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Forest Service
Pacific Northwest Research Station
Pacific Wildland Fire Sciences Lab
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BUREAU OF LAND MANAGEMENT
WORLAND WYOMING
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File Code: 4400
Date: September 29, 2004

Ken Stinson
Range Conservationist
Bureau of Land Management
Worland District Office
101 South 23rd
Worland, WY 82401-0119

Dear Ken,

I would like to thank you and your current and former (John Thompson) colleagues for your assistance and cooperation in our research effort to quantify fuel consumption in big sagebrush ecosystems. Enclosed is a summary of the results from the 2001 Sand Coulee area burns outside of Cody. These results are part of a larger data set that includes prescribed burns in big sagebrush throughout the western United States. It is only with participation, cooperation and support from you and your resource and fire management colleagues that we are able to advance our research program. Thank you. Thank you also for your patience, we hope to be able to disseminate our experimental results back to our cooperators more quickly in the future.

The data we collected will be used to model fuel consumption in shrub-dominated ecosystems, and eventually will be included in CONSUME 3.0, the next version of our fuel consumption software. If you have any questions about the enclosed report, CONSUME, or if there are any additional data we could provide, please do not hesitate to call or write. Please forward these data to the fire staff in the Cody Office and, of course, feel free to share these data with the appropriate people in your organization.

Again, I would like thank the staffs of the Cody and Worland District Offices for your assistance with our research. Your outstanding cooperation and support were vital for the completion of our work and are much appreciated. We continue to seek out opportunities to sample fuel consumption on sagebrush-dominated prescribed burns. If you have any burning projects with a sagebrush component planned in 2005 or 2006 we would really like to hear from you. We hope to have the opportunity to continue our collaboration and work together in the future.

Best regards,

Clint S. Wright
Research Forester
Fire and Environmental Research Applications Team
(206) 732-7827
cwright@fs.fed.us

Enclosure:
Sand Coulee data summaries

Unit:	Heart Mountain		
Dominant Species:	*A. tridentata* ssp. *vaseyana*	Latitude:	N 44.684389
Burn Date/Time:	10/2/2001 13:45	Longitude:	W 109.159229
Slope:	8%	Aspect:	220 degrees (magnetic)

	Pre-burn Loading (tons/acre ± SE)	Post-burn Loading (tons/acre ± SE)	Consumption (tons/acre)	Consumption (percent)
Live sage[1]	5.669 ± 0.6474	0.127 ± 0.0393	8.884	98.6%
Dead sage[1]	3.342 ± 0.5855			
Other shrubs[2, 3]	0.000 ± 0.0000	0.000	0.000	99.2%
Grass[2]	0.146 ± 0.0231	0.001	0.145	99.2%
Forbs[2]	0.029 ± 0.0096	0.000	0.029	99.2%
Down wood 1-hr[2]	0.160 ± 0.0278	0.001	0.159	99.2%
Down wood 10-hr[2]	0.497 ± 0.0993	0.004	0.493	99.2%
Down wood 100-hr[2]	0.233 ± 0.0833	0.002	0.231	99.2%
Litter[2]	. ± .	.	.	.
TOTAL	10.076 ± 1.2821	0.136	9.940	98.7%

Pre-burn Coverage (percent)[4]	
Sage	66.5%
Other shrubs	0.3%
Grass	35.0%
Forbs	2.7%
Litter	.
Mineral Soil	1.8%

Post-burn Coverage (percent)[4]	
Sage	0.6%
Blackened ground	99.2%

Pre-burn Vegetation Height (ft ± SE)[5]	
Sage	1.67 ± 0.086
Grass	0.51 ± 0.033
Forbs	0.29 ± 0.040

Day-of-burn Fuel Moisture (% ± SE)		Sample Size (n)
Sage foliage	73.6 ± 1.40	10
Grass	30.3 ± 1.38	5
Soil	5.6 ± 1.94	3
Dead 1-hr[6]	5.9 ± 0.12	4
Dead 10-hr[6]	5.7 ± 0.12	5
Dead 100-hr[6]	6.6 ± 0.18	4
Live 100-hr[7]	13.7 ± 0.47	5

[1]Loading and consumption based on 18 pre-burn and 18 post-burn clip plots (25 ft^2 each).

[2]Loading based on 18 pre-burn clip plots (25 ft^2 each); consumption calculated as unit pre-burn loading x % blackened ground.

[3]Includes: Rabbitbrush

[4]Based on four 250 ft long line transects.

[5]Based on 44 systematically distributed point measurements.

[6]Dead material collected from standing sage plants.

[7]Live material collected from standing sage plants.

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Date prepared: 9/29/2004

Heart Mtn.

Unit:	Old Tanker		
Dominant Species:	*A. tridentata* ssp. *wyomingensis*	Latitude:	N 44.700974
Burn Date/Time:	10/2/2001 11:55	Longitude:	W 109.129910
Slope:	0%	Aspect:	--

	Pre-burn Loading (tons/acre ± SE)	Post-burn Loading (tons/acre ± SE)	Consumption (tons/acre)	Consumption (percent)
Live sage[1]	2.016 ± 0.2842	0.052 ± 0.0203	3.275	98.4%
Dead sage[1]	1.310 ± 0.2752			
Other shrubs[2, 3]	0.182 ± 0.1158	0.000	0.182	100.0%
Grass[2]	0.129 ± 0.0158	0.000	0.129	100.0%
Forbs[2]	0.055 ± 0.0069	0.000	0.055	100.0%
Down wood 1-hr[2]	0.150 ± 0.0189	0.000	0.150	100.0%
Down wood 10-hr[2]	0.282 ± 0.0592	0.000	0.282	100.0%
Down wood 100-hr[2]	0.010 ± 0.0104	0.000	0.010	100.0%
Litter[2]	. ± .	.	.	.
TOTAL	4.134 ± 0.5738	0.052	4.083	98.8%

Pre-burn Coverage (percent)[4]	
Sage	29.7%
Other shrubs	2.7%
Grass	28.6%
Forbs	5.7%
Litter	45.0%
Mineral Soil	3.9%

Post-burn Coverage (percent)[4]	
Sage	0.5%
Blackened ground	100.0%

Pre-burn Vegetation Height (ft ± SE)[5]	
Sage	1.06 ± 0.064
Grass	0.46 ± 0.034
Forbs	0.25 ± 0.072

Day-of-burn Fuel Moisture (% ± SE)		Sample Size (n)
Sage foliage	73.6 ± 1.40	10
Grass	30.3 ± 1.38	5
Soil	5.6 ± 1.94	3
Dead 1-hr[6]	5.9 ± 0.12	4
Dead 10-hr[6]	5.7 ± 0.12	5
Dead 100-hr[6]	6.6 ± 0.18	4
Live 100-hr[7]	13.7 ± 0.47	5

[1]Loading and consumption based on 18 pre-burn and 18 post-burn clip plots (25 ft^2 each).

[2]Loading based on 18 pre-burn clip plots (25 ft^2 each); consumption calculated as unit pre-burn loading x % blackened ground.

[3]Includes: Rabbitbrush and silver sage

[4]Based on four 250 ft long line transects.

[5]Based on 44 systematically distributed point measurements.

[6]Dead material collected from standing sage plants.

[7]Live material collected from standing sage plants.

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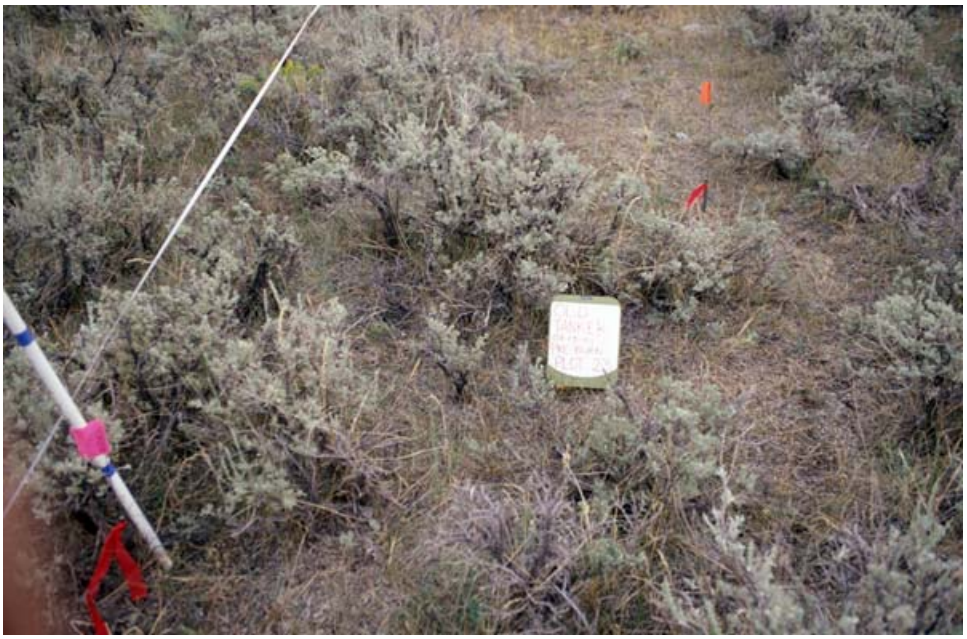
Old Tanker



Unit:	Sand Coulee		
Dominant Species:	*A. tridentata**	Latitude:	N 44.718922
Burn Date/Time:	10/2/2001 16:30	Longitude:	W 109.148771
Slope:	15%	Aspect:	100 degrees (magnetic)

	Pre-burn Loading (tons/acre ± SE)	Post-burn Loading (tons/acre ± SE)	Consumption (tons/acre)	Consumption (percent)
Live sage[1]	2.467 ± 0.3423	0.089 ± 0.0170	3.803	97.7%
Dead sage[1]	1.424 ± 0.2341			
Other shrubs[2, 3]	0.001 ± 0.0011	0.000	0.001	100.0%
Grass[2]	0.128 ± 0.0184	0.000	0.128	100.0%
Forbs[2]	0.033 ± 0.0093	0.000	0.033	100.0%
Down wood 1-hr[2]	0.204 ± 0.0370	0.000	0.204	100.0%
Down wood 10-hr[2]	0.228 ± 0.0588	0.000	0.228	100.0%
Down wood 100-hr[2]	0.000 ± 0.0000	0.000	.	.
Litter[2]	. ± .	.	.	.
TOTAL	4.486 ± 0.5729	0.089	4.397	98.0%

Pre-burn Coverage (percent)[4]	
Sage	42.0%
Other shrubs	0.1%
Grass	27.7%
Forbs	3.9%
Litter	19.3%
Mineral Soil	14.5%

Post-burn Coverage (percent)[4]	
Sage	0.3%
Blackened ground	100.0%

Pre-burn Vegetation Height (ft ± SE)[5]	
Sage	0.95 ± 0.067
Grass	0.40 ± 0.027
Forbs	0.41 ± 0.038

Day-of-burn Fuel Moisture (% ± SE)		Sample Size (n)
Sage foliage	73.6 ± 1.40	10
Grass	30.3 ± 1.38	5
Soil	5.6 ± 1.94	3
Dead 1-hr[6]	5.9 ± 0.12	4
Dead 10-hr[6]	5.7 ± 0.12	5
Dead 100-hr[6]	6.6 ± 0.18	4
Live 100-hr[7]	13.7 ± 0.47	5

*Mixture of Wyoming and mountain big sage.

[1]Loading and consumption based on 18 pre-burn and 18 post-burn clip plots (25 ft^2 each).

[2]Loading based on 18 pre-burn clip plots (9 ft^2 each); consumption calculated as unit pre-burn loading x % blackened ground.

[3]Includes: Rabbitbrush

[4]Based on four 250 ft long line transects.

[5]Based on 44 systematically distributed point measurements.

[6]Dead material collected from standing sage plants.

[7]Live material collected from standing sage plants.

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Sand Coulee p1

Sand Coulee p2

Sand Coulee p3