose DDD
agoseris C	geranium DD	prince's pine EEE
alumroot D	giant_hyssop_mint EE	pussytoes FFF
arnica E	goats_beard FF	queencup_beadlily GGG
aster F	goosefoot GG	rattlesnake_plantain HHH
balsamroot G	groundsel HH	sandwort III
beargrass H	groundsmoke II	sanfoin JJJ
bedstraw I	gumweed JJ	sego_lily KKK
bilobed_speedwell J	helianthella KK	solomon_seal LLL
bitterroot K	hoary_aster LL	stinging_nettle MMM
blue_eyed_mary L	hood_phlox MM	stonecrop NNN
buckwheat M	hounds_tongue NN	strawberry OOO
burr_clover N	knapweed_diffuse OO	sweet_cicely PPP
campion O	knapweed_spotted PP	sunflower QQQ
cinquefoil P	kochia QQ	tapertip_hawksbeard RRR
clover Q	long_leaf_phlox RR	tarweed SSS
collomia R	louisiana_sage SS	tumble_mustard TTT
columbine S	lupine TT	violet UUU
coneflower T	mentzelia UU	western_hawkweed VVV
daisy U	mountain_parsley VV	wild_onion WWW
dandelion V	mules_ears WW	willow_herb XXX
death_camass W	noxious_weeds XX	wintergreen YYY
desert_alyssum X	paintbrush YY	wooly_mullein ZZZ
desert_parsley Y	penstemon ZZ	yampah AAAA
dogbane Z	phacelia AAA	yarrow BBBB
doorweed_knotweed AA	prarie_star BBB	

85. second_forb_sp* (second_for)

Visual observation of the forb species with the second greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary which matches the single dominant forb species in the plot. If the dominant forb is not listed in the data dictionary menu select Aother/unknown@

<u>Attribute Value Code</u> none	<u>Attribute Value Code</u> fern	<u>Attribute Value Code</u>
A	BB	prickly_lettuce CCC
other_unknownB	fireweed CC	primrose DDD
agosaris C	geranium DD	prince's pine EEE
alumroot D	giant_hyssop_mint EE	pussytoes FFF
arnica E	goats_beard FF	queencup_beadlily GGG
aster F	goosefoot GG	rattlesnake_plantain HHH
balsamroot G	groundsel HH	sandwort III
beargrass H	groundsmoke II	sanfoin JJJ
bedstraw I	gumweed JJ	sego_lily KKK
bilobed_speedwell J	helianthella KK	solomon_seal LLL
bitterroot K	hoary_aster LL	stinging_nettle MMM
blue_eyed_mary L	hood_phlox MM	stonecrop NNN
buckwheat M	hounds_tongue NN	strawberry OOO
burr_clover N	knapweed_diffuse OO	sweet_cicely PPP
campion O	knapweed_spotted PP	sunflower QQQ
cinquefoil P	kochia QQ	tapertip_hawksbeard RRR
clover Q	long_leaf_phlox RR	tarweed SSS
collomia R	louisiana_sage SS	tumble_mustard TTT
columbine S	lupine TT	violet UUU
coneflower T	mentzelia UU	western_hawkweed VVV
daisy U	mountain_parsley VV	wild_onion WWW
dandelion V	mules_ears WW	willow_herb XXX
death_camass W	noxious_weeds XX	wintergreen YYY
desert_alyssum X	paintbrush YY	wooly_mullein ZZZ
desert_parsley Y	penstemon ZZ	yampah AAAA
dogbane Z	phacelia AAA	yarrow BBBB
doorweed_knotweed AA	prarie_star BBB	

86. **third_forb_sp** (third_forb)

Visual observation of the forb species with the third greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary which matches the single dominant forb species in the plot. If the dominant forb is not listed in the data dictionary menu select Aother/unknown@

<u>Attribute Value Code</u> none	<u>Attribute Value Code</u> fern	<u>Attribute Value Code</u>
A	BB	prickly_lettuce CCC
other_unknownB	fireweed CC	primrose DDD
agosaris C	geranium DD	prince's pine EEE
alumroot D	giant_hyssop_mint EE	pussytoes FFF
arnica E	goats_beard FF	queencup_beadlily GGG
aster F	goosefoot GG	rattlesnake_plantain HHH
balsamroot G	groundsel HH	sandwort III
beargrass H	groundsmoke II	sanfoin JJJ
bedstraw I	gumweed JJ	sego_lily KKK
bilobed_speedwell J	helianthella KK	solomon_seal LLL
bitterroot K	hoary_aster LL	stinging_nettle MMM
blue_eyed_mary L	hood_phlox MM	stonecrop NNN
buckwheat M	hounds_tongue NN	strawberry OOO
burr_clover N	knapweed_diffuse OO	sweet_cicely PPP
campion O	knapweed_spotted PP	sunflower QQQ
cinquefoil P	kochia QQ	tapertip_hawksbeard RRR
clover Q	long_leaf_phlox RR	tarweed SSS
collomia R	louisiana_sage SS	tumble_mustard TTT
columbine S	lupine TT	violet UUU
coneflower T	mentzelia UU	western_hawkweed VVV
daisy U	mountain_parsley VV	wild_onion WWW
dandelion V	mules_ears WW	willow_herb XXX
death_camass W	noxious_weeds XX	wintergreen YYY
desert_alyssum X	paintbrush YY	wooly_mullein ZZZ
desert_parsley Y	penstemon ZZ	yampah AAAA
dogbane Z	phacelia AAA	yarrow BBBB
doorweed_knotweed AA	prarie_star BBB	

87. fourth_forb_sp (fourth_for)

Visual observation of the forb species with the fourth greatest ground cover. This information is used to determine management needs and fire behavior. Choose the species from the data dictionary which matches the single dominant forb species in the plot. If the dominant forb is not listed in the data dictionary menu select Aother/unknown@

<u>Attribute Value</u>	<u>Code</u>	none	<u>Attribute Value</u>	<u>Code</u>	fern	<u>Attribute Value</u>	<u>Code</u>
	A			BB		prickly_lettuce	CCC
other_unknown	B		fireweed	CC		primrose	DDD
agoseris	C		geranium	DD		prince's pine	EEE
alumroot	D		giant_hyssop_mint	EE		pussytoes	FFF
arnica	E		goats_beard	FF		queencup_beadlily	GGG
aster	F		goosefoot	GG		rattlesnake_plantain	HHH
balsamroot	G		groundsel	HH		sandwort	III
beargrass	H		groundsmoke	II		sanfoin	JJJ
bedstraw	I		gumweed	JJ		sego_lily	KKK
bilobed_speedwell	J		helianthella	KK		solomon_seal	LLL
bitterroot	K		hoary_aster	LL		stinging_nettle	MMM
blue_eyed_mary	L		hood_phlox	MM		stonecrop	NNN
buckwheat	M		hounds_tongue	NN		strawberry	OOO
burr_clover	N		knapweed_diffuse	OO		sweet_cicely	PPP
campion	O		knapweed_spotted	PP		sunflower	QQQ
cinquefoil	P		kochia	QQ		tapertip_hawksbeard	RRR
clover	Q		long_leaf_phlox	RR		tarweed	SSS
collomia	R		louisiana_sage	SS		tumble_mustard	TTT
columbine	S		lupine	TT		violet	UUU
coneflower	T		mentzelia	UU		western_hawkweed	VVV
daisy	U		mountain_parsley	VV		wild_onion	WWW
dandelion	V		mules_ears	WW		willow_herb	XXX
death_camass	W		noxious_weeds	XX		wintergreen	YYY
desert_alyssum	X		paintbrush	YY		wooly_mullein	ZZZ
desert_parsley	Y		penstemon	ZZ		yampah	AAAA
dogbane	Z		phacelia	AAA		yarrow	BBBB
doorweed_knotweed	AA		prarie_star	BBB			

88. grass_forb_height* (grass_forb)

Visual estimate of the average height of the herbaceous and graminoid component of the plot. This information is used to determine management needs and fire behavior. Choose the most appropriate menu selection.

<u>Attribute Value</u>	<u>Code</u>
less_than_4_ins	A
4_ins_to_7_ins	B
more_than_7_ins	C

89. cheatgrass_cover* (cheatgrass)

Estimate of the percent of ground covered by cheatgrass. This is used to determine management needs, fire behavior, and post-burn strategies. The estimate is based on percent of total plot area.

<u>Attribute Value</u>	<u>Code</u>
------------------------	-------------

none	NONE	A
trace_rare	[less_th]	B
low_occasional_plts.	[1_to_5]	C
mod_scatt_plts.	[6_to_25]	D
high_fairly_dense	[26_to_5]	E
very_high_dense	[51_to_9]	F

90. nweed_covr* (nweed_covr)

Estimate of the percent of ground covered by noxious weeds. This is used to determine management needs, fire behavior, and post-burn strategies. The estimate is based on percent of total plot area.

<u>Attribute Value</u>		<u>Code</u>
none	[0]	A
trace_rare	[less_th]	B
low_occasional plts.	[1_to_5]	C
moderate_scat.plts.	[6_to_25]	D
high_fairly_dense	[26_to_5]	E
very_high_dense	[51_to_9]	F

91. nweed_sp* (nweed_sp)

Visual assessment of the presence of noxious weeds. This data is used for management needs and treatment recommendations. Special consideration will be given to plots that have noxious weeds due to their inherent expansion after disturbance. If a noxious weed is present in the plot, in any quantity, choose that species from the data dictionary list. If numerous noxious weeds are present in the plot select the most prevalent species for this field and note all other noxious weeds in the comments section at the end of the data dictionary.

<u>Attribute Value</u>	<u>Code</u>	<u>Attribute Value</u>	<u>Code</u>	<u>Attribute Value</u>	<u>Code</u>
A		jointed_goatgrass	M	scotch_broom	Y
other	B	leafy_spurge	N	scotch_thistle	Z
none	C	milium	O	silverleaf_nightshad	AA
black_henbane	D	musk_thistle	P	skeletonleaf_bursage	BB
buffalo_bur	E	orange_hawkweed	Q	spotted_knapweed	CC
canada_thistle	F	perrenial_pepperweed	R	syrian_bean_caper	DD
common_crupina	G	perrenial_sowthistle	S	tansy_ragwort	EE
dalmatian_toadflax	H	poison_hemlock	T	toothed_spurge	FF
diffuse_knapweed	I	puncturevine	U	whitotop_hoary_cress	GG
dyers_woad	J	purple_loosestrife	V	yellow_hawkweed	HH
field-bindweed	K	rush_skeletonweed	W	yellow_starthistle	II
johnsongrass	L	russian_knapweed	X	yellow_toadflax	JJ

92. 2nd_nweed_sp (2nd_nweed_)

Visual assessment of the presence of additional noxious weeds. This data is used for management needs and treatment recommendations. Special consideration will be given to plots that have noxious weeds due to their inherent expansion after disturbance. If a noxious weed is present in the plot, in any quantity, choose that species from the data dictionary list. If numerous noxious weeds are present in the plot select the most prevalent species for this field and note all other noxious weeds in the comments section at the end of the data dictionary.

<u>Attribute Value</u>	<u>Code</u>	<u>Attribute Value</u>	<u>Code</u>	<u>Attribute Value</u>	<u>Code</u>
A		jointed_goatgrass	M	scotch_broom	Y
other	B	leafy_spurge	N	scotch_thistle	Z
none	C	milium	O	silverleaf_nightshad	AA
black_henbane	D	musk_thistle	P	skeletonleaf_bursage	BB
buffalo_bur	E	orange_hawkweed	Q	spotted_knapweed	CC
canada_thistle	F	perennial_pepperweed	R	syrian_bean_caper	DD
common_crupina	G	perennial_sowthistle	S	tansy_ragwort	EE
dalmatian_toadflax	H	poison_hemlock	T	toothed_spurge	FF
diffuse_knapweed	I	puncturevine	U	whiteweed	GG
dyers_woad	J	purple_loosestrife	V	yellow_hawkweed	HH
field-bindweed	K	rush_skeletonweed	W	yellow_starthistle	II
johnsongrass	L	russian_knapweed	X	yellow_toadflax	JJ

93. nweed_sizeinfest* (nweed_size)

Estimate of the size of the noxious weed infestation. This information is used to determine what treatments may be necessary to eradicate the noxious weeds. The size of the noxious weed infestation also has an affect on management recommendations. Choose the range of areas which most appropriately fits the actual size of the noxious weed infestation. If there are no noxious weeds choose ANo noxious weeds@.

<u>Attribute Value</u>	<u>Code</u>
no_noxious_weeds	A
less_than_.1 acre	B
.1 to 1 acre	C
1 to 5 acres	D

94. perct_veg_remove* (perct_veg_)

Estimate of the percent of total vegetation cover that would be removed due to an average fire. This data is used to determine fire hazard and behavior. Assume low fuel moisture, 80 degree day, 20% relative humidity, and 10 mph winds.

<u>Attribute Value</u>	<u>Code</u>
low_to_less_than_20_	A
mod_to_20_to_80_perc	B
high_to_more_than_80	C

95. rate_of_spread* (rate_of__s)

Estimate of the rate of fire spread. This data is used to determine fire hazard and behavior. Assume low fuel moisture, 80 degree day, 20% relative humidity, and 10 mph winds.

<u>Attribute Value</u>	<u>Code</u>
low_ros	A
mod_ros	B
high_ros	C

97. domestic_grazing (domestic_g)

From: Utilization Studies and Residual Measurement Interagency Technical Reference, Cooperative Extension Service, USDA, NRCS, BLM 1996. Pages 81-85. Estimate of the presence of domestic livestock grazing and relative degree of grazing. Percentages are from standard BLM utilization levels. This information is used for pre and post-burn management considerations.

<u>Attribute Value</u>	<u>Code</u>
none	[0-5%] A
slight	[6-20%] B
light	[21-40%] C
moderate	[41-60%] D
heavy	[61-80%] E
severe	[81-94%] F
ex_severe	[95-100] G

98. big_game_grazing (big_game_g)

This information is used for post-burn management considerations. Percentages are from standard BLM utilization levels. Consider all wildlife grazing and browsing.

<u>Attribute Value</u>	<u>Code</u>
none	[0-5%] A
slight	[6-20%] B
light	[21-40%] C
moderate	[41-60%] D
heavy	[61-80%] E
severe	[81-94%] F
ex_severe	[95-100] G

99. domestic_and_biggame (domestic_a)

This field is the total utilization by both domestic and wildlife grazing/browsing. Use this field when type of grazing can't be determined. Percentages are from standard BLM utilization levels.

<u>Attribute Value</u>	<u>Code</u>
none	[0-5%] A
slight	[6-20%] B
light	[21-40%] C
moderate	[41-60%] D
heavy	[61-80%] E
severe	[81-94%] F

101. rare_indicate sp #(rare_indic)

Observations of rare or indicator plant species or habitat. This is used to determine treatment recommendations and management decisions. This is a text entry up to 50 characters long. Identify any plant species that occur in the plot that are rare or of great ecological significance. Identify any potential micro-habitat sites for threatened, endangered, or sensitive plants. Any plants that are indicators of unique habitats should also be noted.

102. wildlife_cmnts #(wildlife_c)

Observations of important wildlife species in the plot. This is used to determine treatment recommendations and management decisions. This is a text entry up to 50 characters long. Identify any animal species that occur in the plot that are rare or of great ecological significance. Identify any important habitat sites for threatened, endangered, or sensitive animal species. Any evidence of these types of animal species should also be noted.

103. prime_treat* (prime_trea)

Assessment of management needs for the plot area. This information is used to aid in management decisions for treatments. ACommercial Harvest@ is used to remove trees in plots with more than 5 trees with a dbh greater than 10". APre-commercial Thinning@ is used to remove trees in plots with greater than 50 trees with a dbh less than 10". AMechanical Thinning@ is used to remove trees in plots with less than 50 trees with a dbh less than 10". AChemical@ is the use of herbicides to remove unwanted vegetation. APrescribed Fire@ is used as a means of hazardous fuels control with ecological benefits. More than one treatment can be used in conjunction with other. Choose from the data dictionary list the most appropriate treatment type(s) for the plot. If AOther@ is chosen, it should be specified in comments at the end of the data dictionary.

<u>Assessment</u>	<u>Code</u>
none_recommended	A
chem.	B
com_harvest	C
com_firewood_cutting	D
comharv_rx fire	E
pre_comm_thin	F
prethin_rx fire	G
mech_other	H
rxfire_chem.	I
rxfire	J
seeding	K
other	L

104. second_treat (second_tre)

Assessment of management needs for the plot area. This information is used to aid in

management decisions for treatments. This selection will be considered an alternative to the APrimary Treatment@ recommendation. ACommercial Harvest@ is used to remove trees in plots with more than 5 trees with a dbh greater than 10". APre-commercial Thinning@ is used to remove trees in plots with greater than 50 trees with a dbh less than 10". AMechanical Thinning@ is used to remove trees in plots with less than 50 trees with a dbh less than 10". AChemical@ is the use of herbicides to remove unwanted vegetation. APrescribed Fire@ is used as a means of hazardous fuels control with ecological benefits. More than one treatment can be used in conjunction with other. Choose from the data dictionary list the most appropriate treatment type(s) for the plot. If AOther@ is chosen, it should be specified in comments at the end of the data dictionary.

<u>Assessment</u>	<u>Code</u>
none_recommended	A
chem.	B
com_harvest	C
com_firewood_cutting	D
comharv_rx fire	E
pre_comm_thin	F
prethin_rx fire	G
mech_other	H
rxfire_chem.	I
rxfire	J
seeding	K
other	L

106. archeology (archeology)

Observations of any artifacts of archeological significance. Used to determine management needs. Select the most appropriate category of artifacts. More specific details should be given in the remarks section at the end of the data dictionary.

<u>Attribute Values</u>	<u>Code</u>
none	A
arboglyphs	B
structures	C
lithic_scatter	D
select_cut	E
isolated_find	F
multiple_finds	G

107. evid_prev_fire (evid_prev)

Observation of any evidence which indicates a past wildfire. This data is used to determine historic fire presence. If there is no evidence of past fire activity choose AAno@. Choose Acharcoal@ if the evidence of fire is found on the ground or on fallen logs. Choose Afire scar@ if the evidence of fire is found on a standing tree. Enter the appropriate code into the A @ data dictionary field.

<u>Observation</u>	<u>Code</u>
no_evidence	A

charcoal	B
fire_scar	C
charcoal_fire_scar	D

113. temperature #temperatur)
Text entry, record on-site temperature in degrees Fahrenheit.

114. rel_humidity #rel_humidi)
Text entry, record on-site relative humidity in percent.

115. cloud_cover #cloud_cove)
Text entry, record overhead cloud over in percent.

117. remarks #remarks)
Text entry for any additional observations, comments, or remarks.

118. date_of_fire #date_of_fi)
Text entry

119. cause_of_fire (cause_of_f)
Attribute Values
Prescribed A
human/wildfire B
natural/wildfire C

120. type_of_fire (type_of_fi)
Attribute Values
Ground A
surface/head B
surface/backing C
surface/torching D
surface/crown E
surface/spotty F
crown G
crown/running H

121. severity (severity)
Attribute Values
Mosaic A
Light B
Moderate C
High D

122. slope_position (slope_posi)

<u>Attribute Values</u>	
valley bottom	A
low	B
midslope	C
upper	D
ridge	E

123. litter_duff_consumed (litter_duf)

<u>Attribute Values</u>	
0-10 pct	A
11-25 pct	B
26-50 pct	C
51-75 pct	D
76-100 pct	E

124. woody_fuel_consumed (woody_fuel)

<u>Attribute Values</u>	
0-10 pct	A
11-25 pct	B
26-50 pct	C
51-75 pct	D
76-100 pct	E

125. mortality_understory (mortality_)

<u>Attribute Values</u>	
None	A
0-25 pct	B
26-50 pct	C
51-75 pct	D
76-100 pct	E

126. _mortality_overstory (_mortality)

<u>Attribute Values</u>	
None	A
0-25 pct	B
26-50 pct	C
51-75 pct	D
76-100 pct	E

127. crown_scorched (crown_scor)

<u>Attribute Values</u>	
None	A
<30 pct	B

31-60 pct	C
>60 pct	D

128. crown_scorch_height #(crown_scor)
 Numeric entry, 0-300 ft.

129. crown_consumed (crown_cons)

<u>Attribute Values</u>	
None	A
<10 pct	B
11-25 pct	C
26-50 pct	D
51-75 pct	E
76-100 pct	F

130. stems_charred (stems_char)

<u>Attribute Values</u>	
None	A
<5 pct	B
6-15 pct	C
16-30 pct	D
31-50 pct	E
>50 pct	F

131. shrubs_unburned (shrubs_bur)

<u>Attribute Values</u>	
0-10 pct	A
11-25 pct	B
26-50 pct	C
51-75 pct	D
76-100 pct	E

132. shrubs_scorched (shrubs_sco)

<u>Attribute Values</u>	
0-10 pct	A
11-25 pct	B
26-50 pct	C
51-75 pct	D
76-100 pct	E

135. bunchgrasses (bunchgrass)

<u>Attribute Values</u>	
None	A

Dead	B
new growth	C

136. soil_damage (soil_damag)

<u>Attribute Values</u>	
None	A
Low	B
Moderate	C
Severe	D

137. soil_erosion (soil_erosi)

<u>Attribute Values</u>	
None	A
Low	B
Moderate	C