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SUMMARY TABLES
BLACK BUTTE VEGETATION BASELINE

SAMPLE PARAMETERS	TABLE	PAGE
SAMPLE SITE IDENTIFICATION	1	5-1
COVER/CONSTANCY		
Upland Grassland	2	5-2
Upland Shrubland	3	5-7
Conifer Forest and Woodland	4	5-13
Lowland Altered Grassland and Herbaceous Riparian and Wetland	5	5-20
Shrub Riparian and Wetland	6	5-24
Deciduous Forest Riparian and Wetland	7	5-31
SHRUB DENSITY		
Upland Grassland	8	5-33
Upland Shrubland	9	5-34
Conifer Forest and Woodland	10	5-35
Lowland Altered Grassland and Herbaceous Riparian and Wetland	11	5-38
Shrub Riparian and Wetland	12	5-39
Deciduous Forest Riparian and Wetland	13	5-42
TREE DENSITY		
Upland Grassland	14	5-43
Upland Shrubland	15	5-44
Conifer Forest and Woodland	16	5-45
Lowland Altered Grassland and Herbaceous Riparian and Wetland	17	5-48
Shrub Riparian and Wetland	18	5-49
Deciduous Forest Riparian and Wetland	19	5-50
ECOLOGICAL SITE/SOILS CORRELATIONS	20	5-52
VEGETATION TYPES/SOILS CORRELATIONS	21	5-53
VEGETATION TYPE/ECOLOGICAL SITE CORRELATIONS	22	5-57
RANGELAND PRODUCTIVITY AND GRAZING CAPACITY	23	5-59
HAYLAND/PASTURELAND PRODUCTIVITY AND YIELD	24	5-60
PLANT SPECIES OF CONCERN	25	5-61
PLANT SPECIES DIVERSITY	26	5-63
NOXIOUS WEEDS	27	5-64
VEGETATION TYPE ACREAGE	28	5-66

Table 1
Vegetation Types Identified in the Black Butte Baseline Study Area, Meagher County, Montana, 2015.

VEGETATION TYPE[1]	PLOT NUMBERS[2]	n
UPLAND GRASSLAND		**28**
Upland Altered Grassland c.t.	44, 45, 46, 47, 50, 52, 67, 78, 85	9
Festuca idahoensis/Agropyron spicatum h.t.	63, 68, 69	3
Festuca idahoensis /Stipa richardsonii h.t.	61, 107	2
Festuca campestris/Agropyron spicatum h.t.	48	1
Festuca campestris/Festuca idahoensis h.t.	56, 62, 64, 65, 66, 70, 71, 72, 73, 74, 75, 93, 108	13
UPLAND SHRUBLAND		**44**
Artemisia tridentata/Poa pratensis c.t.	51, 53, 54, 57, 77, 83, 84, 88, 92, 95, 97, 100, 101	13
Artemisia tridentata/Festuca idahoensis h.t.	99, 105, 111	3
Artemisia tridentata/Festuca campestris h.t.	49, 55, 58, 59, 60, 76, 79, 81, 90, 91, 94, 98, 102, 103, 104, 114, 115	17
Artemisia tridentata-Dasiphora fruticosa/Poa pratensis c.t.	89, 96, 109, 110, 112, 116	6
Dasiphora fruticosa-Artemisia tridentata/Festuca campestris c.t.	80, 106, 113	3
Mixed Shrub-Shale Outcrop c.t.	86, 87	2
CONIFER FOREST AND WOODLAND		**40**
Pseudotsuga menziesii/Festuca idahoensis h.t.	13	1
Pseudotsuga menziesii/Festuca campestris h.t.	11, 12, 15, 17, 19, 20, 23, 28, 34, 38, 42, 43	12
Pseudotsuga menziesii/Juniperus communis h.t.	14, 24, 25, 26, 29, 32, 33, 40	8
Pseudotsuga menziesii/Calamagrostis rubescens h.t.	31, 35	2
Pseudotsuga menziesii/Symphoricarpos albus h.t.	1, 4, 5, 7, 16, 18, 27, 30, 36, 37, 39	11
Pseudotsuga menziesii/Linnaea borealis h.t.	10, 21, 22, 41	4
Picea engelmannii/Linnaea borealis h.t.	6, 9	2
LOWLAND ALTERED GRASSLAND		**17**
Noxious Weed Tailings c.t. (2014/2015)	162	1
Lowland Altered Grassland (Hay Meadow) c.t.	117, 133, 134, 135, 138, 139, 140, 141, 143, 144, 145, 148, 151, 152, 153, 165	16
RIPARIAN AND WETLAND (RW)[3]		**56**
Herbaceous RW types		(15)
Juncus balticus c.t.	129, 149, 163, 164, 176	5
Carex nebrascensis c.t.	127, 166	2
Carex utriculata h.t.	126, 146, 167, 168, 172, 174, 178, 179	8
Shrub RW types		(37)
Dasiphora fruticosa/Poa pratensis c.t.	82, 118, 160, 169, 170, 177	6
Dasiphora fruticosa/Deschampsia cespitosa c.t.	175, 180, 182, 185	4
Dasiphora fruticosa/Carex utriculata c.t.	155, 173	2
Salix bebbiana series	120, 122, 123, 125, 156, 157, 158, 159, 161, 171, 181, 183, 184	13
Salix geyeriana series	119, 121, 128, 130, 131, 132, 136, 137, 142, 147, 150, 154	12
Deciduous Forest RW types		(4)
Populus tremuloides/Osmorhiza occidentalis h.t.	8	1
Populus tremuloides/Poa pratensis c.t.	2, 3, 124	3
	TOTAL SAMPLE SITES	**185**

[1]Grassland and shrubland habitat types were identified following Mueggler and Stewart (1980); Forest habitat types follow Pfister *et al.* (1977), and Wetland/ Riparian types follow Hansen *et al.* (1995), with minor modifications. In these classifications, vegetation types are named according to the following convention:

A slash (/) indicates a separation of species dominating one or more strata, namely the herbaceous, shrub and/or tree layers; c.t. = community type, h.t. = habitat type.

[2]All plot locations are shown on the vegetation type map (Plate 1).

[3]Wetlands in the study area are often associated with relatively narrow streamside fringes. Such sites are generally missed by the stratified random procedure used to select vegetation sample sites, whereas these sites are specifically targeted for identification and delineation during the baseline wetland inventory. Accordingly, selected riparian and wetland cover/composition data were drawn from the wetland inventory to supplement the vegetation baseline database.

Table 2
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Five UPLAND GRASSLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	UPLAND ALTERED GRASSLAND		*FES IDA/AGR SPI*		*FES IDA/STI RIC*		*FES CAM/AGR SPI*		*FES CAM/FES IDA*		UPLAND GRASSLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=9		n=3		n=2		n=1		n=13		n=28	
GROUND COVER												
Bare Ground	8.11	*100*	12.67	*100*	5.50	*100*	28	*100*	5.18	*77*	7.76	*89*
Rock	0.81	*33*	12.00	*100*			12	*100*	1.82	*38*	2.82	*43*
Litter	82.67	*100*	68.33	*100*	71.50	*100*	55	*100*	78.00	*100*	77.18	*100*
Lichens	0.51	*44*	0.77	*100*	3.00	*100*			1.43	*77*	1.13	*68*
Moss	1.37	*44*	1.00	*100*	14.00	*100*			6.69	*92*	4.65	*75*
Basal Vegetation	6.67	*100*	5.33	*100*	6.00	*100*	5	*100*	6.92	*100*	6.54	*100*
VEGETATION STRUCTURE (nonstratified cover)												
Total Vegetation	92.00	*100*	78.67	*100*	91.50	*100*	76	*100*	90.38	*100*	89.21	*100*
Perennial Graminoids	73.89	*100*	59.33	*100*	65.00	*100*	51	*100*	70.69	*100*	69.39	*100*
Annual Graminoids												
Perennial Forbs and Subshrubs	43.44	*100*	35.67	*100*	48.50	*100*	44	*100*	41.46	*100*	42.07	*100*
Annual/Biennial Forbs	0.47	*67*	1.77	*100*	2.00	*100*	0.3	*100*	0.75	*85*	0.84	*82*
Shrubs	2.67	*56*			5.50	*100*	4	*100*	1.74	*69*	2.20	*61*
Trees (0.01-acre)												
Trees (0.1-acre)									0.02	*8*	0.01	*4*
CLASS\SPECIES												
NATIVE PERENNIAL GRAMINOIDS												
Agropyron smithii					1.50	*50*	2	*100*			0.18	*7*
Agropyron spicatum			6.00	*100*			5	*100*	1.08	*8*	1.32	*18*
Agropyron trachycaulum	0.62	*78*	0.10	*33*	2.00	*100*			1.02	*85*	0.83	*75*
Agrostis scabra	0.22	*22*			0.15	*50*			0.15	*31*	0.15	*25*
Bromus carinatus	1.22	*56*							0.38	*8*	0.57	*21*
Carex eleocharis	0.14	*22*			1.00	*50*			0.60	*69*	0.40	*43*
Carex filifolia	0.33	*11*	1.00	*33*	2.50	*100*	3	*100*	1.02	*62*	0.97	*46*
Carex microptera	0.03	*11*									0.01	*4*
Carex petasata	1.48	*67*			0.15	*50*			0.33	*31*	0.64	*39*
Carex praticola	0.11	*11*									0.04	*4*
Carex rossii									1.58	*31*	0.74	*14*
Danthonia californica	1.44	*56*									0.46	*18*
Danthonia intermedia	1.56	*67*	3.00	*67*	6.00	*50*			7.15	*100*	4.57	*79*
Danthonia unispicata	0.22	*11*	22.33	*100*	12.00	*50*	22	*100*	0.25	*38*	4.22	*39*
Festuca campestris	0.89	*22*	0.67	*33*	0.50	*50*	8	*100*	27.92	*100*	13.64	*64*
Festuca idahoensis	2.67	*67*	26.33	*100*	12.50	*100*	12	*100*	10.38	*92*	9.82	*86*
Juncus balticus	0.22	*11*			0.15	*50*					0.08	*7*
Juncus confusus	0.22	*11*							0.02	*8*	0.08	*7*
Koeleria macrantha			3.33	*100*	1.00	*50*	4	*100*	1.07	*62*	1.07	*46*
Poa secunda					0.50	*50*			0.02	*8*	0.05	*7*

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Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Five UPLAND GRASSLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	UPLAND ALTERED GRASSLAND		*FES IDA/AGR SPI*		*FES IDA/STI RIC*		*FES CAM/AGR SPI*		*FES CAM/FES IDA*		UPLAND GRASSLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=9		n=3		n=2		n=1		n=13		n=28	
Stipa nelsonii	2.22	*44*	0.33	*33*	3.00	*100*			0.74	*46*	1.31	*46*
Stipa richardsonii			0.67	*33*	13.00	*100*			19.77	*92*	10.18	*54*
TOTAL NPG	**13.61**	***100***	**63.77**	***100***	**55.95**	***100***	**56.0**	***100***	**73.48**	***100***	**51.32**	***100***
INTRODUCED PERENNIAL GRAMINOIDS												
Bromus inermis	3.56	*11*									1.14	*4*
Phleum pratense	28.89	*100*							0.02	*8*	9.30	*36*
Poa compressa	0.33	*11*									0.11	*4*
Poa pratensis	36.67	*100*	0.67	*33*	17.00	*100*			6.64	*54*	16.15	*68*
TOTAL IPG	**69.44**	***100***	**0.67**	***33***	**17.00**	***100***			**6.66**	***54***	**26.70**	***68***
NATIVE PERENNIAL FORBS AND SUBSHRUBS												
Achillea millefolium	1.10	*100*	2.33	*100*	2.00	*50*	0.3	*100*	0.44	*92*	0.96	*93*
Agoseris glauca	0.43	*44*							0.25	*46*	0.25	*36*
Allium cernuum									0.05	*15*	0.02	*7*
Allium textile			0.30	*100*			0.3	*100*	0.10	*15*	0.09	*21*
Anemone multifida	0.07	*22*			1.50	*50*			0.16	*54*	0.20	*36*
Anemone patens	0.03	*11*	0.10	*33*					0.02	*8*	0.03	*11*
Antennaria anaphaloides	0.07	*22*							0.15	*31*	0.09	*21*
Antennaria microphylla	0.03	*11*									0.01	*4*
Antennaria parvifolia							2	*100*	0.58	*31*	0.34	*18*
Antennaria rosea	2.00	*33*	10.00	*100*	12.50	*100*	3	*100*	2.84	*77*	4.03	*68*
Arabis nuttallii			0.10	*33*					0.05	*15*	0.03	*11*
Arenaria congesta			1.10	*100*	0.50	*50*	0.3	*100*	0.44	*92*	0.37	*61*
Arnica fulgens					0.15	*50*			0.02	*8*	0.02	*7*
Arnica sororia	0.14	*22*	0.43	*67*					0.12	*38*	0.15	*32*
Artemisia frigida			0.10	*33*							0.01	*4*
Artemisia ludoviciana	3.00	*44*	2.00	*100*	1.50	*100*	10	*100*	1.15	*23*	2.18	*46*
Astragalus adsurgens			0.43	*67*			0.3	*100*	0.12	*23*	0.11	*21*
Astragalus drummondii							1	*100*			0.04	*4*
Astragalus purshii			0.43	*67*			0.3	*100*	0.02	*8*	0.07	*14*
Astragalus tenellus							3	*100*			0.11	*4*
Campanula rotundifolia	0.36	*56*	0.10	*33*	0.15	*50*			0.38	*92*	0.31	*68*
Cerastium arvense	1.56	*56*	1.33	*67*	0.50	*50*	2	*100*	1.72	*77*	1.55	*68*
Cirsium longistylum	0.03	*11*							0.02	*8*	0.02	*7*
Clematis hirsutissima	0.54	*67*			2.50	*100*			0.84	*77*	0.74	*64*
Crepis atribarba			0.10	*33*							0.01	*4*
Crepis occidentalis							0.3	*100*			0.01	*4*
Delphinium bicolor	0.03	*11*	0.10	*33*							0.02	*7*
Drymocallis arguta	0.11	*11*							0.10	*15*	0.08	*11*
Erigeron caespitosus			1.77	*100*			5	*100*	0.08	*8*	0.40	*18*

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	UPLAND ALTERED GRASSLAND		*FES IDA/AGR SPI*		*FES IDA/STI RIC*		*FES CAM/AGR SPI*		*FES CAM/FES IDA*		UPLAND GRASSLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=9		n=3		n=2		n=1		n=13		n=28	
Erigeron compositus			0.33	*33*							0.04	*4*
Erigeron ochroleucus									0.02	*8*	0.01	*4*
Erigeron subtrinervis	2.11	*33*							0.28	*38*	0.81	*29*
Eriogonum umbellatum			2.67	*67*	3.00	*100*	1	*100*	1.20	*77*	1.09	*54*
Erysimum inconspicuum									0.02	*8*	0.01	*4*
Fragaria vesca									0.08	*8*	0.04	*4*
Fragaria virginiana	0.81	*22*									0.26	*7*
Fritillaria pudica			0.10	*33*					0.05	*15*	0.03	*11*
Gaillardia aristata	0.11	*11*	0.43	*67*	0.15	*50*			0.32	*54*	0.24	*39*
Galium boreale	1.51	*78*	1.00	*33*					0.35	*54*	0.75	*54*
Gentiana affinis	0.03	*11*									0.01	*4*
Geranium viscosissimum	10.56	*78*			5.00	*100*			5.38	*62*	6.25	*61*
Geum triflorum	1.78	*56*	1.67	*67*	9.00	*100*			13.92	*100*	7.86	*79*
Heterotheca villosa			0.20	*67*			3	*100*	0.25	*15*	0.25	*18*
Heuchera parvifolia									0.15	*31*	0.07	*14*
Linum lewisii							0.3	*100*	0.05	*15*	0.03	*11*
Lithospermum ruderale	0.22	*22*	0.43	*67*	0.50	*50*	1	*100*	0.68	*54*	0.51	*46*
Lomatium macrocarpum			0.20	*67*			0.3	*100*			0.03	*11*
Lomatium triternatum									0.07	*23*	0.03	*11*
Lupinus argenteus									0.02	*8*	0.01	*4*
Lupinus leucophyllus	1.89	*44*									0.61	*14*
Lupinus sericeus	0.89	*22*	2.33	*100*	4.50	*100*	3	*100*	1.22	*77*	1.53	*64*
Musineon divaricatum									0.02	*8*	0.01	*4*
Noccaea fendleri									0.07	*23*	0.03	*11*
Orobanche fasciculata			0.10	*33*							0.01	*4*
Oxytropis besseyi			0.10	*33*							0.01	*4*
Oxytropis sericea			0.10	*33*					0.05	*15*	0.03	*11*
Oxytropis splendens	0.03	*11*							0.02	*8*	0.02	*7*
Paronychia sessiliflora			0.33	*33*					0.05	*15*	0.06	*11*
Pedicularis parryi									0.02	*8*	0.01	*4*
Penstemon procerus	0.07	*22*									0.02	*7*
Perideridia montana	0.77	*67*							0.02	*8*	0.26	*25*
Phlox hoodii			4.33	*100*			3	*100*	1.48	*38*	1.26	*32*
Potentilla anserina									0.23	*8*	0.11	*4*
Potentilla gracilis	6.89	*100*	0.43	*67*	3.00	*100*			1.65	*100*	3.24	*93*
Potentilla hippiana									0.07	*23*	0.03	*11*
Potentilla pensylvanica					0.15	*50*			0.12	*38*	0.06	*21*
Pyrrocoma integrifolia					1.00	*50*					0.07	*4*
Sedum lanceolatum									1.56	*15*	0.73	*7*
Senecio canus			0.33	*33*					0.10	*15*	0.08	*11*
Senecio streptanthifolius					0.15	*50*			0.15	*31*	0.08	*18*

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	UPLAND ALTERED GRASSLAND		*FES IDA/AGR SPI*		*FES IDA/STI RIC*		*FES CAM/AGR SPI*		*FES CAM/FES IDA*		UPLAND GRASSLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=9		n=3		n=2		n=1		n=13		n=28	
Silene drummondii	0.03	*11*	0.10	*33*					0.09	*31*	0.06	*21*
Sisyrinchium idahoense									0.05	*15*	0.02	*7*
Solidago canadensis (S. lepida)	0.59	*22*									0.19	*7*
Solidago missouriensis	1.78	*56*	1.10	*100*	5.00	*100*	5	*100*	4.76	*92*	3.44	*82*
Symphyotrichum ascendens			0.10	*33*	0.15	*50*			0.08	*8*	0.06	*11*
Symphyotrichum campestre	1.26	*56*			0.15	*50*			0.15	*31*	0.48	*36*
Symphyotrichum falcatum							3	*100*	0.23	*8*	0.21	*7*
Symphyotrichum subspicatum	0.48	*22*									0.15	*7*
Thalictrum venulosum	0.03	*11*									0.01	*4*
Trifolium longipes	0.07	*22*									0.02	*7*
Vicia americana									0.02	*8*	0.01	*4*
Viola adunca	0.03	*11*									0.01	*4*
Zigadenus venenosus			1.00	*67*					0.09	*31*	0.15	*21*
TOTAL NPF	**41.44**	***100***	**38.13**	***100***	**53.05**	***100***	**47.4**	***100***	**44.80**	***100***	**43.69**	***100***
INTRODUCED PERENNIAL FORBS												
Knautia arvensis	4.78	*11*									1.54	*4*
Taraxacum officinale	3.70	*78*	0.20	*67*					0.02	*8*	1.22	*36*
TOTAL IPF	**8.48**	***78***	**0.20**	***67***					**0.02**	***8***	**2.76**	***36***
FERNS AND ALLIES												
Selaginella densa			3.33	*33*	0.15	*50*			2.23	*31*	1.40	*21*
TOTAL FA			**3.33**	***33***	**0.15**	***50***			**2.23**	***31***	**1.40**	***21***
NATIVE ANNUAL/BIENNIAL FORBS												
Androsace occidentalis			0.10	*33*					0.05	*15*	0.03	*11*
Androsace septentrionalis			0.10	*33*					0.09	*31*	0.05	*18*
Barbarea orthoceras	0.03	*11*									0.01	*4*
Boechera divaricarpa									0.02	*8*	0.01	*4*
Collomia linearis	0.03	*11*	0.10	*33*					0.02	*8*	0.03	*11*
Gentianella amarella			0.33	*33*	0.50	*50*			0.45	*69*	0.28	*39*
Microsteris gracilis	0.03	*11*									0.01	*4*
Orthocarpus luteus	0.07	*22*			1.50	*50*			0.08	*8*	0.16	*14*
Orthocarpus tenuifolius					0.15	*50*					0.01	*4*
Polygonum douglasii	0.07	*22*									0.02	*7*
Turritis glabra	0.07	*22*									0.02	*7*
TOTAL NA/BF	**0.30**	***56***	**0.63**	***100***	**2.15**	***100***			**0.71**	***85***	**0.65**	***75***

Table 2

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Five UPLAND GRASSLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	UPLAND ALTERED GRASSLAND		*FES IDA/AGR SPI*		*FES IDA/STI RIC*		*FES CAM/AGR SPI*		*FES CAM/FES IDA*		UPLAND GRASSLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=9		n=3		n=2		n=1		n=13		n=28	
INTRODUCED ANNUAL/BIENNIAL FORBS												
Alyssum alyssoides			1.33	*33*			0.3	*100*	0.08	*8*	0.19	*11*
Carduus nutans	0.03	*11*									0.01	*4*
Thlaspi arvense	0.22	*11*							0.02	*8*	0.08	*7*
Tragopogon dubius							0.3	*100*			0.01	*4*
TOTAL IA/BF	**0.26**	***22***	**1.33**	***33***			**0.6**	*100*	**0.10**	***15***	**0.29**	***21***
SHRUBS												
Artemisia tridentata	1.22	*33*			2.50	*100*			1.25	*54*	1.15	*43*
Clematis occidentalis									0.02	*8*	0.01	*4*
Dasiphora fruticosa	0.67	*22*							0.43	*23*	0.41	*18*
Juniperus communis							4	*100*			0.14	*4*
Rosa woodsii	0.89	*22*			3.00	*50*			0.05	*15*	0.52	*18*
TOTAL SHRUBS	**2.78**	***56***			**5.50**	***100***	**4.0**	*100*	**1.75**	***69***	**2.24**	***61***
TREES (0.1-acre)												
Pseudotsuga menziesii									0.02	*8*	0.01	*4*
TOTAL TREES (0.1-acre)									**0.02**	***8***	**0.01**	***4***
TOTAL VEGETATION (Stratified)	**136.31**	***100***	**108.07**	***100***	**133.80**	***100***	**108.0**	***100***	**129.76**	***100***	**129.05**	***100***

Nomenclature follows Lesica (2012).

Table 3

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	ART TRI/POA PRA		*ART TRI/FES IDA*		*ART TRI/FES CAM*		*ART TRI-DAS FRU/ POA PRA*		*DAS FRU-ART TRI/ FES CAM*		MIXED SHRUB-SHALE OUTCROP		UPLAND SHRUBLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=13		n=3		n=17		n=6		n=3		n=2		n=44	
GROUND COVER														
Bare Ground	0.97	*38*	27.00	*100*	6.54	*100*	3.72	*83*	0.77	*67*	30.00	*100*	6.58	*77*
Rock	0.02	*8*	16.00	*67*	1.49	*41*	0.83	*33*			52.00	*100*	4.15	*32*
Litter	85.38	*100*	50.33	*100*	80.76	*100*	83.33	*100*	86.00	*100*	15.50	*100*	77.80	*100*
Lichens	0.67	*92*	1.87	*100*	1.53	*100*	1.60	*100*	0.87	*100*	0.50	*50*	1.22	*95*
Moss	7.71	*100*	2.00	*67*	4.62	*100*	4.88	*100*	6.43	*100*	0.15	*50*	5.31	*95*
Basal Vegetation	5.38	*100*	3.00	*100*	5.06	*100*	5.67	*100*	6.00	*100*	2.00	*100*	5.02	*100*
VEGETATION STRUCTURE (nonstratified cover)														
Total Vegetation	95.69	*100*	59.33	*100*	89.12	*100*	93.17	*100*	93.33	*100*	38.50	*100*	87.57	*100*
Perennial Graminoids	75.54	*100*	31.00	*100*	56.12	*100*	66.33	*100*	70.67	*100*	9.00	*100*	60.39	*100*
Annual Graminoids	0.02	*8*											0.01	*2*
Perennial Forbs and Subshrubs	24.54	*100*	23.00	*100*	30.00	*100*	39.17	*100*	33.00	*100*	18.00	*100*	28.82	*100*
Annual/Biennial Forbs	0.44	*85*	0.20	*67*	0.47	*76*	0.93	*67*	0.10	*33*	3.50	*100*	0.62	*75*
Shrubs	39.62	*100*	26.67	*100*	41.06	*100*	40.67	*100*	31.67	*100*	8.00	*100*	37.45	*100*
Trees (0.01-acre)	0.54	*15*			0.37	*18*					2.00	*50*	0.39	*14*
Trees (0.1-acre)	0.25	*38*			0.32	*41*					1.00	*50*	0.24	*30*
CLASS\SPECIES NATIVE PERENNIAL GRAMINOIDS														
Agropyron dasystachyum											1.00	*50*	0.05	*2*
Agropyron smithii			0.10	*33*			2.33	*50*					0.33	*9*
Agropyron spicatum	0.02	*8*	2.77	*100*	0.72	*41*					3.00	*50*	0.61	*27*
Agropyron trachycaulum	0.83	*85*	0.77	*67*	0.68	*65*	1.72	*100*	1.10	*100*	1.00	*50*	0.91	*77*
Agrostis scabra	0.09	*31*			0.06	*6*	0.27	*50*	0.67	*33*			0.13	*20*
Bromus carinatus	0.38	*8*			0.41	*6*	0.05	*17*					0.28	*7*
Bromus porteri	0.02	*8*											0.01	*2*
Carex eleocharis	0.35	*31*	0.10	*33*	1.01	*82*	0.22	*33*	1.33	*33*			0.62	*50*
Carex filifolia	0.25	*15*			2.70	*53*	0.17	*17*	2.33	*67*	0.15	*50*	1.31	*34*
Carex microptera							0.17	*17*					0.02	*2*
Carex obtusata							0.05	*17*	1.00	*33*			0.08	*5*
Carex petasata	0.22	*54*			0.42	*41*	1.27	*67*					0.40	*41*
Carex rossii	0.18	*23*	0.10	*33*	0.34	*47*	0.10	*33*			0.50	*50*	0.23	*34*
Danthonia californica	0.08	*8*					0.33	*17*					0.07	*5*
Danthonia intermedia	2.71	*100*	2.67	*33*	8.71	*88*	7.00	*100*	24.67	*100*			6.98	*86*
Danthonia unispicata	0.05	*15*	9.00	*100*	1.78	*47*	0.72	*33*	0.33	*33*	0.15	*50*	1.44	*39*
Elymus glaucus	0.02	*8*											0.01	*2*
Festuca campestris	2.07	*77*	0.10	*33*	19.71	*100*	2.55	*100*	22.33	*100*			10.10	*84*
Festuca idahoensis	3.32	*92*	11.67	*100*	14.18	*100*	2.10	*83*	7.33	*100*	1.50	*50*	8.11	*93*
Festuca rubra									0.10	*33*			0.01	*2*

Table 3

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	ART TRI/POA PRA		ART TRI/FES IDA		ART TRI/FES CAM		ART TRI-DAS FRU/ POA PRA		DAS FRU-ART TRI/ FES CAM		MIXED SHRUB-SHALE OUTCROP		UPLAND SHRUBLAND COMPOSITE	
	Mean Cover	Con-stancy	Mean Cover	Con-stancy	Mean Cover	Con-stancy	Mean Cover	Con-stancy	Mean Cover	Con-stancy	Mean Cover	Con-stancy	Mean Cover	Con-stancy
	n=13		n=3		n=17		n=6		n=3		n=2		n=44	
Juncus balticus							0.67	17	1.00	33			0.16	5
Juncus confusus							0.83	17					0.11	2
Koeleria macrantha	0.22	38	1.10	100	0.69	65	0.17	17	0.33	33	1.00	100	0.50	52
Muhlenbergia richardsonis	0.02	8					1.17	17					0.17	5
Oryzopsis hymenoides											1.00	50	0.05	2
Poa secunda	0.10	15	0.77	67	0.29	29					0.15	50	0.20	23
Stipa nelsonii	0.81	77	0.43	67	0.23	35	1.72	83	0.20	67			0.60	57
Stipa richardsonii	1.89	85	0.33	33	3.56	71	2.05	50	3.00	67			2.44	66
TOTAL NPG	**13.65**	**100**	**29.90**	**100**	**55.49**	**100**	**25.63**	**100**	**65.73**	**100**	**9.45**	**100**	**35.92**	**100**
INTRODUCED PERENNIAL GRAMINOIDS														
Bromus inermis	0.62	8											0.18	2
Phleum pratense	4.53	46	0.33	33			0.88	50	0.43	67			1.51	27
Poa pratensis	63.69	100	4.10	67	7.82	82	48.83	100	12.33	100			29.62	86
TOTAL IPG	**68.84**	**100**	**4.43**	**67**	**7.82**	**82**	**49.72**	**100**	**12.77**	**100**			**31.31**	**86**
INTRODUCED ANNUAL GRAMINOIDS														
Bromus japonicus	0.02	8											0.01	2
TOTAL IAG	**0.02**	**8**											**0.01**	**2**
NATIVE PERENNIAL FORBS AND SUBSHRUBS														
Achillea millefolium	0.55	77	0.30	100	0.47	88	0.58	100	0.10	33	0.65	100	0.48	84
Agoseris glauca	0.09	31			0.05	18	0.10	33	0.67	33	0.50	50	0.13	25
Allium cernuum	0.02	8	0.20	67	0.02	6					0.15	50	0.03	11
Allium textile	0.02	8	0.20	67							0.15	50	0.03	9
Anemone multifida	0.28	31			0.22	47	0.43	67	0.77	100	0.30	100	0.29	48
Anemone patens					0.04	12			0.10	33			0.02	7
Antennaria anaphaloides	0.19	46			0.13	29	0.20	67	0.10	33			0.14	36
Antennaria microphylla	0.08	8			0.06	6							0.05	5
Antennaria parvifolia	0.99	54	0.77	67	3.49	82	1.50	33	2.00	67			2.03	61
Antennaria rosea	0.43	31	7.77	100	2.08	53	2.83	67	0.10	33	0.15	50	1.86	50
Arabis nuttallii	0.02	8											0.01	2
Arenaria congesta	0.35	62	0.87	100	0.72	100	0.15	50	0.20	67			0.48	75
Arnica fulgens	0.19	46	0.10	33	0.11	24			0.10	33			0.11	27
Arnica sororia	0.05	15			0.07	24	0.05	17					0.05	16
Artemisia dracunculus	0.08	8											0.02	2
Artemisia frigida											0.15	50	0.01	2
Artemisia ludoviciana	1.56	38			0.86	35	3.22	67					1.23	34
Astragalus adsurgens	0.05	15			0.44	47	0.33	17	2.00	33			0.37	27
Astragalus agrestis	0.02	8			0.08	12	0.10	33					0.05	11
Astragalus crassicarpus											0.15	50	0.01	2

Table 3

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	ART TRI/POA PRA		*ART TRI/FES IDA*		*ART TRI/FES CAM*		*ART TRI-DAS FRU/ POA PRA*		*DAS FRU-ART TRI/ FES CAM*		MIXED SHRUB-SHALE OUTCROP		UPLAND SHRUBLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=13		n=3		n=17		n=6		n=3		n=2		n=44	
Astragalus miser	0.02	*8*			0.05	*18*							0.03	*9*
Astragalus purshii					0.05	*18*							0.02	*7*
Astragalus vexilliflexus											0.15	*50*	0.01	*2*
Balsamorhiza sagittata					0.24	*6*							0.09	*2*
Besseya wyomingensis					0.02	*6*							0.01	*2*
Boechera pendulocarpa					0.02	*6*							0.01	*2*
Boechera stricta					0.02	*6*							0.01	*2*
Campanula rotundifolia	0.49	*92*	0.20	*67*	0.35	*71*	1.05	*50*	0.87	*100*	0.30	*100*	0.51	*77*
Castilleja flava					0.04	*12*			0.10	*33*			0.02	*7*
Castilleja pallescens					0.02	*6*							0.01	*2*
Cerastium arvense	6.15	*100*	3.67	*100*	4.24	*100*	3.50	*100*	1.67	*67*	1.00	*100*	4.34	*98*
Cirsium hookerianum									0.33	*33*			0.02	*2*
Cirsium longistylum	0.05	*15*					0.38	*33*					0.07	*9*
Cirsium undulatum	0.08	*8*									0.15	*50*	0.03	*5*
Clematis hirsutissima	0.39	*77*			0.36	*53*	0.33	*17*	1.77	*67*			0.42	*50*
Comandra umbellata							0.05	*17*			1.50	*100*	0.08	*7*
Crepis acuminata					0.02	*6*							0.01	*2*
Crepis occidentalis											0.15	*50*	0.01	*2*
Delphinium bicolor	0.02	*8*											0.01	*2*
Dodecatheon conjugens	0.02	*8*			0.02	*6*							0.01	*5*
Dodecatheon pulchellum	0.02	*8*					0.10	*33*					0.02	*7*
Drymocallis arguta	0.02	*8*					0.05	*17*					0.01	*5*
Erigeron caespitosus	0.02	*8*			0.04	*12*					1.50	*50*	0.09	*9*
Erigeron compositus											0.30	*100*	0.01	*5*
Erigeron subtrinervis	1.33	*69*			0.13	*29*	0.50	*17*	0.10	*33*			0.52	*36*
Eriogonum ovalifolium											1.00	*50*	0.05	*2*
Eriogonum umbellatum	0.35	*46*	0.77	*100*	1.13	*82*	0.38	*33*	0.10	*33*			0.65	*59*
Erysimum inconspicuum	0.02	*8*									0.15	*50*	0.01	*5*
Fragaria vesca	0.15	*31*					0.83	*17*					0.16	*11*
Fragaria virginiana	0.15	*15*					1.22	*33*					0.21	*9*
Frasera speciosa	0.02	*8*					0.17	*17*					0.03	*5*
Fritillaria pudica	0.02	*8*											0.01	*2*
Gaillardia aristata	0.17	*38*	0.10	*33*	0.30	*59*					0.15	*50*	0.18	*39*
Galium boreale	0.14	*46*	1.33	*33*	0.48	*65*	1.72	*83*	0.87	*100*	0.65	*100*	0.64	*64*
Gaura coccinea											0.15	*50*	0.01	*2*
Gentiana affinis	0.02	*8*			0.02	*6*							0.01	*5*
Geranium viscosissimum	1.20	*85*			0.27	*24*	0.72	*33*	0.67	*33*			0.60	*41*
Geum macrophyllum							0.67	*17*					0.09	*2*
Geum triflorum	2.69	*54*			3.88	*76*	2.38	*100*	11.67	*100*			3.42	*66*
Heuchera parvifolia	0.15	*31*			0.04	*12*	0.05	*17*					0.06	*16*
Linum lewisii					0.04	*12*	0.05	*17*			0.65	*100*	0.05	*11*

Table 3

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	ART TRI/POA PRA		*ART TRI/FES IDA*		*ART TRI/FES CAM*		*ART TRI-DAS FRU/ POA PRA*		*DAS FRU-ART TRI/ FES CAM*		MIXED SHRUB-SHALE OUTCROP		UPLAND SHRUBLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=13		n=3		n=17		n=6		n=3		n=2		n=44	
Lithophragma parviflorum							0.05	*17*					0.01	*2*
Lithospermum ruderale	0.84	*62*			0.23	*35*	0.67	*33*	0.10	*33*			0.43	*39*
Lomatium macrocarpum					0.13	*29*							0.05	*11*
Lupinus leucophyllus	1.20	*77*			0.02	*6*	1.83	*83*					0.61	*36*
Lupinus sericeus	0.97	*77*	1.53	*100*	2.61	*100*	2.17	*50*	5.67	*100*			2.08	*82*
Mertensia viridis							0.67	*17*					0.09	*2*
Musineon divaricatum											0.15	*50*	0.01	*2*
Noccaea fendleri	0.02	*8*											0.01	*2*
Orobanche fasciculata					0.02	*6*							0.01	*2*
Oxytropis sericea					0.02	*6*					0.15	*50*	0.01	*5*
Oxytropis splendens									0.33	*33*			0.02	*2*
Paronychia sessiliflora			1.10	*67*	0.04	*12*							0.09	*9*
Penstemon eriantherus											0.15	*50*	0.01	*2*
Penstemon nitidus											0.30	*100*	0.01	*5*
Penstemon procerus	0.41	*23*			0.06	*6*	0.77	*67*	0.20	*67*			0.26	*23*
Perideridia montana	0.12	*38*			0.06	*6*	0.10	*33*	0.10	*33*			0.08	*20*
Phacelia hastata											0.15	*50*	0.01	*2*
Phlox hoodii	0.15	*15*	4.00	*100*	1.36	*65*	1.33	*17*			3.50	*100*	1.19	*43*
Physaria didymocarpa											0.50	*50*	0.02	*2*
Potentilla gracilis	1.22	*92*	0.33	*33*	1.29	*82*	3.67	*83*	0.43	*67*			1.41	*77*
Potentilla hippiana			0.10	*33*	0.04	*12*							0.02	*7*
Potentilla pensylvanica	0.08	*8*	0.20	*67*	0.13	*29*	0.17	*17*			0.15	*50*	0.12	*23*
Pyrrocoma integrifolia					0.02	*6*	0.50	*33*	1.67	*67*			0.19	*11*
Sedum lanceolatum			0.20	*67*	0.05	*18*							0.03	*11*
Senecio canus			0.10	*33*	0.04	*12*					0.65	*100*	0.05	*11*
Senecio streptanthifolius	0.02	*8*			0.04	*12*	0.17	*17*	0.43	*67*			0.07	*14*
Silene drummondii					0.02	*6*							0.01	*2*
Sisyrinchium idahoense					0.02	*6*							0.01	*2*
Solidago missouriensis	1.53	*77*			1.22	*82*	2.50	*67*	1.67	*67*	0.15	*50*	1.39	*70*
Stenotus acaulis											3.50	*50*	0.16	*2*
Symphyotrichum ascendens	0.25	*38*	0.10	*33*	0.05	*18*	0.60	*50*			0.15	*50*	0.19	*30*
Symphyotrichum campestre	0.25	*15*			0.09	*29*	0.50	*50*	1.00	*67*			0.25	*27*
Symphyotrichum falcatum	0.46	*8*			0.18	*6*							0.20	*5*
Thalictrum venulosum	0.02	*8*											0.01	*2*
Trifolium longipes	0.28	*77*			0.17	*24*	0.05	*17*	0.10	*33*			0.16	*36*
Valeriana dioica							0.05	*17*					0.01	*2*
Vicia americana							0.17	*17*					0.02	*2*
Viola adunca	0.02	*8*			0.12	*6*	0.60	*50*	0.33	*33*			0.16	*14*
Viola nuttallii	0.07	*23*			0.02	*6*	0.05	*17*	0.33	*33*	0.15	*50*	0.06	*16*
Zigadenus venenosus	0.02	*8*			0.12	*41*			0.10	*33*			0.06	*20*
TOTAL NPF	**26.64**	***100***	**23.93**	***100***	**28.72**	***100***	**40.25**	***100***	**36.73**	***100***	**19.65**	***100***	**29.48**	***100***

Table 3

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	ART TRI/POA PRA		*ART TRI/FES IDA*		*ART TRI/FES CAM*		*ART TRI-DAS FRU/ POA PRA*		*DAS FRU-ART TRI/ FES CAM*		MIXED SHRUB-SHALE OUTCROP		UPLAND SHRUBLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=13		n=3		n=17		n=6		n=3		n=2		n=44	
INTRODUCED PERENNIAL FORBS														
Centaurea maculosa					0.41	*6*							0.16	*2*
Taraxacum officinale	0.45	*77*	0.43	*67*	0.15	*35*	4.22	*83*	0.33	*33*			0.82	*55*
TOTAL IPF	**0.45**	***77***	**0.43**	***67***	**0.56**	***41***	**4.22**	***83***	**0.33**	***33***			**0.98**	***57***
FERNS AND ALLIES														
Equisetum laevigatum							0.17	*17*					0.02	*2*
Selaginella densa	0.08	*8*	2.00	*33*	4.25	*47*	0.17	*17*					1.83	*25*
TOTAL FA	**0.08**	***8***	**2.00**	***33***	**4.25**	***47***	**0.33**	***33***					**1.85**	***27***
NATIVE ANNUAL/BIENNIAL FORBS														
Androsace occidentalis					0.02	*6*							0.01	*2*
Androsace septentrionalis	0.14	*46*	0.20	*67*	0.22	*59*	0.10	*33*					0.15	*45*
Collinsia parviflora					0.04	*12*							0.01	*5*
Gentianella amarella	0.02	*8*			0.15	*24*							0.07	*11*
Lappula squarrosa											0.15	*50*	0.01	*2*
Orthocarpus luteus	0.07	*23*			0.02	*6*	0.38	*33*	0.10	*33*			0.09	*16*
Orthocarpus tenuifolius					0.02	*6*							0.01	*2*
Turritis glabra	0.02	*8*											0.01	*2*
TOTAL NA/BF	**0.25**	***69***	**0.20**	***67***	**0.46**	***76***	**0.48**	***50***	**0.10**	***33***	**0.15**	***50***	**0.35**	***66***
INTRODUCED ANNUAL/BIENNIAL FORBS														
Alyssum alyssoides											1.50	*100*	0.07	*5*
Carduus nutans	0.02	*8*											0.01	*2*
Cynoglossum officinale	0.15	*8*					0.17	*17*					0.07	*5*
Medicago lupulina			0.10	*33*			0.33	*17*			2.00	*50*	0.14	*7*
Thlaspi arvense	0.02	*8*											0.01	*2*
Tragopogon dubius	0.05	*15*									0.15	*50*	0.02	*7*
TOTAL IA/BF	**0.25**	***31***	**0.10**	***33***			**0.50**	***17***			**3.65**	***100***	**0.31**	***18***
SHRUBS														
Artemisia tridentata	38.92	*100*	26.33	*100*	40.24	*100*	22.67	*100*	13.00	*100*	1.50	*50*	32.89	*98*
Clematis occidentalis	0.22	*31*			0.05	*18*	0.05	*17*					0.09	*18*
Dasiphora fruticosa	0.53	*31*	0.33	*33*	0.08	*12*	18.50	*100*	19.67	*100*	3.00	*100*	4.21	*41*
Juniperus communis	0.51	*23*			0.88	*18*	0.67	*17*			0.15	*50*	0.59	*18*
Juniperus horizontalis							0.50	*17*			4.00	*100*	0.25	*7*
Rosa woodsii					0.08	*12*	0.83	*17*			0.30	*100*	0.16	*11*
TOTAL SHRUBS	**40.18**	***100***	**26.67**	***100***	**41.32**	***100***	**43.22**	***100***	**32.67**	***100***	**8.95**	***100***	**38.18**	***100***

Table 3

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	ART TRI/POA PRA		*ART TRI/FES IDA*		*ART TRI/FES CAM*		*ART TRI-DAS FRU/ POA PRA*		*DAS FRU-ART TRI/ FES CAM*		MIXED SHRUB-SHALE OUTCROP		UPLAND SHRUBLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=13		n=3		n=17		n=6		n=3		n=2		n=44	
TREES (0.01-acre)														
Juniperus scopulorum	0.15	*8*			0.12	*6*							0.09	*5*
Pseudotsuga menziesii	0.38	*8*			0.25	*12*					2.00	*50*	0.30	*9*
TOTAL TREES (0.01-acre)	**0.54**	***15***			**0.37**	***18***					**2.00**	***50***	**0.39**	***14***
TREES (0.1-acre)														
Juniperus scopulorum	0.05	*15*			0.05	*18*							0.03	*11*
Pseudotsuga menziesii	0.20	*23*			0.31	*35*					1.00	*50*	0.22	*23*
TOTAL TREES (0.1-acre)	**0.25**	***38***			**0.36**	***41***					**1.00**	***50***	**0.26**	***30***
TOTAL VEGETATION (Stratified)	**150.89**	***100***	**87.67**	***100***	**138.99**	***100***	**164.35**	***100***	**148.33**	***100***	**43.85**	***100***	**138.78**	***100***

Nomenclature follows Lesica (2012).

Table 4

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
GROUND COVER																
Bare Ground	12	*100*	7.66	*92*	4.91	*75*	2.00	*50*	5.64	*82*	3.33	*75*	2.00	*100*	5.66	*83*
Rock	6	*100*	7.08	*67*	1.79	*38*	0.50	*50*	3.66	*45*	1.25	*25*	4.00	*50*	3.99	*50*
Litter	65	*100*	66.67	*100*	70.00	*100*	83.50	*100*	63.18	*100*	49.50	*100*	68.50	*100*	65.55	*100*
Lichens	4	*100*	1.68	*92*	3.33	*100*	0.30	*100*	2.26	*100*	1.83	*100*	3.00	*100*	2.24	*98*
Moss	8	*100*	13.61	*92*	17.29	*100*	11.15	*100*	21.75	*100*	41.25	*100*	15.00	*100*	19.16	*98*
Water													1.50	*50*	0.08	*3*
Basal Vegetation	5	*100*	3.33	*100*	2.75	*100*	2.50	*100*	3.64	*100*	3.00	*100*	6.00	*100*	3.40	*100*
VEGETATION STRUCTURE (nonstratified cover)																
Total Vegetation	90	*100*	72.83	*100*	79.38	*100*	59.50	*100*	78.73	*100*	79.75	*100*	96.00	*100*	77.38	*100*
Perennial Graminoids	29	*100*	29.92	*100*	11.25	*100*	2.50	*100*	27.64	*100*	13.75	*100*	52.50	*100*	23.68	*100*
Annual Graminoids									0.09	*9*					0.03	*3*
Perennial Forbs and Subshrubs	37	*100*	21.08	*100*	14.88	*100*	4.50	*100*	21.82	*100*	28.50	*100*	41.50	*100*	21.38	*100*
Annual/Biennial Forbs	0.3	*100*	0.23	*58*	0.58	*38*	1.15	*100*	1.17	*73*	0.15	*50*	0.65	*100*	0.62	*63*
Shrubs	25	*100*	7.86	*100*	36.75	*100*			28.45	*100*	47.50	*100*	16.50	*100*	23.73	*95*
Trees (0.01-acre)	40	*100*	42.25	*100*	47.13	*100*	55.00	*100*	34.91	*100*	27.25	*100*	48.00	*100*	40.58	*100*
Trees (0.1-acre)	45	*100*	41.00	*100*	50.63	*100*	74.00	*100*	44.82	*100*	42.75	*100*	40.00	*100*	45.85	*100*
CLASS\SPECIES																
NATIVE PERENNIAL GRAMINOIDS																
Agropyron spicatum			4.53	*67*	1.41	*38*									1.64	*28*
Agropyron trachycaulum	1	*100*	0.24	*42*	0.04	*13*			0.33	*36*	0.25	*25*	0.50	*50*	0.25	*33*
Agrostis exarata													1.00	*50*	0.05	*3*
Agrostis scabra			0.61	*25*	0.28	*63*	0.65	*100*	0.45	*45*	0.40	*75*	0.15	*50*	0.44	*48*
Bromus carinatus			0.25	*8*	0.13	*13*			0.55	*27*			1.00	*50*	0.30	*15*
Calamagrostis rubescens			0.11	*17*	0.95	*50*	0.30	*100*	4.30	*73*	6.75	*100*	9.00	*50*	2.55	*53*
Carex disperma													27.00	*50*	1.35	*3*
Carex eleocharis			0.13	*25*											0.04	*8*
Carex geyeri									2.55	*18*	2.50	*25*	6.00	*50*	1.25	*10*
Carex hoodii									0.03	*9*					0.01	*3*
Carex microptera													0.15	*50*	0.01	*3*
Carex obtusata			0.03	*8*											0.01	*3*
Carex petasata	3	*100*	0.05	*17*					0.14	*45*					0.13	*20*
Carex rossii			0.69	*50*	0.69	*100*	0.15	*50*	1.66	*64*	0.40	*75*			0.85	*63*
Danthonia intermedia	4	*100*	1.30	*50*	0.95	*50*			0.20	*45*	0.08	*25*			0.74	*43*
Danthonia unispicata			1.05	*42*											0.32	*13*
Deschampsia cespitosa													0.15	*50*	0.01	*3*
Elymus glaucus											0.08	*25*			0.01	*3*

Table 4

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
Festuca campestris			4.25	*100*	0.79	*63*			1.03	*64*	0.50	*50*			1.77	*65*
Festuca idahoensis	2	*100*	11.67	*100*	1.11	*88*			0.85	*55*	0.58	*50*			4.06	*70*
Glyceria striata													2.00	*50*	0.10	*3*
Juncus balticus													0.15	*50*	0.01	*3*
Koeleria macrantha	0.3		0.48	*58*	0.04	*13*			0.05	*18*					0.18	*25*
Luzula campestris									0.09	*9*					0.03	*3*
Poa interior			0.86	*25*	0.75	*13*									0.41	*10*
Poa secunda			0.44	*25*	0.04	*13*			0.55	*18*					0.29	*15*
Stipa nelsonii	12	*100*	1.97	*67*	0.41	*25*			1.08	*82*	0.25	*25*			1.30	*53*
Stipa richardsonii	4	*100*	0.86	*33*	0.20	*38*			0.15	*27*	0.25	*25*			0.46	*30*
Trisetum spicatum			0.11	*17*	0.16	*25*			0.21	*27*	0.50	*25*			0.17	*20*
TOTAL NPG	**26.3**	*100*	**29.62**	***100***	**7.94**	***100***	**1.10**	***100***	**14.19**	***100***	**12.53**	***100***	**47.10**	***100***	**18.70**	***100***
INTRODUCED PERENNIAL GRAMINOIDS																
Phleum pratense			1.17	*8*					2.82	*36*	1.00	*25*	6.00	*50*	1.53	*18*
Poa palustris									0.05	*18*					0.02	*5*
Poa pratensis	6	*100*	2.17	*58*	4.16	*63*	1.65	*100*	12.48	*91*	1.75	*25*	5.00	*50*	5.57	*68*
TOTAL IPG	**6.0**	*100*	**3.33**	***58***	**4.16**	***63***	**1.65**	***100***	**15.35**	***100***	**2.75**	***25***	**11.00**	***50***	**7.11**	***70***
INTRODUCED ANNUAL GRAMINOIDS																
Bromus tectorum									0.09	*9*					0.03	*3*
TOTAL IAG									**0.09**	***9***					**0.03**	***3***
NATIVE PERENNIAL FORBS AND SUBSHRUBS																
Achillea millefolium	0.3	*100*	0.27	*50*					0.16	*55*	0.15	*50*	0.15	*50*	0.16	*40*
Actaea rubra													1.65	*100*	0.08	*5*
Agoseris glauca	0.3	*100*	0.03	*8*					0.03	*9*	0.08	*25*			0.03	*10*
Allium brevistylum									0.03	*9*			0.15	*50*	0.02	*5*
Allium cernuum	0.3	*100*	0.25	*83*	0.11	*38*	0.15	*50*	0.16	*55*	0.08	*25*			0.17	*55*
Anemone multifida	0.3	*100*	0.43	*58*	0.29	*38*			0.20	*45*					0.25	*40*
Anemone patens									0.03	*9*					0.01	*3*
Antennaria anaphaloides			0.05	*17*	0.04	*13*			0.20	*45*	0.08	*25*			0.09	*23*
Antennaria corymbosa													0.15	*50*	0.01	*3*
Antennaria neglecta					1.88	*13*			0.09	*9*					0.40	*5*
Antennaria parvifolia	5	*100*	2.22	*67*	2.11	*63*	0.65	*100*	1.27	*18*	0.33	*50*			1.63	*50*
Antennaria racemosa			0.11	*17*	0.50	*38*			0.21	*18*	1.65	*75*	0.15	*50*	0.36	*28*
Antennaria rosea			1.91	*83*	0.79	*50*					0.25	*25*			0.76	*38*
Antennaria umbrinella									0.18	*9*					0.05	*3*
Arabis nuttallii			0.08	*25*											0.02	*8*
Arenaria congesta	1	*100*	0.29	*50*	0.04	*13*			0.05	*18*					0.14	*25*

Table 4
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven
CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
Arnica cordifolia			0.08	*8*	1.33	*63*	0.15	*50*	1.75	*36*	2.08	*100*	0.50	*50*	1.01	*40*
Arnica fulgens			0.03	*8*											0.01	*3*
Arnica sororia	1	*100*	0.16	*33*							0.08	*25*			0.08	*15*
Artemisia dracunculus			0.17	*8*											0.05	*3*
Artemisia frigida			0.11	*17*											0.03	*5*
Artemisia ludoviciana	20	*100*	0.58	*17*											0.68	*8*
Astragalus adsurgens			0.78	*42*	0.25	*13*			0.27	*18*					0.36	*20*
Astragalus miser			0.80	*33*	1.00	*25*			1.03	*45*	0.83	*75*			0.81	*35*
Astragalus purshii			0.05	*17*											0.02	*5*
Balsamorhiza sagittata	0.3	*100*	1.19	*33*					0.03	*9*					0.37	*15*
Berberis repens			0.08	*8*	0.49	*63*			0.78	*36*	2.00	*100*			0.54	*35*
Besseya wyomingensis			0.03	*8*					0.03	*9*					0.02	*5*
Boechera pendulocarpa			0.03	*8*											0.01	*3*
Boechera stricta			0.05	*17*											0.02	*5*
Campanula rotundifolia	0.3	*100*	0.15	*50*	0.08	*25*			0.16	*55*	0.23	*75*	0.15	*50*	0.14	*48*
Cardamine breweri													0.15	*50*	0.01	*3*
Castilleja miniata													0.15	*50*	0.01	*3*
Cerastium arvense	5	*100*	1.99	*83*	0.13	*13*	0.15	*50*	0.33	*45*					0.85	*45*
Chamerion angustifolium			0.03	*8*					0.03	*9*	0.08	*25*	1.00	*50*	0.07	*10*
Cirsium undulatum			0.03	*8*											0.01	*3*
Clematis hirsutissima			0.13	*25*											0.04	*8*
Comandra umbellata			0.03	*8*											0.01	*3*
Conimitella williamsii					0.04	*13*									0.01	*3*
Corallorhiza wisteriana											0.08	*25*			0.01	*3*
Crepis acuminata			0.13	*25*	0.04	*13*			0.03	*9*					0.06	*13*
Crepis atribarba	0.3	*100*							0.03	*9*					0.02	*5*
Dodecatheon conjugens			0.05	*17*					0.03	*9*					0.02	*8*
Draba oligosperma			0.03	*8*											0.01	*3*
Drymocallis arguta									0.12	*18*					0.03	*5*
Epilobium ciliatum													0.15	*50*	0.01	*3*
Erigeron caespitosus			0.53	*25*											0.16	*8*
Erigeron speciosus									0.18	*9*					0.05	*3*
Erigeron subtrinervis			0.69	*42*	0.41	*25*			0.48	*18*	0.15	*50*			0.44	*28*
Eriogonum umbellatum	1	*100*	0.25	*25*					0.03	*9*					0.11	*13*
Eurybia conspicua					0.41	*50*			1.18	*36*	4.50	*100*	20.00	*50*	1.86	*33*
Fragaria vesca			0.38	*42*	0.91	*50*	0.15	*50*	1.85	*36*	1.50	*75*			0.96	*43*
Fragaria virginiana			1.00	*33*	1.08	*63*			2.48	*55*	1.33	*75*	2.00	*100*	1.43	*50*
Frasera speciosa			0.03	*8*	0.13	*13*			0.03	*9*	0.15	*50*			0.06	*13*
Fritillaria atropurpurea					0.04	*13*									0.01	*3*
Gaillardia aristata	1	*100*	0.05	*17*					0.03	*9*					0.05	*10*

Table 4
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
Galium boreale			0.34	*67*	0.11	*38*	0.65	*100*	0.93	*82*	0.30	*100*	1.50	*50*	0.52	*68*
Galium trifidum													0.15	*50*	0.01	*3*
Geranium richardsonii													3.00	*100*	0.15	*5*
Geranium viscosissimum			0.17	*8*					0.05	*18*					0.07	*8*
Geum macrophyllum													1.00	*50*	0.05	*3*
Geum rivale													0.50	*50*	0.03	*3*
Geum triflorum	1	*100*	0.50	*25*	0.25	*13*			0.45	*55*	0.33	*50*			0.38	*33*
Helianthella uniflora	1	*100*													0.03	*3*
Heuchera cylindrica			0.08	*8*	0.38	*25*			0.38	*55*	0.65	*100*	0.50	*50*	0.30	*35*
Heuchera parvifolia			0.10	*33*	0.20	*38*	1.50	*100*	0.03	*9*					0.15	*25*
Hieracium albiflorum					0.13	*13*									0.03	*3*
Hieracium scouleri									0.03	*9*					0.01	*3*
Linnaea borealis					0.08	*25*					10.75	*100*	3.50	*100*	1.27	*20*
Linum lewisii					0.04	*13*									0.01	*3*
Lithophragma parviflorum			0.03	*8*			0.30	*100*	0.03	*9*					0.03	*10*
Lithospermum ruderale	0.3	*100*	0.58	*50*	0.15	*50*			0.54	*64*	0.15	*50*			0.37	*50*
Lomatium dissectum	0.3	*100*													0.01	*3*
Lomatium macrocarpum			0.05	*17*											0.02	*5*
Lupinus argenteus			0.03	*8*											0.01	*3*
Lupinus leucophyllus									0.18	*9*	0.25	*25*			0.08	*5*
Lupinus sericeus	0.3	*100*	0.44	*25*	0.04	*13*			0.60	*45*					0.31	*25*
Mentha arvensis													0.50	*50*	0.03	*3*
Mertensia viridis			0.33	*17*	0.04	*13*			0.26	*36*					0.18	*18*
Micranthes odontoloma													0.50	*50*	0.03	*3*
Moehringia lateriflora									0.03	*9*					0.01	*3*
Moneses uniflora													0.15	*50*	0.01	*3*
Noccaea fendleri			0.03	*8*											0.01	*3*
Orthilia secunda					0.04	*13*					0.15	*50*	0.15	*50*	0.03	*10*
Osmorhiza chilensis					0.04	*13*			0.03	*9*			0.50	*50*	0.04	*8*
Osmorhiza occidentalis									0.03	*9*	0.08	*25*	1.00	*50*	0.07	*8*
Oxytropis sericea	0.3	*100*													0.01	*3*
Pedicularis groenlandica													0.15	*50*	0.01	*3*
Penstemon procerus			0.28	*17*											0.08	*5*
Perideridia montana									0.09	*9*					0.03	*3*
Phlox hoodii			1.00	*33*	0.25	*13*									0.35	*13*
Platanthera obtusata													0.15	*50*	0.01	*3*
Potentilla anserina			0.58	*8*											0.18	*3*
Potentilla gracilis			0.91	*58*	0.49	*75*	0.15	*50*	1.42	*73*	0.33	*50*	0.15	*50*	0.81	*63*
Potentilla hippiana			0.03	*8*					0.03	*9*					0.02	*5*
Potentilla pensylvanica			0.30	*33*	0.04	*13*									0.10	*13*

Table 4
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
Prosartes trachycarpa									0.03	*9*	0.15	*50*			0.02	*8*
Prunella vulgaris													0.15	*50*	0.01	*3*
Pyrola asarifolia													0.15	*50*	0.01	*3*
Pyrola chlorantha					0.11	*38*							0.15	*50*	0.03	*10*
Pyrola minor													0.15	*50*	0.01	*3*
Ranunculus uncinatus													0.15	*50*	0.01	*3*
Sedum lanceolatum			0.10	*33*	0.11	*38*	0.30	*100*	0.05	*18*	0.15	*50*			0.10	*33*
Senecio canus			0.03	*8*											0.01	*3*
Senecio integerrimus	0.3	*100*													0.01	*3*
Senecio pseudaureus													0.15	*50*	0.01	*3*
Senecio streptanthifolius			0.11	*17*	0.04	*13*			0.05	*18*					0.06	*13*
Silene drummondii			0.10	*33*					0.08	*27*	0.08	*25*			0.06	*20*
Smilacina racemosa					0.04	*13*			0.57	*27*			1.00	*50*	0.22	*13*
Smilacina stellata					0.04	*13*			0.08	*27*	0.15	*50*	0.15	*50*	0.05	*18*
Solidago missouriensis	1	*100*	1.04	*83*	0.15	*50*			0.09	*9*	0.25	*25*			0.42	*43*
Stellaria crispa													2.50	*50*	0.13	*3*
Stellaria longifolia													0.15	*50*	0.01	*3*
Symphyotrichum ascendens									0.03	*9*	0.25	*25*			0.03	*5*
Symphyotrichum campestre											0.08	*25*			0.01	*3*
Symphyotrichum falcatum	1	*100*													0.03	*3*
Symphyotrichum subspicatum													0.15	*50*	0.01	*3*
Thalictrum venulosum			0.03	*8*					0.51	*55*	1.00	*25*	1.50	*50*	0.32	*23*
Trifolium longipes			0.03	*8*					0.26	*36*	0.08	*25*	0.15	*50*	0.10	*18*
Valeriana dioica			0.05	*17*	1.11	*75*	0.15	*50*	1.66	*64*	0.65	*75*			0.77	*48*
Veronica americana													0.15	*50*	0.01	*3*
Viola adunca	0.3	*100*			0.04	*13*	0.50	*50*	0.30	*18*					0.12	*13*
Viola nuttallii			0.03	*8*	0.04	*13*									0.02	*5*
Zigadenus elegans									0.27	*9*	0.25	*25*	0.15	*50*	0.11	*8*
Zigadenus venenosus	0.3	*100*	0.03	*8*											0.02	*5*
TOTAL NPF	**42.2**	***100***	**22.52**	***100***	**15.99**	***100***	**4.80**	***100***	**22.57**	***100***	**31.70**	***100***	**46.55**	***100***	**22.95**	***100***
INTRODUCED PERENNIAL FORBS																
Cirsium arvense											0.25	*25*	0.15	*50*	0.03	*5*
Silene latifolia									0.18	*9*					0.05	*3*
Taraxacum officinale	0.3	*100*	0.21	*50*	0.28	*63*	0.15	*50*	0.54	*45*	0.15	*50*	0.50	*50*	0.32	*53*
TOTAL IPF	**0.3**	***100***	**0.21**	***50***	**0.28**	***63***	**0.15**	***50***	**0.72**	***45***	**0.40**	***50***	**0.65**	***100***	**0.40**	***55***

Table 4
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
FERNS AND ALLIES																
Cystopteris fragilis													0.15	*50*	0.01	*3*
Selaginella densa			0.83	*8*											0.25	*3*
Woodsia oregana			0.03	*8*											0.01	*3*
TOTAL FA			**0.86**	***17***									**0.15**	***50***	**0.27**	***8***
NATIVE ANNUAL/BIENNIAL FORBS																
Androsace filiformis													0.15	*50*	0.01	*3*
Androsace occidentalis							0.15	*50*							0.01	*3*
Androsace septentrionalis			0.03	*8*			0.15	*50*	0.08	*27*					0.04	*13*
Boechera divaricarpa			0.03	*8*					0.03	*9*					0.02	*5*
Chenopodium fremontii							0.50	*50*							0.03	*3*
Collinsia parviflora			0.08	*25*			0.30	*100*	0.03	*9*					0.05	*15*
Collomia linearis	0.3	*100*	0.05	*17*			0.15	*50*	0.03	*9*					0.04	*13*
Descurainia incana					0.04	*13*									0.01	*3*
Epilobium brachycarpum			0.03	*8*					0.03	*9*					0.02	*5*
Gentianella amarella					0.04	*13*			0.09	*9*	0.15	*50*			0.05	*10*
Lappula squarrosa			0.03	*8*			0.15	*50*							0.02	*5*
Microsteris gracilis									0.03	*9*					0.01	*3*
Phacelia linearis			0.03	*8*											0.01	*3*
Polygonum douglasii							0.15	*50*	0.03	*9*					0.02	*5*
Turritis glabra									0.05	*18*					0.02	*5*
TOTAL NA/BF	**0.3**	***100***	**0.25**	***42***	**0.08**	***25***	**1.55**	***100***	**0.39**	***55***	**0.15**	***50***	**0.15**	***50***	**0.31**	***48***
INTRODUCED ANNUAL/BIENNIAL FORBS																
Alyssum alyssoides			0.11	*17*											0.03	*5*
Carduus nutans					0.13	*13*			0.27	*9*					0.10	*5*
Cynoglossum officinale					0.38	*13*			0.45	*36*			0.50	*50*	0.23	*15*
Descurainia sophia							0.15	*50*	0.09	*9*					0.03	*5*
Thlaspi arvense			0.03	*8*					0.03	*9*					0.02	*5*
Tragopogon dubius									0.05	*18*					0.02	*5*
TOTAL IA/BF			**0.13**	***25***	**0.50**	***13***	**0.15**	***50***	**0.90**	***55***			**0.50**	***50***	**0.42**	***30***
SHRUBS																
Amelanchier alnifolia			0.03	*8*							0.25	*25*			0.03	*5*
Arctostaphylos uva-ursi			0.67	*25*	7.38	*75*			10.64	*64*	10.00	*100*			5.60	*50*
Artemisia tridentata	25	*100*	3.03	*33*	0.16	*25*			0.12	*18*					1.60	*23*
Clematis occidentalis					0.75	*25*			0.75	*18*	0.08	*25*	1.50	*50*	0.44	*15*
Dasiphora fruticosa			0.03	*8*	0.63	*13*			0.05	*18*					0.15	*10*
Juniperus communis			2.11	*67*	25.25	*100*			1.73	*27*	34.00	*100*	1.15	*100*	9.62	*63*

Table 4

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

	PSE MEN/FES IDA		*PSE MEN/FES CAM*		*PSE MEN/JUN COM*		*PSE MEN/CAL RUB*		*PSE MEN/SYM ALB*		*PSE MEN/LIN BOR*		*PIC ENG/LIN BOR*		**CONIFER FOREST AND WOODLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=12**		**n=8**		**n=2**		**n=11**		**n=4**		**n=2**		**n=40**	
Juniperus horizontalis			0.33	*8*											0.10	*3*
Lonicera utahensis											0.25	*25*			0.03	*3*
Prunus virginiana									0.09	*9*	0.50	*25*			0.08	*5*
Ribes cereum			0.03	*8*	0.04	*13*									0.02	*5*
Ribes inerme			0.17	*8*					0.09	*9*					0.08	*5*
Ribes setosum			0.11	*17*	0.63	*25*			1.18	*36*	0.50	*25*	3.50	*100*	0.71	*28*
Rosa acicularis													0.50	*50*	0.03	*3*
Rosa woodsii			0.49	*50*	0.79	*50*			1.33	*82*	1.25	*75*	1.50	*50*	0.87	*58*
Rubus idaeus					0.38	*13*			0.36	*18*	0.08	*25*	2.00	*50*	0.28	*13*
Salix bebbiana													1.50	*50*	0.08	*3*
Shepherdia canadensis					0.38	*25*			0.27	*18*	1.08	*75*	0.15	*50*	0.27	*20*
Spiraea betulifolia			0.50	*25*	2.45	*75*			5.03	*55*	2.33	*100*	2.00	*50*	2.36	*50*
Symphoricarpos albus			0.69	*42*	1.13	*38*			9.82	*100*	4.75	*100*	4.50	*50*	3.83	*60*
Vaccinium scoparium					0.04	*13*									0.01	*3*
TOTAL SHRUBS	**25.0**	***100***	**8.17**	***100***	**39.98**	***100***			**31.46**	***100***	**55.05**	***100***	**18.30**	***100***	**26.14**	***95***
TREES (0.01-acre)																
Juniperus scopulorum			5.36	*50*	0.25	*13*			0.27	*9*	0.08	*25*			1.74	*23*
Picea engelmannii													40.00	*100*	2.00	*5*
Pinus contorta			0.83	*8*	9.00	*25*			0.09	*9*	1.25	*25*	1.00	*50*	2.25	*15*
Pinus flexilis					0.25	*13*									0.05	*3*
Pinus ponderosa			0.03	*8*											0.01	*3*
Pseudotsuga menziesii	40	*100*	38.67	*100*	38.00	*100*	55.00	*100*	34.82	*100*	26.75	*100*	7.65	*100*	35.58	*100*
TOTAL TREES (0.01-acre)	**40.0**	***100***	**44.88**	***100***	**47.50**	***100***	**55.00**	***100***	**35.18**	***100***	**28.08**	***100***	**48.65**	***100***	**41.63**	***100***
TREES (0.1-acre)																
Juniperus scopulorum			1.83	*67*	0.16	*25*			0.12	*18*	0.08	*25*			0.62	*33*
Picea engelmannii													31.50	*100*	1.58	*5*
Pinus contorta			0.50	*17*	8.83	*63*			0.09	*9*	4.08	*50*	1.50	*50*	2.42	*28*
Pinus flexilis					0.16	*25*							0.15	*50*	0.04	*8*
Pinus ponderosa			0.44	*25*											0.13	*8*
Populus tremuloides											0.08	*25*	0.15	*50*	0.02	*5*
Pseudotsuga menziesii	45	*100*	39.75	*100*	41.88	*100*	74.00	*100*	44.82	*100*	39.75	*100*	8.00	*100*	41.83	*100*
TOTAL TREES (0.1-acre)	**45.0**	***100***	**42.52**	***100***	**51.03**	***100***	**74.00**	***100***	**45.03**	***100***	**43.98**	***100***	**41.30**	***100***	**46.63**	***100***
TOTAL VEGETATION (Stratified)	**140.1**	***100***	**109.97**	***100***	**116.41**	***100***	**64.40**	***100***	**120.86**	***100***	**130.65**	***100***	**173.05**	***100***	**117.95**	***100***

Nomenclature follows Lesica (2012).

Table 5

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for the LOWLAND ALTERED GRASSLAND and Three HERBACEOUS RIPARIAN AND WETLAND Community Types, Black Butte Baseline Study Area, 2015.

	LOWLAND ALTERED GRASSLAND (HAY MEADOW)		*JUN BAL*		*CAR NEB*		*CAR UTR*		HERBACEOUS RIPARIAN AND WETLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=16		n=5		n=2		n=8		n=15	
GROUND COVER										
Bare Ground	0.18	*25*			0.15	*50*	1.04	*25*	0.57	*20*
Rock	0.04	*13*								
Litter	85.75	*100*	81.80	*100*	57.00	*100*	49.75	*100*	61.40	*100*
Lichens										
Moss	7.22	*75*	11.20	*40*	16.65	*100*	14.16	*88*	13.51	*73*
Water			0.60	*20*	18.00	*50*	26.63	*88*	16.80	*60*
Basal Vegetation	6.88	*100*	6.40	*100*	8.00	*100*	8.50	*100*	7.73	*100*
VEGETATION STRUCTURE (nonstratified cover)										
Total Vegetation	92.56	*100*	88.00	*100*	91.00	*100*	91.75	*100*	90.40	*100*
Perennial Graminoids	83.25	*100*	80.00	*100*	82.00	*100*	89.13	*100*	85.13	*100*
Annual Graminoids										
Perennial Forbs and Subshrubs	46.06	*100*	37.40	*100*	34.50	*100*	10.25	*88*	22.53	*93*
Annual/Biennial Forbs	12.24	*81*	0.66	*40*	0.50	*50*	0.25	*13*	0.42	*27*
Shrubs			2.20	*60*	4.50	*50*	2.91	*50*	2.89	*53*
Trees (0.01-acre)										
Trees (0.1-acre)										
CLASS\SPECIES										
NATIVE PERENNIAL GRAMINOIDS										
Agropyron trachycaulum	0.06	*6*								
Anthoxanthum hirtum			1.06	*40*	0.50	*50*	0.04	*13*	0.44	*27*
Bromus pumpellianus			0.06	*20*					0.02	*7*
Calamagrostis stricta			3.66	*40*	8.00	*50*	0.75	*25*	2.69	*33*
Carex aquatilis			1.60	*40*	4.00	*50*	8.00	*38*	5.33	*40*
Carex atherodes	0.02	*6*								
Carex microptera			0.46	*40*					0.15	*13*
Carex nebrascensis	0.52	*13*	1.00	*40*	41.00	*100*	10.13	*75*	11.20	*67*
Carex pellita	0.25	*6*	3.40	*40*					1.13	*13*
Carex praegracilis	8.56	*44*	16.20	*100*	11.00	*100*	3.00	*25*	8.47	*60*
Carex praticola			0.20	*20*					0.07	*7*
Carex simulata							4.00	*38*	2.13	*20*
Carex utriculata	0.13	*6*			0.15	*50*	69.00	*100*	36.82	*60*
Deschampsia cespitosa	2.00	*25*	4.20	*80*	6.00	*100*	1.00	*50*	2.73	*67*
Eleocharis palustris					3.00	*50*	0.63	*25*	0.73	*20*
Festuca rubra	0.19	*6*	6.20	*80*	1.50	*50*	1.29	*25*	2.95	*47*
Glyceria striata					1.00	*50*	0.13	*13*	0.20	*13*

Table 5
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for the LOWLAND ALTERED GRASSLAND and Three HERBACEOUS RIPARIAN AND WETLAND Community Types, Black Butte Baseline Study Area, 2015.

	LOWLAND ALTERED GRASSLAND (HAY MEADOW)		*JUN BAL*		*CAR NEB*		*CAR UTR*		HERBACEOUS RIPARIAN AND WETLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=16		n=5		n=2		n=8		n=15	
Hordeum brachyantherum	0.02	*6*	0.20	*20*	1.00	*50*			0.20	*13*
Hordeum jubatum			2.80	*20*					0.93	*7*
Juncus balticus	7.50	*56*	37.60	*100*	15.00	*50*	4.13	*38*	16.73	*60*
Juncus longistylis	0.04	*13*								
Muhlenbergia richardsonis	0.06	*6*			1.00	*50*			0.13	*7*
TOTAL NPG	**19.34**	***63***	**78.64**	***100***	**93.15**	***100***	**102.08**	***100***	**93.07**	***100***
INTRODUCED PERENNIAL GRAMINOIDS										
Agropyron repens	0.25	*13*								
Agrostis stolonifera	1.58	*50*								
Alopecurus arundinaceus	11.14	*56*	1.20	*20*			8.75	*13*	5.07	*13*
Alopecurus pratensis							2.00	*13*	1.07	*7*
Bromus inermis	7.13	*38*								
Dactylis glomerata	0.02	*6*								
Phleum pratense	37.25	*88*	10.00	*80*			1.13	*13*	3.93	*33*
Poa compressa										
Poa palustris	4.13	*19*	5.46	*80*	4.00	*50*	0.75	*25*	2.75	*47*
Poa pratensis	27.50	*94*	9.40	*80*	3.50	*50*	1.50	*13*	4.40	*40*
Schedonorus arundinaceus	0.31	*13*								
Schedonorus pratensis	3.63	*38*								
TOTAL IPG	**92.93**	***100***	**26.06**	***100***	**7.50**	***50***	**14.13**	***38***	**17.22**	***60***
NATIVE PERENNIAL FORBS AND SUBSHRUBS										
Achillea millefolium	0.58	*38*	0.06	*20*					0.02	*7*
Agoseris glauca			0.06	*20*					0.02	*7*
Allium geyeri	0.04	*13*								
Allium schoenoprasum	0.44	*6*	0.60	*20*					0.20	*7*
Anemone multifida	0.02	*6*								
Antennaria microphylla	0.02	*6*								
Arnica chamissonis	0.23	*19*								
Artemisia ludoviciana	0.02	*6*								
Campanula rotundifolia	0.02	*6*								
Cerastium arvense	0.13	*6*								
Cicuta maculata							0.13	*13*	0.07	*7*
Crepis runcinata	0.04	*13*								
Dodecatheon pulchellum	0.44	*19*	0.46	*40*					0.15	*13*
Epilobium ciliatum							0.04	*13*	0.02	*7*
Epilobium palustre			0.06	*20*			0.24	*50*	0.15	*33*
Erigeron lonchophyllus	0.02	*6*								

Table 5
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for the LOWLAND ALTERED GRASSLAND and Three HERBACEOUS RIPARIAN AND WETLAND Community Types, Black Butte Baseline Study Area, 2015.

	LOWLAND ALTERED GRASSLAND (HAY MEADOW)		*JUN BAL*		*CAR NEB*		*CAR UTR*		HERBACEOUS RIPARIAN AND WETLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=16		n=5		n=2		n=8		n=15	
Fragaria virginiana	0.08	*13*	0.06	*20*					0.02	*7*
Galium boreale	0.16	*25*	0.06	*20*					0.02	*7*
Galium trifidum					0.15	*50*	0.11	*38*	0.08	*27*
Geum aleppicum			1.20	*40*					0.40	*13*
Geum macrophyllum							0.13	*13*	0.07	*7*
Geum rivale	1.25	*13*	2.92	*60*	0.15	*50*			0.99	*27*
Lupinus leucophyllus	0.50	*6*								
Mentha arvensis	0.06	*6*	1.00	*20*	14.00	*50*	1.75	*50*	3.13	*40*
Oxytropis splendens	0.38	*6*								
Pedicularis groenlandica			1.20	*40*					0.40	*13*
Polygonum amphibium	0.13	*6*	1.60	*20*	1.00	*50*	0.04	*13*	0.69	*20*
Potamogeton filiformis							0.13	*13*	0.07	*7*
Potentilla anserina	0.91	*19*			2.00	*50*	2.25	*13*	1.47	*13*
Potentilla gracilis	3.27	*88*	3.86	*100*	1.50	*50*	0.38	*13*	1.69	*47*
Pyrrocoma integrifolia	0.13	*6*								
Ranunculus acriformis	0.33	*19*								
Ranunculus macounii							0.25	*13*	0.13	*7*
Rumex occidentalis							1.04	*50*	0.55	*27*
Senecio sphaerocephalus	0.46	*19*	3.20	*20*			1.50	*13*	1.87	*13*
Sisyrinchium idahoense	0.02	*6*								
Solidago canadensis (S. lepida)	0.04	*13*	0.06	*20*					0.02	*7*
Stachys palustris			0.60	*20*	19.00	*50*	1.50	*13*	3.53	*20*
Stellaria longifolia			0.06	*20*			0.25	*13*	0.15	*13*
Stellaria longipes			0.06	*20*					0.02	*7*
Symphyotrichum boreale							0.04	*13*	0.02	*7*
Symphyotrichum lanceolatum var. hesperium							1.13	*13*	0.60	*7*
Symphyotrichum subspicatum	0.66	*69*	7.06	*100*	0.50	*50*			2.42	*40*
Thalictrum venulosum	0.02	*6*								
Trifolium longipes	0.19	*13*	0.60	*40*					0.20	*13*
Viola nephrophylla	0.02	*6*	1.60	*40*	2.15	*100*	0.66	*63*	1.17	*60*
Zizia aptera			0.06	*20*					0.02	*7*
TOTAL NPF	**10.56**	***94***	**26.44**	***100***	**40.45**	***100***	**11.54**	***88***	**20.36**	***93***
INTRODUCED PERENNIAL FORBS										
Cerastium fontanum	0.77	*13*								
Cirsium arvense	0.25	*19*	12.80	*40*			0.13	*13*	4.33	*20*
Medicago sativa	0.19	*6*								
Sonchus arvensis			1.20	*20*					0.40	*7*
Taraxacum officinale	14.44	*94*	1.12	*80*			0.04	*13*	0.39	*33*

Table 5

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for the LOWLAND ALTERED GRASSLAND and Three HERBACEOUS RIPARIAN AND WETLAND Community Types, Black Butte Baseline Study Area, 2015.

	LOWLAND ALTERED GRASSLAND (HAY MEADOW)		*JUN BAL*		*CAR NEB*		*CAR UTR*		HERBACEOUS RIPARIAN AND WETLAND COMPOSITE	
	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*	Mean Cover	*Con-stancy*
	n=16		n=5		n=2		n=8		n=15	
Trifolium hybridum	7.10	*75*	0.40	*20*			0.25	*13*	0.27	*13*
Trifolium pratense	18.94	*75*								
Trifolium repens	2.31	*50*	0.06	*20*					0.02	*7*
TOTAL IPF	**43.99**	***100***	**15.58**	***80***			**0.41**	***25***	**5.41**	***40***
FERNS AND ALLIES										
Equisetum arvense	0.63	*6*								
Equisetum laevigatum	0.14	*31*	0.12	*40*					0.04	*13*
TOTAL FA	**0.76**	***38***	**0.12**	***40***					**0.04**	***13***
NATIVE ANNUAL/BIENNIAL FORBS										
Cardamine pensylvanica					0.50	*50*			0.07	*7*
Rhinanthus crista-galli	6.25	*50*	0.60	*20*			0.25	*13*	0.33	*13*
TOTAL NA/BF	**6.25**	***50***	**0.60**	***20***	**0.50**	***50***	**0.25**	***13***	**0.40**	***20***
INTRODUCED ANNUAL/BIENNIAL FORBS										
Carduus nutans	0.02	*6*								
Carum carvi	6.56	*63*								
Medicago lupulina	0.02	*6*								
Thlaspi arvense	0.04	*13*	0.06	*20*					0.02	*7*
TOTAL IA/BF	**6.63**	***69***	**0.06**	***20***					**0.02**	***7***
SHRUBS										
Dasiphora fruticosa			0.60	*20*	1.00	*50*	2.63	*38*	1.73	*33*
Salix bebbiana			0.20	*20*			0.16	*25*	0.15	*20*
Salix boothii			0.20	*20*	1.00	*50*			0.20	*13*
Salix brachycarpa			1.00	*20*					0.33	*7*
Salix geyeriana					1.50	*50*			0.20	*7*
Salix planifolia			0.20	*20*	1.00	*50*	0.13	*13*	0.27	*20*
TOTAL SHRUBS			**2.20**	***60***	**4.50**	***50***	**2.91**	***50***	**2.89**	***53***
TOTAL VEGETATION (Stratified)	**180.48**	***100***	**149.70**	***100***	**146.10**	***100***	**131.31**	***100***	**139.41**	***100***

Nomenclature follows Lesica (2012).

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
GROUND COVER												
Bare Ground	1.67	*50*			1.00	*50*	0.35	*62*	0.92	*25*	0.74	*41*
Rock							1.18	*15*	0.08	*8*	0.44	*8*
Litter	90.67	*100*	86.50	*100*	76.00	*100*	68.85	*100*	74.67	*100*	76.57	*100*
Lichens							0.02	*8*			0.01	*3*
Moss	0.88	*67*	7.00	*100*	9.50	*100*	17.41	*100*	15.00	*92*	12.39	*92*
Water					4.50	*100*	4.15	*62*	1.42	*42*	2.16	*41*
Basal Vegetation	6.83	*100*	6.50	*100*	9.00	*100*	8.15	*100*	7.92	*100*	7.73	*100*
VEGETATION STRUCTURE (nonstratified cover)												
Total Vegetation	93.83	*100*	95.25	*100*	97.00	*100*	94.54	*100*	98.00	*100*	95.76	*100*
Perennial Graminoids	73.00	*100*	70.00	*100*	91.50	*100*	82.85	*100*	56.00	*100*	71.62	*100*
Perennial Forbs and Subshrubs	52.17	*100*	40.25	*100*	11.00	*100*	31.00	*100*	33.33	*100*	35.11	*100*
Annual/Biennial Forbs	0.77	*50*	0.08	*25*			0.30	*38*	1.46	*58*	0.71	*43*
Shrubs	43.50	*100*	62.50	*100*	21.00	*100*	53.77	*100*	78.50	*100*	59.30	*100*
Trees (0.01-acre)							0.38	*31*			0.13	*11*
Trees (0.1-acre)							0.27	*46*			0.09	*16*
CLASS\SPECIES												
NATIVE PERENNIAL GRAMINOIDS												
Agropyron trachycaulum	0.05	*17*	2.25	*100*			0.10	*15*	0.58	*8*	0.48	*22*
Agrostis scabra	0.17	*17*	0.25	*25*							0.05	*5*
Anthoxanthum hirtum									0.33	*8*	0.11	*3*
Bromus carinatus	0.17	*17*									0.03	*3*
Bromus ciliatus							0.08	*8*			0.03	*3*
Bromus pumpellianus							0.10	*15*	0.17	*17*	0.09	*11*
Calamagrostis canadensis							0.08	*8*	2.33	*50*	0.78	*19*
Calamagrostis stricta			1.25	*50*	2.00	*50*	0.46	*31*	0.25	*17*	0.49	*24*
Carex aquatilis							2.38	*23*			0.84	*8*
Carex athrostachya	0.05	*17*									0.01	*3*
Carex aurea							0.07	*23*	0.03	*8*	0.03	*11*
Carex interior							0.69	*23*	0.03	*8*	0.25	*11*
Carex microptera	0.17	*17*	0.50	*25*	0.50	*50*	0.15	*15*			0.16	*14*
Carex multicostata	0.17	*17*									0.03	*3*
Carex nebrascensis	0.17	*17*	0.50	*25*	19.00	*100*	9.08	*54*	2.83	*33*	5.22	*41*

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
Carex pachystachya	0.33	*17*					0.23	*8*			0.14	*5*
Carex pellita			4.50	*50*	2.00	*50*	7.69	*23*	2.92	*25*	4.24	*24*
Carex praegracilis	5.50	*67*	9.75	*75*	6.00	*50*	2.00	*31*	1.86	*33*	3.58	*43*
Carex praticola	1.33	*33*									0.22	*5*
Carex simulata							2.31	*8*			0.81	*3*
Carex utriculata	0.33	*17*			50.00	*100*	38.38	*92*	26.92	*83*	24.97	*68*
Danthonia californica	1.67	*17*	0.08	*25*							0.28	*5*
Danthonia intermedia	1.33	*17*	0.25	*25*							0.24	*5*
Deschampsia cespitosa	1.17	*50*	13.00	*100*	15.50	*100*	2.69	*46*	0.75	*25*	3.62	*49*
Festuca rubra	2.88	*83*	13.50	*100*	2.00	*100*	2.79	*62*	1.78	*42*	3.59	*65*
Glyceria grandis									0.08	*8*	0.03	*3*
Glyceria striata							1.33	*46*	0.44	*25*	0.61	*24*
Juncus balticus	6.67	*50*	12.25	*100*	5.50	*100*	14.31	*85*	6.58	*58*	9.86	*73*
Juncus longistylis							1.12	*23*			0.39	*8*
Juncus nodosus									0.03	*8*	0.01	*3*
Muhlenbergia richardsonis	0.33	*17*	1.00	*25*	0.15	*50*	0.05	*15*			0.19	*14*
Phalaris arundinacea									0.50	*8*	0.16	*3*
Scirpus microcarpus									1.00	*17*	0.32	*5*
Stipa richardsonii	0.17	*17*									0.03	*3*
TOTAL NPG	**22.65**	***100***	**59.08**	***100***	**102.65**	***100***	**86.10**	***100***	**49.40**	***100***	**61.88**	***100***
INTRODUCED PERENNIAL GRAMINOIDS												
Agrostis stolonifera	5.33	*33*	4.00	*25*	9.00	*50*	3.23	*38*	1.25	*25*	3.32	*32*
Alopecurus arundinaceus							0.23	*8*			0.08	*3*
Alopecurus pratensis					0.50	*50*	0.02	*8*	0.17	*8*	0.09	*8*
Bromus inermis	0.05	*17*					1.69	*8*	1.11	*17*	0.96	*11*
Phleum pratense	30.17	*100*	2.00	*50*	1.50	*50*	4.77	*31*	4.58	*25*	8.35	*43*
Poa palustris			0.08	*25*			1.54	*54*	6.42	*83*	2.63	*49*
Poa pratensis	37.00	*100*	23.00	*100*	6.00	*50*	12.31	*62*	4.11	*75*	14.47	*76*
Schedonorus pratensis							0.02	*8*			0.01	*3*
TOTAL IPG	**72.55**	***100***	**29.08**	***100***	**17.00**	***50***	**23.82**	***69***	**17.63**	***92***	**29.91**	***84***
NATIVE PERENNIAL FORBS AND SUBSHRUBS												
Achillea millefolium	1.38	*83*	1.33	*100*	0.50	*50*	0.17	*38*	0.11	*17*	0.49	*46*
Agoseris glauca	0.27	*50*					0.02	*8*			0.05	*11*
Allium geyeri	0.05	*17*	0.08	*25*							0.02	*5*
Allium schoenoprasum	0.17	*17*	1.08	*75*							0.14	*11*

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
Anemone multifida	0.05	*17*									0.01	*3*
Antennaria microphylla	1.83	*50*	0.08	*25*							0.31	*11*
Antennaria neglecta							0.05	*15*			0.02	*5*
Antennaria rosea	3.00	*17*	0.58	*50*							0.55	*8*
Arabis nuttallii	0.05	*17*									0.01	*3*
Arnica chamissonis									0.19	*17*	0.06	*5*
Arnica fulgens	0.05	*17*									0.01	*3*
Astragalus agrestis	1.17	*17*									0.19	*3*
Astragalus alpinus							0.08	*8*			0.03	*3*
Campanula rotundifolia	0.05	*17*									0.01	*3*
Canadanthus modestus									3.08	*50*	1.00	*16*
Cardamine breweri					0.15	*50*					0.01	*3*
Castilleja miniata							0.05	*15*	0.08	*8*	0.04	*8*
Cerastium arvense	0.83	*33*									0.14	*5*
Cicuta maculata									0.03	*8*	0.01	*3*
Cirsium hookerianum					0.15	*50*					0.01	*3*
Cirsium longistylum	0.05	*17*									0.01	*3*
Cirsium scariosum	0.05	*17*	0.08	*25*							0.02	*5*
Claytonia rosea	0.05	*17*	0.08	*25*							0.02	*5*
Crepis atribarba	0.05	*17*									0.01	*3*
Crepis runcinata	0.10	*33*	0.08	*25*			0.07	*23*			0.05	*16*
Dodecatheon pulchellum	0.33	*17*	0.50	*25*			0.02	*8*			0.12	*8*
Epilobium ciliatum					0.50	*50*	0.32	*46*	0.63	*42*	0.35	*32*
Epilobium palustre					0.15	*50*	0.07	*23*			0.03	*11*
Erigeron lonchophyllus	0.05	*17*	0.08	*25*			0.02	*8*			0.02	*8*
Erigeron subtrinervis	0.05	*17*									0.01	*3*
Fragaria virginiana	6.00	*100*	2.50	*75*			2.31	*62*	0.69	*25*	2.28	*54*
Galium boreale	2.17	*83*	1.23	*100*			0.48	*31*	0.63	*42*	0.86	*49*
Galium trifidum							0.09	*31*	0.08	*25*	0.06	*19*
Gentiana affinis			0.08	*25*			0.05	*15*			0.02	*8*
Geranium richardsonii							0.31	*8*			0.11	*3*
Geranium viscosissimum	0.05	*17*					0.38	*15*			0.14	*8*
Geum aleppicum	0.17	*17*					0.23	*8*	0.19	*17*	0.17	*11*
Geum macrophyllum	1.00	*17*			1.00	*50*	0.62	*23*	2.58	*58*	1.27	*32*
Geum rivale	1.83	*33*	2.25	*50*	0.15	*50*	6.77	*62*	6.08	*50*	4.90	*51*
Heracleum lanatum							1.08	*8*			0.38	*3*
Iris missouriensis	1.33	*17*	0.08	*25*							0.22	*5*

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
Lupinus leucophyllus	0.05	*17*									0.01	*3*
Lysimachia ciliata							0.69	*8*			0.24	*3*
Mentha arvensis							1.25	*31*	1.53	*58*	0.94	*30*
Mimulus guttatus					0.15	*50*	0.08	*8*			0.04	*5*
Moehringia lateriflora							0.05	*15*	0.03	*8*	0.02	*8*
Oxytropis deflexa	0.50	*17*									0.08	*3*
Parnassia palustris					0.15	*50*	0.35	*31*	0.03	*8*	0.14	*16*
Paronychia sessiliflora											0.00	*0*
Pedicularis groenlandica							0.15	*8*			0.05	*3*
Perideridia montana	0.17	*17*									0.03	*3*
Petasites frigidus							0.31	*8*	6.50	*25*	2.22	*11*
Platanthera hyperborea							0.07	*23*	0.05	*17*	0.04	*14*
Polygonum amphibium									0.08	*8*	0.03	*3*
Potentilla anserina	0.17	*17*							0.43	*42*	0.17	*16*
Potentilla gracilis	9.67	*100*	6.00	*100*	0.30	*100*	0.33	*31*	0.13	*25*	2.39	*51*
Prunella vulgaris	0.50	*17*					0.25	*15*	0.05	*17*	0.19	*14*
Pyrola asarifolia							0.35	*46*	0.03	*8*	0.13	*19*
Pyrrocoma integrifolia	0.22	*33*									0.04	*5*
Ranunculus macounii			0.08	*25*			0.12	*23*	0.03	*8*	0.06	*14*
Ranunculus uncinatus			0.50	*25*							0.05	*3*
Rumex occidentalis					0.15	*50*	0.38	*31*	0.53	*25*	0.31	*22*
Rumex salicifolius							0.02	*8*			0.01	*3*
Scutellaria galericulata									0.13	*25*	0.04	*8*
Senecio pauperculus							0.08	*8*	0.03	*8*	0.04	*5*
Senecio pseudaureus									0.61	*33*	0.20	*11*
Senecio sphaerocephalus							0.18	*15*	0.69	*17*	0.29	*11*
Sisyrinchium idahoense			0.08	*25*							0.01	*3*
Smilacina stellata	0.15	*50*	0.23	*75*			0.07	*23*	0.16	*33*	0.12	*35*
Solidago canadensis (S. lepida)	2.00	*67*	0.50	*25*			1.61	*54*	0.50	*25*	1.11	*41*
Sparganium angustifolium									0.03	*8*	0.01	*3*
Spiranthes romanzoffiana							0.07	*23*			0.02	*8*
Stachys palustris			0.08	*25*			0.05	*15*	0.19	*17*	0.09	*14*
Stellaria longifolia							0.22	*31*	0.38	*67*	0.20	*32*
Stellaria longipes							0.05	*15*			0.02	*5*
Symphyotrichum ascendens	1.33	*17*					0.62	*8*			0.43	*5*
Symphyotrichum boreale									0.17	*8*	0.05	*3*
Symphyotrichum campestre	0.33	*17*									0.05	*3*
Symphyotrichum foliaceum	0.83	*17*					0.69	*8*			0.38	*5*
Symphyotrichum subspicatum	6.50	*50*	13.25	*100*	5.15	*100*	5.95	*85*	4.28	*92*	6.24	*84*

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
Thalictrum venulosum	0.17	*17*	0.25	*25*			0.02	*8*	0.36	*17*	0.18	*14*
Trifolium longipes	0.05	*17*	0.90	*75*			0.02	*8*	0.33	*8*	0.22	*16*
Valeriana dioica			0.08	*25*			0.07	*23*	0.03	*8*	0.04	*14*
Valeriana edulis	0.67	*17*	2.33	*75*							0.36	*11*
Veronica americana					0.15	*50*	0.10	*15*	0.24	*33*	0.12	*19*
Viola adunca	0.43	*50*	0.08	*25*			0.02	*8*	0.05	*17*	0.10	*19*
Viola canadensis							0.02	*8*	0.28	*25*	0.10	*11*
Viola nephrophylla	2.50	*17*	3.83	*75*	1.50	*50*	3.33	*85*	1.58	*67*	2.58	*65*
Zigadenus elegans			0.33	*50*							0.04	*5*
Zizia aptera	0.50	*33*	0.25	*25*			0.05	*15*			0.12	*14*
TOTAL NPF	**48.92**	***100***	**38.78**	***100***	**10.15**	***100***	**30.81**	***100***	**33.80**	***100***	**34.46**	***100***
INTRODUCED PERENNIAL FORBS												
Cerastium fontanum			0.08	*25*			0.07	*23*	0.03	*8*	0.04	*14*
Cirsium arvense	3.22	*50*					0.54	*23*	0.75	*42*	0.95	*30*
Knautia arvensis	0.05	*17*							0.03	*8*	0.02	*5*
Plantago major					0.15	*50*	0.05	*15*	0.08	*25*	0.05	*16*
Taraxacum officinale	7.00	*100*	5.15	*100*	1.00	*50*	1.45	*54*	1.38	*50*	2.71	*65*
Trifolium hybridum	1.00	*33*					1.41	*15*	0.44	*25*	0.80	*19*
Trifolium pratense	3.00	*50*									0.49	*8*
Trifolium repens	0.50	*17*	4.00	*25*							0.51	*5*
TOTAL IPF	**14.77**	***100***	**9.23**	***100***	**1.15**	***50***	**3.52**	***62***	**2.70**	***58***	**5.56**	***70***
FERNS AND ALLIES												
Botrychium minganense							0.02	*8*			0.01	*3*
Equisetum arvense	0.05	*17*					0.30	*31*	0.72	*33*	0.35	*24*
Equisetum laevigatum	0.05	*17*	0.15	*50*			0.12	*38*	0.03	*8*	0.07	*24*
TOTAL FA	**0.10**	***33***	**0.15**	***50***			**0.44**	***62***	**0.74**	***42***	**0.43**	***46***
NATIVE ANNUAL/BIENNIAL FORBS												
Androsace septentrionalis							0.02	*8*			0.01	*3*
Arabis hirsuta									0.03	*8*	0.01	*3*
Artemisia biennis									0.03	*8*	0.01	*3*
Cardamine pensylvanica							0.02	*8*	0.22	*25*	0.08	*11*
Erysimum cheiranthoides									0.17	*8*	0.05	*3*
Orthocarpus luteus	0.05	*17*									0.01	*3*
Rorippa palustris									0.36	*17*	0.12	*5*
Turritis glabra							0.02	*8*			0.01	*3*
TOTAL NA/BF	**0.05**	***17***					**0.07**	***23***	**0.79**	***50***	**0.29**	***27***

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
INTRODUCED ANNUAL/BIENNIAL FORBS												
Carduus nutans	0.17	*17*									0.03	*3*
Cirsium vulgare									0.03	*8*	0.01	*3*
Cynoglossum officinale	0.05	*17*	0.08	*25*			0.23	*15*	0.25	*8*	0.18	*14*
Galeopsis tetrahit									0.33	*8*	0.11	*3*
Medicago lupulina	0.50	*17*					0.02	*8*			0.09	*5*
Thlaspi arvense									0.03	*8*	0.01	*3*
TOTAL IA/BF	**0.72**	***33***	**0.08**	***25***			**0.25**	***23***	**0.63**	***17***	**0.42**	***22***
SHRUBS												
Arctostaphylos uva-ursi							0.54	*15*			0.19	*5*
Betula glandulosa							1.77	*15*	1.67	*17*	1.16	*11*
Dasiphora fruticosa	42.67	*100*	62.50	*100*	21.00	*100*	16.08	*92*	6.92	*75*	22.70	*89*
Juniperus communis							1.20	*54*			0.42	*19*
Juniperus horizontalis			0.25	*25*							0.03	*3*
Ribes inerme							0.08	*8*	2.33	*83*	0.78	*30*
Ribes setosum			0.08	*25*			0.22	*38*	0.69	*17*	0.31	*22*
Rosa acicularis							0.15	*8*			0.05	*3*
Rosa woodsii	0.17	*17*					0.43	*38*	0.13	*42*	0.22	*30*
Salix bebbiana	1.00	*17*	0.25	*25*			26.77	*92*	11.00	*58*	13.16	*57*
Salix boothii							0.23	*15*	34.00	*83*	11.11	*32*
Salix brachycarpa							1.15	*15*	0.08	*8*	0.43	*8*
Salix drummondiana									2.33	*17*	0.76	*5*
Salix geyeriana							0.62	*23*	29.08	*83*	9.65	*35*
Salix melanopsis							0.08	*8*	1.00	*8*	0.35	*5*
Salix planifolia							6.92	*54*	9.83	*58*	5.62	*38*
Salix pseudomonticola							4.23	*69*	0.50	*17*	1.65	*30*
Shepherdia canadensis							0.08	*8*			0.03	*3*
TOTAL SHRUBS	**43.83**	***100***	**63.08**	***100***	**21.00**	***100***	**60.55**	***100***	**99.56**	***100***	**68.62**	***100***
TREES (0.01-acre)												
Juniperus scopulorum							0.35	*23*			0.12	*8*
Pinus flexilis							0.02	*8*			0.01	*3*
TOTAL TREES (0.01-acre)							**0.38**	***31***			**0.13**	***11***

Table 6

Summary of Mean Percent Canopy Cover and Constancy by Class and Species for 12 Sample Sites in Three DASIPHORA FRUTICOSA RIPARIAN AND WETLAND Community Types and 25 Sites in Two SALIX RW Series, Black Butte Baseline Study Area, 2015.

	DAS FRU/POA PRA		*DAS FRU/DES CES*		*DAS FRU/CAR UTR*		*SAL BEB*		*SAL GEY*		**SHRUB RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=6		**n=4**		**n=2**		**n=13**		**n=12**		**n=37**	
TREES (0.1-acre)												
Juniperus scopulorum							0.22	*31*			0.08	*11*
Picea engelmannii							0.02	*8*			0.01	*3*
Pinus flexilis							0.02	*8*			0.01	*3*
Populus tremuloides							0.02	*8*			0.01	*3*
TOTAL TREES (0.1-acre)							**0.29**	***46***			**0.10**	***16***
TOTAL VEGETATION (Stratified)	**203.58**	***100***	**199.45**	***100***	**151.95**	***100***	**205.92**	***100***	**205.26**	***100***	**201.71**	***100***

Nomenclature follows Lesica (2012).

Table 7
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Four Sample Sites in Two DECIDUOUS FOREST RIPARIAN AND WETLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	POP TRE/ OSM OCC		*POP TRE/ POA PRA*		**DECIDUOUS FOREST RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=3**		**n=4**	
GROUND COVER						
Bare Ground	7.00	*100*	5.00	*67*	5.50	*75*
Rock						
Litter	86.00	*100*	84.33	*100*	84.75	*100*
Lichens			1.00	*67*	0.75	*50*
Moss			2.43	*100*	1.83	*75*
Water						
Basal Vegetation	7.00	*100*	7.33	*100*	7.25	*100*
VEGETATION STRUCTURE (nonstratified cover)						
Total Vegetation	95.00	*100*	95.00	*100*	95.00	*100*
Perennial Graminoids	74.00	*100*	73.00	*100*	73.25	*100*
Annual Graminoids						
Perennial Forbs and Subshrubs	48.00	*100*	51.00	*100*	50.25	*100*
Annual/Biennial Forbs	2.00	*100*	1.53	*100*	1.65	*100*
Shrubs	5.00	*100*	24.67	*100*	19.75	*100*
Trees (0.01-acre)	52.00	*100*	52.33	*100*	52.25	*100*
Trees (0.1-acre)	52.00	*100*	51.33	*100*	51.50	*100*
CLASS\SPECIES						
NATIVE PERENNIAL GRAMINOIDS						
Agropyron trachycaulum	3.00	*100*	0.67	*33*	1.25	*50*
Agrostis scabra			0.33	*33*	0.25	*25*
Bromus carinatus	2.00	*100*	0.77	*67*	1.08	*75*
Calamagrostis rubescens	30.00	*100*	1.33	*33*	8.50	*50*
Carex petasata			0.33	*33*	0.25	*25*
Danthonia intermedia			0.33	*33*	0.25	*25*
Festuca campestris			0.33	*33*	0.25	*25*
Festuca idahoensis			0.33	*33*	0.25	*25*
TOTAL NPG	**35.00**	*100*	**4.43**	***100***	**12.08**	***100***
INTRODUCED PERENNIAL GRAMINOIDS						
Bromus inermis			0.67	*33*	0.50	*25*
Phleum pratense	32.00	*100*	22.33	*100*	24.75	*100*
Poa pratensis	18.00	*100*	54.00	*100*	45.00	*100*
TOTAL IPG	**50.00**	*100*	**77.00**	***100***	**70.25**	***100***
NATIVE PERENNIAL FORBS AND SUBSHRUBS						
Achillea millefolium	1.00	*100*	3.33	*100*	2.75	*100*
Actaea rubra	7.00	*100*			1.75	*25*
Allium brevistylum	0.30	*100*	0.10	*33*	0.15	*50*
Allium cernuum			0.10	*33*	0.08	*25*
Allium geyeri			0.10	*33*	0.08	*25*
Antennaria anaphaloides			0.10	*33*	0.08	*25*
Arnica cordifolia			1.33	*33*	1.00	*25*
Arnica fulgens			0.10	*33*	0.08	*25*
Campanula rotundifolia			0.30	*100*	0.23	*75*
Castilleja miniata	0.30	*100*	0.10	*33*	0.15	*50*
Cerastium arvense			0.33	*33*	0.25	*25*
Epilobium ciliatum			0.10	*33*	0.08	*25*
Eurybia integrifolia			6.67	*33*	5.00	*25*
Fragaria virginiana	3.00	*100*	3.67	*67*	3.50	*75*
Galium boreale	1.00	*100*	2.33	*100*	2.00	*100*
Geranium richardsonii	25.00	*100*			6.25	*25*
Geranium viscosissimum			10.00	*100*	7.50	*75*
Geum aleppicum			0.33	*33*	0.25	*25*

Table 7
Summary of Mean Percent Canopy Cover and Constancy by Class and Species for Four Sample Sites in Two DECIDUOUS FOREST RIPARIAN AND WETLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

	POP TRE/ OSM OCC		*POP TRE/ POA PRA*		**DECIDUOUS FOREST RIPARIAN AND WETLAND COMPOSITE**	
	Mean Cover	***Con-stancy***	**Mean Cover**	***Con-stancy***	**Mean Cover**	***Con-stancy***
	n=1		**n=3**		**n=4**	
Geum macrophyllum	2.00	*100*	0.67	*33*	1.00	*50*
Geum triflorum			0.33	*33*	0.25	*25*
Heracleum lanatum			0.33	*33*	0.25	*25*
Ligusticum filicinum			0.33	*33*	0.25	*25*
Lupinus leucophyllus			1.00	*33*	0.75	*25*
Osmorhiza occidentalis	13.00	*100*			3.25	*25*
Perideridia montana	0.30	*100*	1.00	*100*	0.83	*100*
Potentilla gracilis			3.67	*100*	2.75	*75*
Ranunculus uncinatus	1.00	*100*			0.25	*25*
Smilacina racemosa	0.30	*100*			0.08	*25*
Solidago canadensis (S. lepida)			0.10	*33*	0.08	*25*
Symphyotrichum subspicatum			2.00	*33*	1.50	*25*
Thalictrum venulosum	1.00	*100*	0.67	*33*	0.75	*50*
Zigadenus elegans			0.10	*33*	0.08	*25*
TOTAL NPF	**55.20**	*100*	**39.20**	***100***	**43.20**	***100***
INTRODUCED PERENNIAL FORBS						
Cirsium arvense			0.10	*33*	0.08	*25*
Taraxacum officinale	1.00	*100*	21.33	*100*	16.25	*100*
TOTAL IPF	**1.00**	*100*	**21.43**	***100***	**16.33**	***100***
NATIVE ANNUAL/BIENNIAL FORBS						
Collomia linearis			0.20	*67*	0.15	*50*
TOTAL NA/BF			**0.20**	***67***	**0.15**	***50***
INTRODUCED ANNUAL/BIENNIAL FORBS						
Cirsium vulgare			0.33	*33*	0.25	*25*
Cynoglossum officinale	2.00	*100*	1.10	*67*	1.33	*75*
TOTAL IA/BF	**2.00**	*100*	**1.43**	***67***	**1.58**	***75***
SHRUBS						
Dasiphora fruticosa			0.33	*33*	0.25	*25*
Ribes inerme			0.10	*33*	0.08	*25*
Ribes setosum			0.33	*33*	0.25	*25*
Rosa woodsii	3.00	*100*	23.00	*100*	18.00	*100*
Symphoricarpos albus	3.00	*100*	1.33	*33*	1.75	*50*
Symphoricarpos occidentalis			0.10	*33*	0.08	*25*
TOTAL SHRUBS	**6.00**	*100*	**25.20**	***100***	**20.40**	***100***
TREES (0.01-acre)						
Picea engelmannii			0.33	*33*	0.25	*25*
Populus tremuloides	52.00	*100*	52.33	*100*	52.25	*100*
TOTAL TREES (0.01-acre)	**52.00**	*100*	**52.67**	***100***	52.50	*100*
TREES (0.1-acre)						
Picea engelmannii	1.00	*100*	0.10	*33*	0.33	*50*
Pinus flexilis	0.30	*100*			0.08	*25*
Populus tremuloides	52.00	*100*	50.67	*100*	51.00	*100*
Pseudotsuga menziesii			1.00	*33*	0.75	*25*
TOTAL TREES (0.1-acre)	**53.30**	*100*	**51.77**	***100***	**52.15**	***100***
TOTAL VEGETATION (Stratified)	**201.20**	*100*	**221.57**	***100***	**216.48**	***100***

Nomenclature follows Lesica (2012).

Table 8
Summary of Shrub Density (Plants Per Acre) by Species for Five UPLAND GRASSLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	UPLAND ALTERED GRASSLAND n=9	*FES IDA/ AGR SPI* n=3	*FES IDA/ STI RIC* n=2	*FES CAM/ AGR SPI* n=1	*FES CAM/ FES IDA* n=13	UPLAND GRASSLAND COMPOSITE n=28
Artemisia tridentata						
immature/mature	292.3	33.7	1062.4		350.2	**336.1**
decadent						
Total live	292.3	33.7	1062.4		350.2	**336.1**
Dasiphora fruticosa						
immature/mature	33.7				202.4	**104.8**
decadent						
Total live	33.7				202.4	**104.8**
Juniperus communis						
immature/mature				101.2		**3.6**
decadent						
Total live				101.2		**3.6**
Rosa woodsii						
immature/mature	269.8		1871.8			**220.4**
decadent						
Total live	269.8		1871.8			**220.4**
TOTAL SHRUBS						
IMMATURE/MATURE	**595.8**	**33.7**	**2934.2**	**101.2**	**552.6**	**664.9**
DECADENT						
TOTAL LIVE	**595.8**	**33.7**	**2934.2**	**101.2**	**552.6**	**664.9**

Table 9
Summary of Shrub Density (Plants Per Acre) by Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	ART TRI/ POA PRA n=13	ART TRI/ FES IDA n=3	*ART TRI/ FES CAM* n=17	*ART TRI- DAS FRU/ POA PRA* n=6	*DAS FRU- ART TRI/ FES CAM* n=3	MIXED SHRUB-SHALE OUTCROP n=2	UPLAND SHRUBLAND COMPOSITE n=44
Artemisia tridentata							
immature/mature	5417.0	4924.1	4969.7	3642.5	573.4	607.1	**4419.7**
decadent	474.8	404.7	363.1	354.1	33.7		**358.7**
Total live	5891.8	5328.8	5332.8	3996.6	607.1	607.1	**4778.5**
Dasiphora fruticosa							
immature/mature	93.4			1332.2	2226.0	253.0	**372.5**
decadent							
Total live	93.4			1332.2	2226.0	253.0	**372.5**
Juniperus communis							
immature/mature		33.7	11.9				**6.9**
decadent							
Total live		33.7	11.9				**6.9**
Juniperus horizontalis							
immature/mature						50.6	**2.3**
decadent							
Total live						50.6	**2.3**
Rosa woodsii							
immature/mature			107.1	67.5		607.1	**78.2**
decadent							
Total live			107.1	67.5		607.1	**78.2**
TOTAL SHRUBS							
IMMATURE/MATURE	**5510.4**	**4957.8**	**5088.8**	**5042.1**	**2799.3**	**1517.7**	**4879.6**
DECADENT	**474.8**	**404.7**	**363.1**	**354.1**	**33.7**		**358.7**
TOTAL LIVE	**5985.2**	**5362.5**	**5451.8**	**5396.3**	**2833.0**	**1517.7**	**5238.4**

Table 10
Summary of Shrub Density (Plants Per Acre) by Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	PSE MEN/ FES IDA n=1	PSE MEN/ FES CAM n=12	PSE MEN/ JUN COM n=8	PSE MEN/ CAL RUB n=2	PSE MEN/ SYM ALB n=11	PSE MEN/ LIN BOR n=4	PIC ENG/ LIN BOR n=2	CONIFER FOREST AND WOODLAND COMPOSITE n=40
Arctostaphylos uva-ursi								
immature/mature		1045.5	3427.5		3440.1	3642.5		**2309.4**
decadent								
Total live		1045.5	3427.5		3440.1	3642.5		**2309.4**
Artemisia tridentata								
immature/mature	1214	404.7	12.6		27.6			**161.9**
decadent	1012	202.4						**86.0**
Total live	2226	607.1	12.6		27.6			**247.9**
Clematis occidentalis								
immature/mature					110.4		404.7	**50.6**
decadent								
Total live					110.4		404.7	**50.6**
Dasiphora fruticosa								
immature/mature			126.5		27.6	50.6		**37.9**
decadent								
Total live			126.5		27.6	50.6		**37.9**
Juniperus communis								
immature/mature		67.5	872.7		46.0	1795.9	101.2	**392.1**
decadent								
Total live		67.5	872.7		46.0	1795.9	101.2	**392.1**
Juniperus horizontalis								
immature/mature		33.7						**10.1**
decadent								
Total live		33.7						**10.1**

Table 10
Summary of Shrub Density (Plants Per Acre) by Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	PSE MEN/ FES IDA n=1	PSE MEN/ FES CAM n=12	PSE MEN/ JUN COM n=8	PSE MEN/ CAL RUB n=2	PSE MEN/ SYM ALB n=11	PSE MEN/ LIN BOR n=4	PIC ENG/ LIN BOR n=2	CONIFER FOREST AND WOODLAND COMPOSITE n=40
Lonicera utahensis								
immature/mature						25.3		**2.5**
decadent								
Total live						25.3		**2.5**
Ribes cereum								
immature/mature					27.6			**7.6**
decadent								
Total live					27.6			**7.6**
Ribes inerme								
immature/mature		16.9						**5.1**
decadent								
Total live		16.9						**5.1**
Ribes setosum								
immature/mature		16.9	50.6		174.8	126.5	1011.8	**126.5**
decadent								
Total live		16.9	50.6		174.8	126.5	1011.8	**126.5**
Rosa acicularis								
immature/mature							1062.4	**53.1**
decadent								
Total live							1062.4	**53.1**
Rosa woodsii								
immature/mature		994.9	1973.0		1085.4	2453.6	809.4	**1277.4**
decadent								
Total live		994.9	1973.0		1085.4	2453.6	809.4	**1277.4**

Table 10
Summary of Shrub Density (Plants Per Acre) by Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	PSE MEN/ FES IDA n=1	PSE MEN/ FES CAM n=12	PSE MEN/ JUN COM n=8	PSE MEN/ CAL RUB n=2	PSE MEN/ SYM ALB n=11	PSE MEN/ LIN BOR n=4	PIC ENG/ LIN BOR n=2	CONIFER FOREST AND WOODLAND COMPOSITE n=40
Rubus idaeus								
immature/mature			25.3		358.7	3946.0	708.3	**533.7**
decadent								
Total live			25.3		358.7	3946.0	708.3	**533.7**
Salix bebbiana								
immature/mature							303.5	**15.2**
decadent								
Total live							303.5	**15.2**
Shepherdia canadensis								
immature/mature		42.2	88.5		110.4	101.2	50.6	**73.4**
decadent								
Total live		42.2	88.5		110.4	101.2	50.6	**73.4**
Spiraea betulifolia								
immature/mature		1340.6	6627.3		6751.5	1644.2	1770.7	**3837.3**
decadent								
Total live		1340.6	6627.3		6751.5	1644.2	1770.7	**3837.3**
Symphoricarpos albus								
immature/mature		1256.3	2099.5		12619.9	7892.0	5362.5	**5324.6**
decadent								
Total live		1256.3	2099.5		12619.9	7892.0	5362.5	**5324.6**
TOTAL SHRUBS								
IMMATURE/MATURE	**1214**	**5219.2**	**15303.5**	**0.0**	**24779.9**	**21677.8**	**11585.1**	**14218.3**
DECADENT	**1012**	**202.4**						**86.0**
TOTAL LIVE	**2226**	**5421.6**	**15303.5**	**0.0**	**24779.9**	**21677.8**	**11585.1**	**14304.3**

Table 11
Summary of Shrub Density (Plants Per Acre) by Species for the LOWLAND ALTERED GRASSLAND and Three HERBACEOUS RIPARIAN AND WETLAND Community Types, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	LOWLAND ALTERED GRASSLAND (HAY MEADOW) n=16	*JUN BAL* n=5	*CAR NEB* n=2	*CAR UTR* n=8	HERBACEOUS RIPARIAN AND WETLAND COMPOSITE n=15
Dasiphora fruticosa					
immature/mature		667.8	809.4	948.6	**836.4**
decadent				50.6	**27.0**
Total live		667.8	809.4	999.2	**863.4**
Salix bebbiana					
immature/mature		40.5	1517.7	63.2	**249.6**
decadent					
Total live		40.5	1517.7	63.2	**249.6**
Salix boothii					
immature/mature		20.2	101.2		**20.2**
decadent					
Total live		20.2	101.2		**20.2**
Salix brachycarpa					
immature/mature		80.9			**27.0**
decadent					
Total live		80.9			**27.0**
Salix planifolia					
immature/mature		101.2		37.9	**54.0**
decadent					
Total live		101.2		37.9	**54.0**
TOTAL SHRUBS					
IMMATURE/MATURE	**0.0**	**910.6**	**2428.3**	**1049.7**	**1187.2**
DECADENT				**50.6**	**27.0**
TOTAL LIVE	**0.0**	**910.6**	**2428.3**	**1100.3**	**1214.2**

Table 12
Summary of Shrub Density (Plants Per Acre) by Species for Three *Dasiphora fruticosa* RIPARIAN AND WETLAND Community Types and Two *Salix* RW Series, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	*DAS FRU/ POA PRA* n=6	*DAS FRU/ DES CES* n=4	*DAS FRU/ CAR UTR* n=2	*SAL BEB* n=12	*SAL GEY* n=12	SHRUB RIPARIAN AND WETLAND COMPOSITE n=36
Arctostaphylos uva-ursi						
immature/mature				50.6		**16.9**
decadent						
Total live				50.6		**16.9**
Betula glandulosa						
immature/mature				185.5	75.9	**87.1**
decadent					8.4	**2.8**
Total live				185.5	84.3	**89.9**
Dasiphora fruticosa						
immature/mature	3524.4	4502.5	3490.7	2875.2	860.0	**2526.7**
decadent	67.5	354.1	151.8	8.4	8.4	**64.6**
Total live	3591.9	4856.6	3642.5	2883.6	868.5	**2591.3**
Juniperus communis						
immature/mature				59.0		**19.7**
decadent						
Total live				59.0		**19.7**
Juniperus horizontalis						
immature/mature		25.3				**2.8**
decadent						
Total live		25.3				**2.8**
Ribes inerme						
immature/mature				33.7	792.6	**275.4**
decadent						
Total live				33.7	792.6	**275.4**
Ribes setosum						
immature/mature		101.2		160.2	42.2	**78.7**
decadent						
Total live		101.2		160.2	42.2	**78.7**
Rosa acicularis						
immature/mature				168.6		**56.2**
decadent						
Total live				168.6		**56.2**
Rosa woodsii						
immature/mature	50.6			202.4	50.6	**92.7**
decadent						
Total live	50.6			202.4	50.6	**92.7**

Table 12
Summary of Shrub Density (Plants Per Acre) by Species for Three *Dasiphora fruticosa* RIPARIAN AND WETLAND Community Types and Two *Salix* RW Series, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	*DAS FRU/ POA PRA* n=6	*DAS FRU/ DES CES* n=4	*DAS FRU/ CAR UTR* n=2	*SAL BEB* n=12	*SAL GEY* n=12	SHRUB RIPARIAN AND WETLAND COMPOSITE n=36
Salix bebbiana						
immature/mature	219.2	50.6		2951.1	472.2	**1183.2**
decadent				109.6	8.4	**39.3**
Total live	219.2	50.6		3060.7	480.6	**1222.6**
Salix boothii						
immature/mature				8.4	843.2	**283.9**
decadent						
Total live				8.4	843.2	**283.9**
Salix brachycarpa						
immature/mature				345.7	16.9	**120.9**
decadent						
Total live				345.7	16.9	**120.9**
Salix drummondiana						
immature/mature					151.8	**50.6**
decadent						
Total live					151.8	**50.6**
Salix geyeriana						
immature/mature		75.9		177.1	548.1	**250.1**
decadent					8.4	**2.8**
Total live		75.9		177.1	556.5	**253.0**
Salix melanopsis						
immature/mature				25.3	59.0	**28.1**
decadent						
Total live				25.3	59.0	**28.1**
Salix planifolia						
immature/mature	67.5			1205.7	337.3	**525.6**
decadent					8.4	**2.8**
Total live	67.5			1205.7	345.7	**528.4**
Salix pseudomonticola						
immature/mature	50.6			581.8	16.9	**208.0**
decadent						
Total live	50.6			581.8	16.9	**208.0**
Shepherdia canadensis						
immature/mature				8.4		**2.8**
decadent						
Total live				8.4		**2.8**

Table 12
Summary of Shrub Density (Plants Per Acre) by Species for Three *Dasiphora fruticosa* RIPARIAN AND WETLAND Community Types and Two *Salix* RW Series, Black Butte Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	*DAS FRU/ POA PRA* n=6	*DAS FRU/ DES CES* n=4	*DAS FRU/ CAR UTR* n=2	*SAL BEB* n=12	*SAL GEY* n=12	SHRUB RIPARIAN AND WETLAND COMPOSITE n=36
TOTAL SHRUBS						
IMMATURE/MATURE	3912.3	4755.5	3490.7	9038.7	4266.4	5809.4
DECADENT	67.5	354.1	151.8	118.0	42.2	112.4
TOTAL LIVE	3979.7	5109.6	3642.5	9156.8	4308.6	5921.8

Table 13
Summary of Shrub Density (Plants Per Acre)
by Species for Four Sample Sites in Two
DECIDUOUS FOREST RIPARIAN AND
WETLAND Vegetation Types, Black Butte
Baseline Study Area, 2015.

SHRUB SPECIES/AGE CLASS	*POP TRE/ OSM OCC* n=1	*POP TRE/ POA PRA* n=3	DECIDUOUS FOREST RIPARIAN AND WETLAND COMPOSITE n=4
Dasiphora fruticosa			
immature/mature		269.8	**202.4**
decadent			
Total live		269.8	**202.4**
Ribes inerme			
immature/mature		33.7	**25.3**
decadent			
Total live		33.7	**25.3**
Ribes setosum			
immature/mature		168.6	**126.5**
decadent			
Total live		168.6	**126.5**
Rosa woodsii			
immature/mature	3137	10489.0	**8650.9**
decadent			
Total live	3137	10489.0	**8650.9**
Symphoricarpos albus			
immature/mature	5261	303.5	**1543.0**
decadent			
Total live	5261	303.5	**1543.0**
Symphoricarpos occidentalis			
immature/mature		134.9	**101.2**
decadent			
Total live		134.9	**101.2**
TOTAL SHRUBS			
IMMATURE/MATURE	**8398**	**11399.6**	**10649.2**
DECADENT			
TOTAL LIVE	**8398**	**11399.6**	**10649.2**

Table 14
Summary of Tree Density (Trees Per Acre) by Species for Five UPLAND GRASSLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	UPLAND ALTERED GRASSLAND n=9	*FES IDA/ AGR SPI* n=3	*FES IDA/ STI RIC* n=2	*FES CAM/ AGR SPI* n=1	*FES CAM/ FES IDA* n=13	UPLAND GRASSLAND COMPOSITE n=28
Pseudotsuga menziesii						
<1"					0.1	0.04
1-4"						
4-8"						
8-12"						
12-16"						
16-20"						
TOTAL LIVE TREES					0.1	0.04
TOTAL TREE SPECIES - LIVE						
<1"					**0.1**	**0.04**
1-4"						
4-8"						
8-12"						
12-16"						
16-20"						
***TOTAL LIVE TREES**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.04**

Table 15
Summary of Tree Density (Trees Per Acre) by Species for Six UPLAND SHRUBLAND Vegetation Types, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*ART TRI/ POA PRA* n=13	*ART TRI/ FES IDA* n=3	*ART TRI/ FES CAM* n=17	*ART TRI-DAS FRU/ POA PRA* n=6	*DAS FRU-ART TRI/ FES CAM* n=3	MIXED SHRUB-SHALE OUTCROP n=2	UPLAND SHRUBLAND COMPOSITE n=44
Juniperus scopulorum							
<1"	0.2		0.2				0.16
1-4"							
4-8"							
8-12"							
12-16"							
16-20"							
TOTAL LIVE TREES	0.2		0.2				0.16
Pinus ponderosa							
<1"						0.5	0.02
1-4"							
4-8"							
8-12"							
12-16"							
16-20"							
TOTAL LIVE TREES						0.5	0.02
Pseudotsuga menziesii							
<1"	0.6		0.9			2.5	0.64
1-4"	0.8		0.2				0.30
4-8"							
8-12"							
12-16"							
16-20"							
TOTAL LIVE TREES	1.4		1.1			2.5	0.93
TOTAL TREE SPECIES - LIVE							
<1"	**0.8**		**1.1**			**3.0**	**0.82**
1-4"	**0.8**		**0.2**				**0.30**
4-8"							
8-12"							
12-16"							
16-20"							
TOTAL LIVE TREES	**1.6**	**0.0**	**1.3**	**0.0**	**0.0**	**3.0**	**1.11**

Table 16
Summary of Tree Density (Trees Per Acre) by Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*PSE MEN/ FES IDA* n=1	*PSE MEN/ FES CAM* n=12	*PSE MEN/ JUN COM* n=8	*PSE MEN/ CAL RUB* n=2	*PSE MEN/ SYM ALB* n=11	*PSE MEN/ LIN BOR* n=4	*PIC ENG/ LIN BOR* n=2	CONIFER FOREST AND WOODLAND COMPOSITE n=40
Juniperus scopulorum								
<1"		6.6	1.1		0.4	0.8		2.38
1-4"		0.8	0.1					0.28
4-8"		0.1						0.03
8-12"								
12-16"								
16-20"								
20-24"								
24-28"								
28-32"								
TOTAL LIVE TREES		7.5	1.3		0.4	0.8		2.68
Picea engelmannii								
<1"							13.0	0.65
1-4"							7.5	0.38
4-8"							5.5	0.28
8-12"							4.5	0.23
12-16"							0.5	0.03
16-20"								
20-24"								
24-28"								
28-32"								
TOTAL LIVE TREES							31.0	1.55
Pinus contorta								
<1"			2.9		0.5	1.3	4.5	1.05
1-4"			19.8		0.3	0.3	2.5	4.18
4-8"		0.2	4.6		0.2	1.5		1.18
8-12"			0.3			1.3		0.18
12-16"								
16-20"								
20-24"								
24-28"								
28-32"								
TOTAL LIVE TREES		0.2	27.5		0.9	4.3	7.0	6.58

Table 16
Summary of Tree Density (Trees Per Acre) by Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*PSE MEN/ FES IDA* n=1	*PSE MEN/ FES CAM* n=12	*PSE MEN/ JUN COM* n=8	*PSE MEN/ CAL RUB* n=2	*PSE MEN/ SYM ALB* n=11	*PSE MEN/ LIN BOR* n=4	*PIC ENG/ LIN BOR* n=2	CONIFER FOREST AND WOODLAND COMPOSITE n=40
Pinus flexilis								
<1"			1.3		0.1		0.5	0.30
1-4"			0.3					0.05
4-8"								
8-12"								
12-16"								
16-20"								
20-24"								
24-28"								
28-32"								
TOTAL LIVE TREES			1.5		0.1		0.5	0.35
Pinus ponderosa								
<1"		0.3						0.08
1-4"			0.1					0.03
4-8"			0.1					0.03
8-12"		0.2						0.05
12-16"								
16-20"		0.1						0.03
20-24"								
24-28"								
28-32"								
TOTAL LIVE TREES		0.5	0.3					0.20
Populus tremuloides								
<1"						0.3	0.5	0.05
1-4"								
4-8"								
8-12"								
12-16"								
16-20"								
20-24"								
24-28"								
28-32"								
TOTAL LIVE TREES						0.3	0.5	0.05

Table 16
Summary of Tree Density (Trees Per Acre) by Species for Seven CONIFER FOREST AND WOODLAND Habitat Types, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*PSE MEN/ FES IDA* n=1	*PSE MEN/ FES CAM* n=12	*PSE MEN/ JUN COM* n=8	*PSE MEN/ CAL RUB* n=2	*PSE MEN/ SYM ALB* n=11	*PSE MEN/ LIN BOR* n=4	*PIC ENG/ LIN BOR* n=2	**CONIFER FOREST AND WOODLAND COMPOSITE** n=40
Pseudotsuga menziesii								
<1"	17.0	17.8	64.8	5.0	40.3	34.3	17.5	34.35
1-4"	42.0	9.7	11.0	2.5	1.7	5.8	1.5	7.40
4-8"	10.0	8.0	8.8	13.0	3.8	7.8	7.5	7.25
8-12"	1.0	4.5	5.3	16.0	6.9	7.5	2.5	6.00
12-16"		3.1	1.8	3.0	4.6	2.5		2.95
16-20"		1.0	0.4	1.0	0.7	0.5		0.68
20-24"		0.5	0.1			0.3		0.20
24-28"		0.1	0.1		0.1			0.08
28-32"		0.2						0.05
TOTAL LIVE TREES	70.0	44.8	92.1	40.5	58.2	58.5	29.0	58.95
TOTAL TREE SPECIES - LIVE								
<1"	**17.0**	**24.7**	**70.0**	**5.0**	**41.2**	**36.5**	**36.0**	**38.85**
1-4"	**42.0**	**10.5**	**31.3**	**2.5**	**2.0**	**6.0**	**11.5**	**12.30**
4-8"	**10.0**	**8.3**	**13.5**	**13.0**	**4.0**	**9.3**	**13.0**	**8.75**
8-12"	**1.0**	**4.7**	**5.5**	**16.0**	**6.9**	**8.8**	**7.0**	**6.45**
12-16"		**3.1**	**1.8**	**3.0**	**4.6**	**2.5**	**0.5**	**2.98**
16-20"		**1.1**	**0.4**	**1.0**	**0.7**	**0.5**		**0.70**
20-24"		**0.5**	**0.1**			**0.3**		**0.20**
24-28"		**0.1**	**0.1**		**0.1**			**0.08**
28-32"		**0.2**						**0.05**
TOTAL LIVE TREES	**70.0**	**53.0**	**122.6**	**40.5**	**59.5**	**63.8**	**68.0**	**70.35**

Table 17
Summary of Tree Density (Tres Per Acre) by Species for the LOWLAND ALTERED GRASSLAND (HAY MEADOW) and Three HERBACEOUS RIPARIAN AND WETLAND Community Types, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	LOWLAND ALTERED GRASSLAND (HAY MEADOW) n=16	*JUNCUS BALTICUS* n=5	*CAREX NEBRASCENSIS* n=2	*CAREX UTRICULATA* n=8	HERBACEOUS RIPARIAN AND WETLAND COMPOSITE n=15
TOTAL TREE SPECIES - LIVE					
<1"					
1-4"					
4-8"					
8-12"					
12-16"					
16-20"					
20-24"					
24-28"					
TOTAL LIVE TREES	0.0	0.0	0.0	0.0	0.00

Table 18
Summary of Tree Density (Trees Per Acre) by Species for Three
Dasiphora fruticosa RIPARIAN AND WETLAND Community Types and
Two *Salix* RW Series, Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*DAS FRU/ POA PRA* n=6	*DAS FRU/ DES CES* n=4	*DAS FRU/ CAR UTR* n=2	*SAL BEB* n=12	*SAL GEY* n=12	SHRUB RIPARIAN AND WETLAND COJMPOSITE n=36
Juniperus scopulorum						
<1"				1.3		**0.44**
1-4"						
4-8"						
8-12"						
TOTAL LIVE TREES				1.3		**0.44**
Picea engelmannii						
<1"				0.1		**0.03**
1-4"						
4-8"						
8-12"						
TOTAL LIVE TREES				0.1		**0.03**
Pinus flexilis						
<1"				0.1		**0.03**
1-4"						
4-8"						
8-12"						
TOTAL LIVE TREES				0.1		**0.03**
Populus tremuloides						
<1"				0.1		**0.03**
1-4"						
4-8"						
8-12"						
TOTAL LIVE TREES				0.1		**0.03**
TOTAL TREE SPECIES - LIVE						
<1"				**1.6**		**0.53**
1-4"						
4-8"						
8-12"						
***TOTAL LIVE TREES**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**0.53**

Table 19
Summary of Tree Density (Trees Per Acre) by Species for Two
DECIDUOUS FOREST RIPARIAN AND WETLAND Vegetation Types,
Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*POP TRE/ OSM OCC* n=1	*POP TRE/ POA PRA* n=3	DECIDUOUS FOREST RIPARIAN AND WETLAND COMPOSITE n=4
Picea engelmannii			
<1"		0.3	0.25
1-4"	1.0		0.25
4-8"			
8-12"			
12-16"			
16-20"			
TOTAL LIVE TREES	1.0	0.3	0.50
Pinus flexilis			
<1"	1.0		0.25
1-4"			
4-8"			
8-12"			
12-16"			
16-20"			
TOTAL LIVE TREES	1.0		0.25
Populus tremuloides			
<1"	40.0	31.7	33.75
1-4"	43.0	52.0	49.75
4-8"	1.0	3.7	3.00
8-12"	28.0	3.0	9.25
12-16"		2.0	1.50
16-20"			
TOTAL LIVE TREES	112.0	92.3	97.25
Pseudotsuga menziesii			
<1"			
1-4"			
4-8"			
8-12"			
12-16"			
16-20"		0.3	0.25
TOTAL LIVE TREES		0.3	0.25

Table 19
Summary of Tree Density (Trees Per Acre) by Species for Two
DECIDUOUS FOREST RIPARIAN AND WETLAND Vegetation Types,
Black Butte Baseline Study Area, 2015.

TREE SPECIES DBH CLASS - LIVE TREES	*POP TRE/ OSM OCC* n=1	*POP TRE/ POA PRA* n=3	DECIDUOUS FOREST RIPARIAN AND WETLAND COMPOSITE n=4
TOTAL TREE SPECIES - LIVE			
<1"	41.0	32.0	34.25
1-4"	44.0	52.0	50.00
4-8"	1.0	3.7	3.00
8-12"	28.0	3.0	9.25
12-16"		2.0	1.50
16-20"		0.3	0.25
TOTAL LIVE TREES	114.0	93.0	98.25

Table 20
Correlation of Soils Mapping Units with Ecological Sites, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

SOIL MAPPING UNIT[1]		ECOLOGICAL SITE[2] (15-19" and 20+" ppz)	TOTAL ANNUAL PRODUCTION (dry pounds/acre)[3]		
Symbol	Name		Favorable	Normal	Unfavorable
Ad-b	Adel loams, 5-15%	Overflow	3000	2400	1800
Ch-b	Cheadle, channery loams, 5-15%	Shallow Droughty	1800	1100	700
Cl-a	Clunton, clay loams - frequently flooded, 0-5%	Wet Meadow	4500	4000	3500
Cp-c	Caseypeak, skeletal loams, 15-40%	Douglas-fir/rough fescue	600	400	200
Cp-d	Caseypeak, skeletal loams – steep, 40-70%	Douglas-fir/rough fescue	600	400	200
Dc-a	Duckcreek, clay loams, 0-5%	Loamy Argillic	2500	1800	1100
Fa-b	Farlin, clay loams, 0-5%	Droughty	2200	1500	900
Hl-b	Houlihan, sandy loams, 5-15%	Loamy	2800	2100	1400
Kp-c	Kimpton, skeletal loams, 15-40%	Douglas-fir/snowberry, Douglas-fir/twinflower, Douglas-fir/common juniper	300	200	100
Kp-d	Kimpton, skeletal loams – steep, 40-70%	Douglas-fir/snowberry, Douglas-fir/twinflower, Douglas-fir/common juniper	300	200	100
Lb-b	Libeg, clay loams, 5-15%	Loamy Droughty	2500	1800	1100
Ml-a	Medicinelodge - frequently flooded, 0-5%	Wet Meadow, Subirrigated	4500, 3500	4000, 3000	3500, 2500
Ml-b	Medicinelodge - occasionally flooded, 5-15%	Subirrigated, Quaking aspen/Kentucky bluegrass	3000	2500	2000
Pn-b	Poin, skeletal sandy loams, 5-15%	Shallow Droughty, Douglas-fir/rough fescue, Douglas-fir/common juniper	1800, 600, 300	1100, 400, 200	700, 200, 100
Rc-b	Redchief, silty loams, 5-15%	Droughty, Quaking aspen/Kentucky bluegrass	2200, 3000	1500, 2500	900, 2000
Rf-a	Redfish, occasionally flooded, 0-5%	Wet Meadow, Subirrigated	4500, 3500	4000, 3000	3500, 2500
Ry-b	Raynesford, silty clay loams, 5-15%	Loamy	2800	2100	1400
Se-b	Sebud, gravelly loams, 5-15%	Subirrigated	3000	2500	2000
Wa-b	Woodhall, skeletal loams, 5-15%	Droughty, Douglas-fir/rough fescue, Douglas-fir/snowberry	2200, 600, 300	1500, 400, 200	900, 200, 100
Wg-b	Wineglass, channery clay loams, 5-15%	Loamy	2800	2100	1400
Wu-b	Woodhurst, skeletal loams, 5-15%	Droughty	2200	1500	900
DL	Disturbed Land, varies	NA	-	-	-
RO	Rock Outcrop, 30-90%	NA	-	-	-

[1]Soils mapping units are identified, classified and delineated in the Black Butte baseline soils report and map (Baker 2015).

[2]Soils mapping units were correlated with ecological sites using the online Meagher County Soil Survey (NRCS 2015), and, as necessary, on-site vegetation composition data. All ecological sites are in MLRA 43B, Central Rocky Mountains; ecological sites are primarily in the 20+-inch precipitation zone ("ppz"), occasionally the 15 to 19-inch ppz.

[3]"Normal" annual production refers to a year of about average precipitation and temperature patterns.

Table 21

Correlation of Vegetation Types with Soil Mapping Units, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Number of Vegetation Sample Plots by Soil Mapping Unit												
VEGETATION TYPE	**n**	Ad	Ch	Cl	Cp	Dc	Fa	Hl	Kp	Lb	Ml	Pn	Rc	Rf
UPLAND GRASSLAND	**28**													
Upland Altered Grassland c.t.	9							2		3	1		1	
Festuca idahoensis/Agropyron spicatum h.t.	3		1		1					1				
Festuca idahoensis /Stipa richardsonii h.t.	2		1				1							
Festuca campestris/Agropyron spicatum h.t.	1									1				
Festuca campestris/Festuca idahoensis h.t.	13		4				1			2				
UPLAND SHRUBLAND	**44**													
Artemisia tridentata/Poa pratensis c.t.	13		5								1		2	
Artemisia tridentata/Festuca idahoensis h.t.	3		3											
Artemisia tridentata/Festuca campestris h.t.	17		12		1			1	1			2		
Artemisia tridentata-Dasiphora fruticosa / Poa pratensis c.t.	6		1			2		1			1			
Dasiphora fruticosa-Artemisia tridentata / Festuca campestris c.t.	3		1			2								
Mixed Shrub-Shale Outcrop c.t.	2		2											
CONIFER FOREST AND WOODLAND	**40**													
Pseudotsuga menziesii/Festuca idahoensis h.t.	1				1									
Pseudotsuga menziesii/Festuca campestris h.t.	12				6				2			2		
Pseudotsuga menziesii/Juniperus communis h.t.	8				1				4			2		
Pseudotsuga menziesii/Calamagrostis rubescens h.t.	2								2					
Pseudotsuga menziesii/Symphoricarpos albus h.t.	11				1				6			1	1	
Pseudotsuga menziesii/Linnaea borealis h.t.	4								4					
Picea engelmannii/Linnaea borealis h.t.	2								2					
LOWLAND ALTERED GRASSLAND	**17**													
Noxious Weed Tailings c.t. (2014/2015)	1										1			
Lowland Altered Grassland (Hay Meadow) c.t.	16	1		1		1					5			8
RIPARIAN AND WETLAND (RW)	**56**													
Herbaceous RW types	(15)													
Juncus balticus c.t.	5										4			
Carex nebrascensis c.t.	2										2			
Carex utriculata h.t.	8										8			

Table 21

Correlation of Vegetation Types with Soil Mapping Units, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

VEGETATION TYPE	n	Number of Vegetation Sample Plots by Soil Mapping Unit												
		Ad	Ch	Cl	Cp	Dc	Fa	Hl	Kp	Lb	Ml	Pn	Rc	Rf
Shrub RW types	(37)													
Dasiphora fruticosa /Poa pratensis c.t.	6			1		1					4			
Dasiphora fruticosa /Deschampsia cespitosa c.t.	4										4			
Dasiphora fruticosa /Carex utriculata c.t.	2										2			
Salix bebbiana series	13										13			
Salix geyeriana series	12			1							11			
Deciduous Forest RW types	(4)													
Populus tremuloides/Osmorhiza occidentalis h.t.	1												1	
Populus tremuloides/Poa pratensis c.t.	3									1	1		1	
TOTAL PLOTS	**185**	**1**	**30**	**3**	**11**	**6**	**2**	**4**	**21**	**8**	**58**	**7**	**6**	**8**

Map Symbol[1]	Soil Mapping Unit[1]
Ad-b	Adel loams, 5-15%
Ch-b	Cheadle, channery loams, 5-15%
Cl-a	Clunton, clay loams - frequently flooded, 0-5%
Cp-c	Caseypeak, skeletal loams, 15-40%
Cp-d	Caseypeak, skeletal loams – steep, 40-70%
Dc-a	Duckcreek, clay loams, 0-5%
Fa-b	Farlin, clay loams, 0-5%
Hl-b	Houlihan, sandy loams, 5-15%
Kp-c	Kimpton, skeletal loams, 15-40%
Kp-d	Kimpton, skeletal loams – steep, 40-70%
Lb-b	Libeg, clay loams, 5-15%
Ml-a	Medicinelodge - frequently flooded, 0-5%
Ml-b	Medicinelodge - occasionally flooded, 5-15%
Pn-b	Poin, skeletal sandy loams, 5-15%
Rc-b	Redchief, silty loams, 5-15%
Rf-a	Redfish, occasionally flooded, 0-5%
Ry-b	Raynesford, silty clay loams, 5-15%
Se-b	Sebud, gravelly loams, 5-15%
Wa-b	Woodhall, skeletal loams, 5-15%
Wg-b	Wineglass, channery clay loams, 5-15%
Wu-b	Woodhurst, skeletal loams, 5-15%
RO	Rock Outcrop, 30-90%

[1]Soils mapping units are identified, classified and delineated in the baseline soils report and map (Baker 2015).

n=number of sample sites

Table 21

Correlation of Vegetation Types with Soil Mapping Units, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Number of Vegetation Sample Plots by Soil Mapping Unit					
VEGETATION TYPE	**n**	RO	Ry	Se	Wa	Wg	Wu
UPLAND GRASSLAND	**28**						
Upland Altered Grassland c.t.	9					2	
Festuca idahoensis/Agropyron spicatum h.t.	3						
Festuca idahoensis /Stipa richardsonii h.t.	2						
Festuca campestris/Agropyron spicatum h.t.	1						
Festuca campestris/Festuca idahoensis h.t.	13				5	1	
UPLAND SHRUBLAND	**44**						
Artemisia tridentata/Poa pratensis c.t.	13				1	3	1
Artemisia tridentata/Festuca idahoensis h.t.	3						
Artemisia tridentata/Festuca campestris h.t.	17						
Artemisia tridentata-Dasiphora fruticosa / Poa pratensis c.t.	6		1				
Dasiphora fruticosa-Artemisia tridentata / Festuca campestris c.t.	3						
Mixed Shrub-Shale Outcrop c.t.	2						
CONIFER FOREST AND WOODLAND	**40**						
Pseudotsuga menziesii/Festuca idahoensis h.t.	1						
Pseudotsuga menziesii/Festuca campestris h.t.	12				2		
Pseudotsuga menziesii/Juniperus communis h.t.	8				1		
Pseudotsuga menziesii/Calamagrostis rubescens h.t.	2						
Pseudotsuga menziesii/Symphoricarpos albus h.t.	11				2		
Pseudotsuga menziesii/Linnaea borealis h.t.	4						
Picea engelmannii/Linnaea borealis h.t.	2						
LOWLAND ALTERED GRASSLAND	**17**						
Noxious Weed Tailings c.t. (2014/2015)	1						
Lowland Altered Grassland (Hay Meadow) c.t.	16						
RIPARIAN AND WETLAND (RW)	**56**						
Herbaceous RW types	(15)						
Juncus balticus c.t.	5			1			
Carex nebrascensis c.t.	2						
Carex utriculata h.t.	8						

Table 21

Correlation of Vegetation Types with Soil Mapping Units, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Number of Vegetation Sample Plots by Soil Mapping Unit					
VEGETATION TYPE	**n**	RO	Ry	Se	Wa	Wg	Wu
Shrub RW types	(37)						
Dasiphora fruticosa /Poa pratensis c.t.	6						
Dasiphora fruticosa /Deschampsia cespitosa c.t.	4						
Dasiphora fruticosa /Carex utriculata c.t.	2						
Salix bebbiana series	13						
Salix geyeriana series	12						
Deciduous Forest RW types	(4)						
Populus tremuloides/Osmorhiza occidentalis h.t.	1						
Populus tremuloides/Poa pratensis c.t.	3						
TOTAL PLOTS	**185**	**0**	**1**	**1**	**11**	**6**	**1**

Map Symbol[1]	Soil Mapping Unit[1]
Ad-b	Adel loams, 5-15%
Ch-b	Cheadle, channery loams, 5-15%
Cl-a	Clunton, clay loams - frequently flooded, 0-5%
Cp-c	Caseypeak, skeletal loams, 15-40%
Cp-d	Caseypeak, skeletal loams – steep, 40-70%
Dc-a	Duckcreek, clay loams, 0-5%
Fa-b	Farlin, clay loams, 0-5%
Hl-b	Houlihan, sandy loams, 5-15%
Kp-c	Kimpton, skeletal loams, 15-40%
Kp-d	Kimpton, skeletal loams – steep, 40-70%
Lb-b	Libeg, clay loams, 5-15%
Ml-a	Medicinelodge - frequently flooded, 0-5%
Ml-b	Medicinelodge - occasionally flooded, 5-15%
Pn-b	Poin, skeletal sandy loams, 5-15%
Rc-b	Redchief, silty loams, 5-15%
Rf-a	Redfish, occasionally flooded, 0-5%
Ry-b	Raynesford, silty clay loams, 5-15%
Se-b	Sebud, gravelly loams, 5-15%
Wa-b	Woodhall, skeletal loams, 5-15%
Wg-b	Wineglass, channery clay loams, 5-15%
Wu-b	Woodhurst, skeletal loams, 5-15%
RO	Rock Outcrop, 30-90%

[1]Soils mapping units are identified, classified and delineated in the baseline soils report and map (Baker 2015).

n=number of sample sites

Table 22

Correlation of Vegetation Types with Ecological Sites, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Number of Vegetation Sample Plots by Ecological Site[1] (15-19" and 20+" ppz)												
VEGETATION TYPE	n	Dr	Lo	LoA	LoDr	SwDr	D-fir/ r. fescue	D-fir/ c. juniper	D-fir/ snowberry	D-fir/ twinflower	Q. aspen/ K. bluegrass	Ov	Sb	WM
UPLAND GRASSLAND	**28**													
Upland Altered Grassland c.t.	9	1	4		3								1	
Festuca idahoensis/Agropyron spicatum h.t.	3				1	2								
Festuca idahoensis /Stipa richardsonii h.t.	2	1				1								
Festuca campestris/Agropyron spicatum h.t.	1				1									
Festuca campestris/Festuca idahoensis h.t.	13	6	1		2	4								
UPLAND SHRUBLAND	**44**													
Artemisia tridentata/Poa pratensis c.t.	13	4	3			5							1	
Artemisia tridentata/Festuca idahoensis h.t.	3					3								
Artemisia tridentata/Festuca campestris h.t.	17		1			16								
Artemisia tridentata-Dasiphora fruticosa /Poa pratensis c.t.	6		2	2		1							1	
Dasiphora fruticosa-Artemisia tridentata /Festuca campestris c.t	3			2		1								
Mixed Shrub-Shale Outcrop c.t.	2					2								
CONIFER FOREST AND WOODLAND	**40**													
Pseudotsuga menziesii/Festuca idahoensis h.t.	1						1							
Pseudotsuga menziesii/Festuca campestris h.t.	12						12							
Pseudotsuga menziesii/Juniperus communis h.t.	8							8						
Pseudotsuga menziesii/Calamagrostis rubescens h.t.	2								2					
Pseudotsuga menziesii/Symphoricarpos albus h.t.	11								11					
Pseudotsuga menziesii/Linnaea borealis h.t.	4									4				
Picea engelmannii/Linnaea borealis h.t.	2									2				
LOWLAND ALTERED GRASSLAND	**17**													
Noxious Weed Tailings c.t. (2014/2015)	1												1	
Lowland Altered Grassland (Hay Meadow) c.t.	16											1	8	7
RIPARIAN AND WETLAND (RW)	**56**													
Herbaceous RW types	(15)													
Juncus balticus c.t.	5												2	3
Carex nebrascensis c.t.	2													2
Carex utriculata h.t.	8													8

Table 22

Correlation of Vegetation Types with Ecological Sites, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Number of Vegetation Sample Plots by Ecological Site[1] (15-19" and 20+" ppz)												
VEGETATION TYPE	**n**	**Dr**	**Lo**	**LoA**	**LoDr**	**SwDr**	**D-fir/ r. fescue**	**D-fir/ c. juniper**	**D-fir/ snowberry**	**D-fir/ twinflower**	**Q. aspen/ K. bluegrass**	**Ov**	**Sb**	**WM**
Shrub RW types	(37)													
Dasiphora fruticosa /Poa pratensis c.t.	6			1									4	1
Dasiphora fruticosa /Deschampsia cespitosa c.t.	4												4	
Dasiphora fruticosa /Carex utriculata c.t.	2													2
Salix bebbiana series	13													13
Salix geyeriana series	12												3	9
Deciduous Forest RW types	(4)													
Populus tremuloides/Osmorhiza occidentalis h.t.	1										1			
Populus tremuloides/Poa pratensis c.t.	3				2						1			
TOTAL PLOTS	**185**	**12**	**11**	**5**	**9**	**35**	**13**	**8**	**13**	**6**	**2**	**1**	**25**	**45**

[1]Ecological sites were determined using descriptions in the Meagher County Soil Survey (USDA Natural Resources Conservation Service 2003, 2015):

Map Symbol	**Ecological Site (15-19" and 20+" ppz)**
Dr	Droughty
Lo	Loamy
LoA	Loamy Argillic
LoDr	Loamy Droughty
SwDr	Shallow Droughty
D-fir/r. fescue	Douglas-fir/rough fescue
D-fir/c. juniper	Douglas-fir/common juniper
D-fir/snowberry	Douglas-fir/common snowberry
D-fir/twinflower	Douglas-fir/twinflower
Q. aspen/K. bluegrass	Quaking aspen/Kentucky bluegrass
Ov	Overflow
Sb	Subirrigated
WM	Wet Meadow

Table 23
Potential Rangeland Productivity and Estimated Grazing Capacity of the Black Butte Baseline Study Area, Meagher County, Montana, 2015.

Soil[1] Symbol	Productivity[2] (dry pounds/acre)	Acreage by Soil[1]	Total Annual Production[2] (dry pounds)	Estimated Available Forage (Percent)[2]	Estimated Grazing Capacity (AUM)[3]
Ad-b	2400	26.9	64,542	85	69.4
Ch-b	1100	798.5	878,313	78	867.2
Cl-a	4000	26.5	105,992	80	107.3
Cp-c	400	220.3	88,130	70	78.1
Cp-d	400	79.3	31,712	70	28.1
Dc-a	1800	138.0	248,338	80	251.5
Fa-b	1500	46.5	69,779	78	68.9
Hl-b	2100	55.6	116,786	77	113.8
Kp-c	200	329.7	65,946	50	41.7
Kp-d	200	127.7	25,530	50	16.2
Lb-b	1800	197.8	355,985	80	360.5
Ml-a	3700	256.4	948,599	80	960.6
Ml-b	2500	71.7	179,300	70	158.9
Pn-b	500	200.8	100,392	65	82.6
Rc-b	1800	86.5	155,669	70	137.9
Rf-a	3400	31.5	107,194	80	108.6
Ry-b	2100	67.5	141,795	77	138.2
Se-b	2500	35.7	89,269	80	90.4
Wa-b	1000	297.8	297,797	65	245.0
Wg-b	2100	166.4	349,457	77	340.6
Wu-b	1500	58.2	87,282	78	86.2
DL	NA	36.9	-	NA	-
RO	NA	11.3	-	NA	-
TOTALS		**3367.5**	**4,507,805**		**4351.7**

[1]Soil symbols and mapping are taken from Baker (2015). Soil names are given for each mapping unit symbol in Table 20.

[2]Following NRCS (2003), total annual production is the amount of vegetation that can be expected to grow annually on well-managed range that is supporting the historic climax plant community (HCPC). As most of the study area does not support the HCPC, due to historical grazing, annual production and therefore grazing capacity can be expected to be considerably less than the figures taken from NRCS (2003).
Productivity figures are for years of "normal" precipitation and temperature regime (see Table 20). Figures for soils with multiple ecological sites are weighted means derived from Appendix E.

[3]AUM calculations are based on 790 pounds forage per animal unit month (AUM) for a 1,000 pound cow with calf up to 4 months age. No adjustments have been made for site grazability factors, such as steep slopes, site inaccessibility, distance to water, or land use alterations such as irrigation, etc.

Table 24
Predicted Average Yields of Principal Crops, Black Butte Baseline Study Area, 2015.

Soil Name (Baker 2015)	Land Capability[1]		Hay Meadow Acreage by Soil		Hay Meadow Expected Yield[2]				
					Grass Hay (Tons per Acre)		Grass - Legume Hay (Tons per Acre)		Pasture (AUM per Acre)
	Non-Irrigated	Irrigated	Non-Irrigated	Irrigated	Non-Irrigated	Irrigated	Non-Irrigated	Irrigated	
Clunton-frequently flooded	5w	5w	9.20		2.0		2.3	4.0	5.1
Duckcreek	6e	6e	2.40		1.5		1.8	3.0	3.0
Medicinelodge-frequently flooded	6w	6w		30.73	2.0		2.3	4.0	5.1
Redfish-occasionally flooded	6w	6w		26.72	2.0		2.3	4.0	5.1
TOTAL			**11.60**	**57.45**					

[1]**Land capability** classification (NRCS 2012) shows, in a general way, the suitability of soils for most kinds of field crops. Soils are generally grouped at three levels - capability class, subclass, and unit.

Capability classes , the broadest groups, are designated by the numbers 1 through 8, indicating progressively greater limitations and narrower choices for practical use. If properly managed, soils in classes 1, 2, 3 and 4 are suitable for the mechanized production of commonly grown field crops and for pasture.

Capability subclasses indicate the dominant limitations in the class by adding a letter, e, w, s, or c, to the class numeral. The letter *e* shows that the main hazard is the risk of erosion; *w* shows that water in or on the soil interferes with plant growth; *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c* shows that the chief limitation is climate that is very cold or very dry.

[2]**Source**: Meagher County Soil Survey (NRCS 2015), where "absence of a yield figure indicates that the soil is not suitable for the crop or the crop is not generally grown on the soil". Yields are those that can be expected under a high level of non-irrigated and irrigated management.

Table 25
Montana Natural Heritage Program Records[1] of Plant Species of Concern, Meagher County, Montana, 2015.

Plant Species	Global Rank	State Rank	USFWS	USFS	BLM	Habitat
Adoxa moschatellina Musk-root	G5	S3		Sensitive		Rock/Talus
Cirsium longistylum Long-styled thistle	G2G3	S2S3				Meadows (Montane-subalpine)
Downingia laeta Great Basin downingia	G5	S2S3				Wetland/Riparian (Shallow water ponds, lakes)
Eleocharis rostellata Beaked spikerush	G5	S3		Sensitive		Wetlands (Alkaline)
Goodyera repens Northern rattlesnake-plantain	G5	S3		Sensitive		Mesic Forest
Phlox kelseyi var. missoulensis Missoula phlox	G3	S3		Sensitive		Slopes/ridges (open, foothills to subalpine)
Physaria klausii Divide bladderpod	G3	S3				Slopes (Open, Montane/subalpine)
Salix serissima Autumn willow	G4	S3				Wetland/Riparian

[1]Explanation of ranking categories follows the MTNHP website at: http://fieldguide.mt.gov/statusCodes.aspx

SPECIES STATUS CODES: Definitions for species conservation status ranks, categories and other codes designated by MTNHP, Federal and State Agencies:

Species of Concern: Species of Concern are native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors. Designation as a Montana Species of Concern or Potential Species of Concern is based on the Montana Status Rank, and is not a statutory or regulatory classification. Montana employs a standardized ranking system to denote **global** (range-wide) and **state** status (NatureServe 2006). Species are assigned numeric ranks ranging from 1 (highest risk, greatest concern) to 5 (demonstrably secure), reflecting the relative degree of risk to the species' viability, based upon available information.

Rank		Definition
G1	**S1**	At high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
G2	**S2**	At risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state.
G3	**S3**	Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.
G4	**S4**	Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining.
G5	**S5**	Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.
GH	**SH**	Historical, known only from records usually 40 or more years old; may be rediscovered.
T#		Rank of a subspecies or variety. Appended to the global rank of the full species, *e.g.* G4T3

U.S. Fish and Wildlife Service (Endangered Species Act): Status of a taxon under the federal Endangered Species Act of 1973 (16 U.S.C.A. § 1531-1543 (Supp. 1996))

Designation Descriptions

LT	Listed threatened: Any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 U.S.C. 1532(20)).
C	Candidate: Those taxa for which sufficient information on biological status and threats exists to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships; however, none of the substantive or procedural provisions of the Act apply to candidate species.

Table 25
Montana Natural Heritage Program Records[1] of Plant Species of Concern, Meagher County, Montana, 2015.

Bureau of Land Management: BLM Sensitive Species are defined by the BLM 6840 Manual as those that normally occur on Bureau administered lands for which BLM has the capability to significantly affect the conservation status of the species through management. The sensitive species designation, for species other than federally listed, proposed, or candidate species, may include such native species as those that could become endangered in or extirpated from a state, are under status review by FWS, or are undergoing significant current or predicted downward trends in habitat capability, etc.

Designation Descriptions

Sensitive	Denotes species listed as sensitive on BLM lands
Special Status	Denotes species that are listed as Endangered or Threatened under the Endangered Species Act

U.S. Forest Service: U.S. Forest Service Manual (2670.22) defines Sensitive Species on Forest Service lands as those for which population viability is a concern as evidenced by a significant downward trend in population or a significant downward trend in habitat capacity.

Designation Descriptions

Endangered	Listed as Endangered (LE) under the U.S. Endangered Species Act.
Threatened	Listed as Threatened (LT) under the U.S. Endangered Species Act.
Sensitive	Listed as a Sensitive Species by USFS Northern Region (R1).

Table 26
Average Number of Vascular Plant Species per Plot for Seven Physiognomic Types, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

	AVERAGE NUMBER OF SPECIES PER PLOT[1]						
CLASS	UPLAND GRASSLAND n=28	UPLAND SHRUBLAND n=44	CONIFER FOREST AND WOODLAND n=40	LOWLAND ALTERED GRASSLAND n=16	HERBACEOUS RIPARIAN AND WETLAND n=15	SHRUB RIPARIAN AND WETLAND n=37	DECIDUOUS FOREST RIPARIAN AND WETLAND n=4
NATIVE PERENNIAL GRAMINOIDS	7.5	8.3	6.4	1.9	5.8	5.9	3.0
INTRODUCED PERENNIAL GRAMINOIDS	1.1	1.2	0.9	4.1	1.4	2.2	2.3
NATIVE ANNUAL GRAMINOIDS	-	-	-	-	-	-	-
INTRODUCED ANNUAL GRAMINOIDS	-	<0.1	<0.1	-	-	-	-
NATIVE PERENNIAL FORBS AND SUBSHRUBS	18.1	19.1	16.8	4.8	5.3	12.0	13.3
INTRODUCED PERENNIAL FORBS	0.4	0.6	0.6	3.3	0.8	1.6	1.3
FERNS AND ALLIES	0.2	0.3	0.1	0.4	0.1	0.5	-
NATIVE ANNUAL/BIENNIAL FORBS	1.2	0.9	0.9	0.5	0.2	0.3	0.5
INTRODUCED ANNUAL/BIENNIAL FORBS	0.3	0.3	0.4	0.9	0.1	0.3	1.0
SHRUBS	0.9	1.9	4.2	-	1.0	4.2	2.5
TREES	-	0.1	1.5	-	-	0.1	1.3
TOTAL	**29.7**	**32.7**	**31.8**	**15.9**	**14.7**	**27.2**	**25.0**

[1]n = number of 0.01-acre plots (11.8 feet radius) sampled in each physiognomic type.

Table 27

Noxious Weed Abundance and Distribution by Vegetation Type, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Percent Cover/Constancy by Species Potentially Problematic Weeds (not listed)			
VEGETATION TYPE	**n**	***Carduus nutans***	***Carum carvi***	***Knautia arvensis***	***Rhinanthus crista-galli***
UPLAND GRASSLAND	**28**	**0.01/4**		**1.54/4**	
Upland Altered Grassland c.t.	9	0.03/11		4.78/11	
Festuca idahoensis/Agropyron spicatum h.t.	3				
Festuca idahoensis /Stipa richardsonii h.t.	2				
Festuca campestris/Agropyron spicatum h.t.	1				
Festuca campestris/Festuca idahoensis h.t.	13				
UPLAND SHRUBLAND	**44**	**0.01/2**			
Artemisia tridentata/Poa pratensis c.t.	13	0.02/8			
Artemisia tridentata/Festuca idahoensis h.t.	3				
Artemisia tridentata/Festuca campestris h.t.	17				
Artemisia tridentata-Dasiphora fruticosa /Poa pratensis c.t.	6				
Dasiphora fruticosa-Artemisia tridentata /Festuca campestris c.t	3				
Mixed Shrub-Shale Outcrop c.t.	2				
CONIFER FOREST AND WOODLAND	**40**	**0.10/5**			
Pseudotsuga menziesii/Festuca idahoensis h.t.	1				
Pseudotsuga menziesii/Festuca campestris h.t.	12				
Pseudotsuga menziesii/Juniperus communis h.t.	8	0.13/13			
Pseudotsuga menziesii/Calamagrostis rubescens h.t.	2				
Pseudotsuga menziesii/Symphoricarpos albus h.t.	11	0.27/9			
Pseudotsuga menziesii/Linnaea borealis h.t.	4				
Picea engelmannii/Linnaea borealis h.t.	2				
LOWLAND ALTERED GRASSLAND	**17**	**NA**	**NA**		**NA**
Noxious Weed Tailings c.t. (2014)	1	84.0/100			
Noxious Weed Tailings c.t. (2015) post-herbicide	1	0/0			
Lowland Altered Grassland (Hay Meadow) c.t.	16	0.02/6	6.56/63		6.25/50
RIPARIAN AND WETLAND (RW)	**56**				
Herbaceous RW types	(15)				**0.33/13**
Juncus balticus c.t.	5				0.60/20
Carex nebrascensis c.t.	2				
Carex utriculata h.t.	8				0.25/13
Shrub RW types	(37)	**0.03/3**		**0.02/5**	
Dasiphora fruticosa /Poa pratensis c.t.	6	0.17/17		0.05/17	
Dasiphora fruticosa /Deschampsia cespitosa c.t.	4				
Dasiphora fruticosa /Carex utriculata c.t.	2				
Salix bebbiana series	13				
Salix geyeriana series	12			0.03/8	
Deciduous Forest RW types	(4)				
Populus tremuloides/Osmorhiza occidentalis h.t.	1				
Populus tremuloides/Poa pratensis c.t.	3				
TOTAL PLOTS	**185**				

n = number of sample sites

X = species noted as sporadic, limited occurrence in the study area, and not recorded in the vegetation sample plots.

Table 27

Noxious Weed Abundance and Distribution by Vegetation Type, Black Butte Baseline Study Area, Meagher County, Montana, 2015.

		Percent Cover/Constancy by Species State-listed Noxious Weeds			
VEGETATION TYPE	**n**	***Centaurea maculosa***	***Cirsium arvense***	***Cynoglossum officinale***	***Leucanthemum vulgare***
UPLAND GRASSLAND	**28**				
Upland Altered Grassland c.t.	9				
Festuca idahoensis/Agropyron spicatum h.t.	3				
Festuca idahoensis /Stipa richardsonii h.t.	2				
Festuca campestris/Agropyron spicatum h.t.	1				
Festuca campestris/Festuca idahoensis h.t.	13				
UPLAND SHRUBLAND	**44**	**0.16/2**		**0.07/5**	
Artemisia tridentata/Poa pratensis c.t.	13			0.15/8	
Artemisia tridentata/Festuca idahoensis h.t.	3				
Artemisia tridentata/Festuca campestris h.t.	17	0.41/6			
Artemisia tridentata-Dasiphora fruticosa /Poa pratensis c.t.	6			0.17/17	
Dasiphora fruticosa-Artemisia tridentata /Festuca campestris c.t	3				
Mixed Shrub-Shale Outcrop c.t.	2				
CONIFER FOREST AND WOODLAND	**40**		**0.03/5**	**0.23/15**	
Pseudotsuga menziesii/Festuca idahoensis h.t.	1				
Pseudotsuga menziesii/Festuca campestris h.t.	12				
Pseudotsuga menziesii/Juniperus communis h.t.	8			0.38/13	
Pseudotsuga menziesii/Calamagrostis rubescens h.t.	2				
Pseudotsuga menziesii/Symphoricarpos albus h.t.	11			0.45/36	
Pseudotsuga menziesii/Linnaea borealis h.t.	4		0.25/25		
Picea engelmannii/Linnaea borealis h.t.	2		0.15/50	0.50/50	
LOWLAND ALTERED GRASSLAND	**17**		**NA**		**X**
Noxious Weed Tailings c.t. (2014)	1		8.0/100	1.0/100	
Noxious Weed Tailings c.t. (2015) post-herbicide	1		0/0	0/0	
Lowland Altered Grassland (Hay Meadow) c.t.	16		0.25/19		X
RIPARIAN AND WETLAND (RW)	**56**				
Herbaceous RW types	(15)		**4.33/20**		
Juncus balticus c.t.	5		12.80/40		
Carex nebrascensis c.t.	2				
Carex utriculata h.t.	8		0.13/13		
Shrub RW types	(37)		**0.95/30**	**0.18/14**	
Dasiphora fruticosa /Poa pratensis c.t.	6		3.22/50	0.05/17	
Dasiphora fruticosa /Deschampsia cespitosa c.t.	4			0.08/25	
Dasiphora fruticosa /Carex utriculata c.t.	2				
Salix bebbiana series	13		0.54/23	0.23/15	
Salix geyeriana series	12		0.75/42	0.25/8	
Deciduous Forest RW types	(4)		**0.08/25**	**1.33/75**	
Populus tremuloides/Osmorhiza occidentalis h.t.	1			2.00/100	
Populus tremuloides/Poa pratensis c.t.	3		0.10/33	1.10/67	
TOTAL PLOTS	**185**				

n = number of sample sites

X = species noted as sporadic, limited occurrence in the study area, and not recorded in the vegetation sample plots.

Table 28
Vegetation Acreage of the Black Butte Baseline Study Area,
Meagher County, Montana, 2015 (see Plate 1)

MAP UNIT	VEGETATION TYPE	ACRES	PERCENT
	UPLAND GRASSLAND	**778.80**	**23.13**
11	**Upland Altered Grassland c.t.**	172.00	5.11
12	**Upland Native Grassland**	606.80	18.02
	Festuca idahoensis/Agropyron spicatum h.t.		
	Festuca idahoensis /Stipa richardsonii h.t.		
	Festuca campestris/Agropyron spicatum h.t.		
	Festuca campestris/Festuca idahoensis h.t.		
	UPLAND SHRUBLAND	**1372.14**	**40.75**
21	*Artemisia tridentata/Poa pratensis* c.t.	1348.61	40.05
	Artemisia tridentata/Festuca idahoensis h.t.		
	Artemisia tridentata/Festuca campestris h.t.		
	Artemisia tridentata-Dasiphora fruticosa /Poa pratensis c.t.		
	Dasiphora fruticosa-Artemisia tridentata /Festuca campestris c.t.		
22	Mixed Shrub-Shale Outcrop c.t.	23.53	0.70
	CONIFER FOREST AND WOODLAND (Mature)	**502.12**	**14.91**
	CONIFER FOREST AND WOODLAND (Immature)	**235.07**	**6.98**
31 AND 31R[1]	*Pseudotsuga menziesii/Festuca idahoensis* h.t.	(31) 465.44 (31R) 228.65	13.82 6.79
	Pseudotsuga menziesii/Festuca campestris h.t.		
	Pseudotsuga menziesii/Juniperus communis h.t.		
	Pseudotsuga menziesii/Calamagrostis rubescens h.t.		
	Pseudotsuga menziesii/Symphoricarpos albus h.t.		
32 AND 32R[1]	*Pseudotsuga menziesii/Linnaea borealis* h.t.	(32) 36.68	1.09
	Picea engelmannii/Linnaea borealis h.t.	(32R) 6.42	0.19
	LOWLAND ALTERED GRASSLAND	**125.34**	**3.72**
41	Noxious Weed Tailings c.t.	6.82	0.20
42	Lowland Altered Grassland c.t.	49.47	1.47
43	Hay Meadow	69.05	2.05
	RIPARIAN AND WETLAND (RW)	**303.32**	**9.00**
51	**Herbaceous RW types**	75.01	2.23
	Juncus balticus c.t.		
	Carex nebrascensis c.t.		
	Carex utriculata h.t.		
52	**Low Shrub (Cinquefoil) RW types**	120.04	3.56
	Dasiphora fruticosa /Poa pratensis c.t.		
	Dasiphora fruticosa /Deschampsia cespitosa c.t.		
	Dasiphora fruticosa /Carex utriculata c.t.		
53	**Tall Shrub (Willow) RW types**	95.77	2.84
	Salix bebbiana series		
	Salix geyeriana series		
54	**Deciduous Forest (Aspen) RW types**	12.50	0.37
	Populus tremuloides/Osmorhiza occidentalis h.t.		
	Populus tremuloides/Poa pratensis c.t.		
	MISCELLANEOUS	**50.70**	**1.51**
D	Disturbed	17.40	0.52
Rd	Road	28.72	0.85
W	Water	4.58	0.14
	TOTAL	**3367.49**	**100.00**

[1]R = immature stands of seedling, sapling, pole-sized trees in logged areas with conifer recruitment or where conifers are encroaching into grassland and shrubland areas.